



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

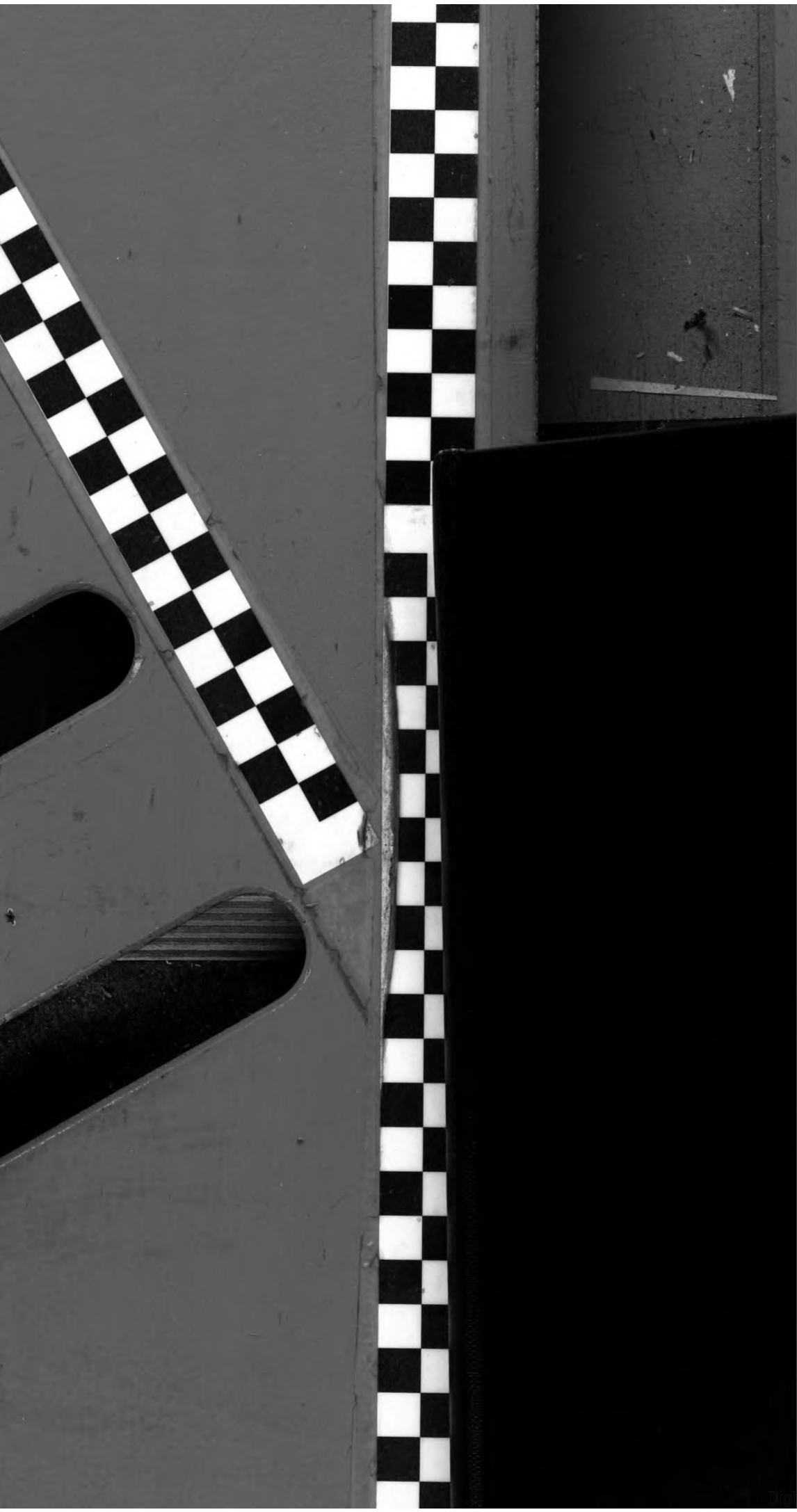
Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

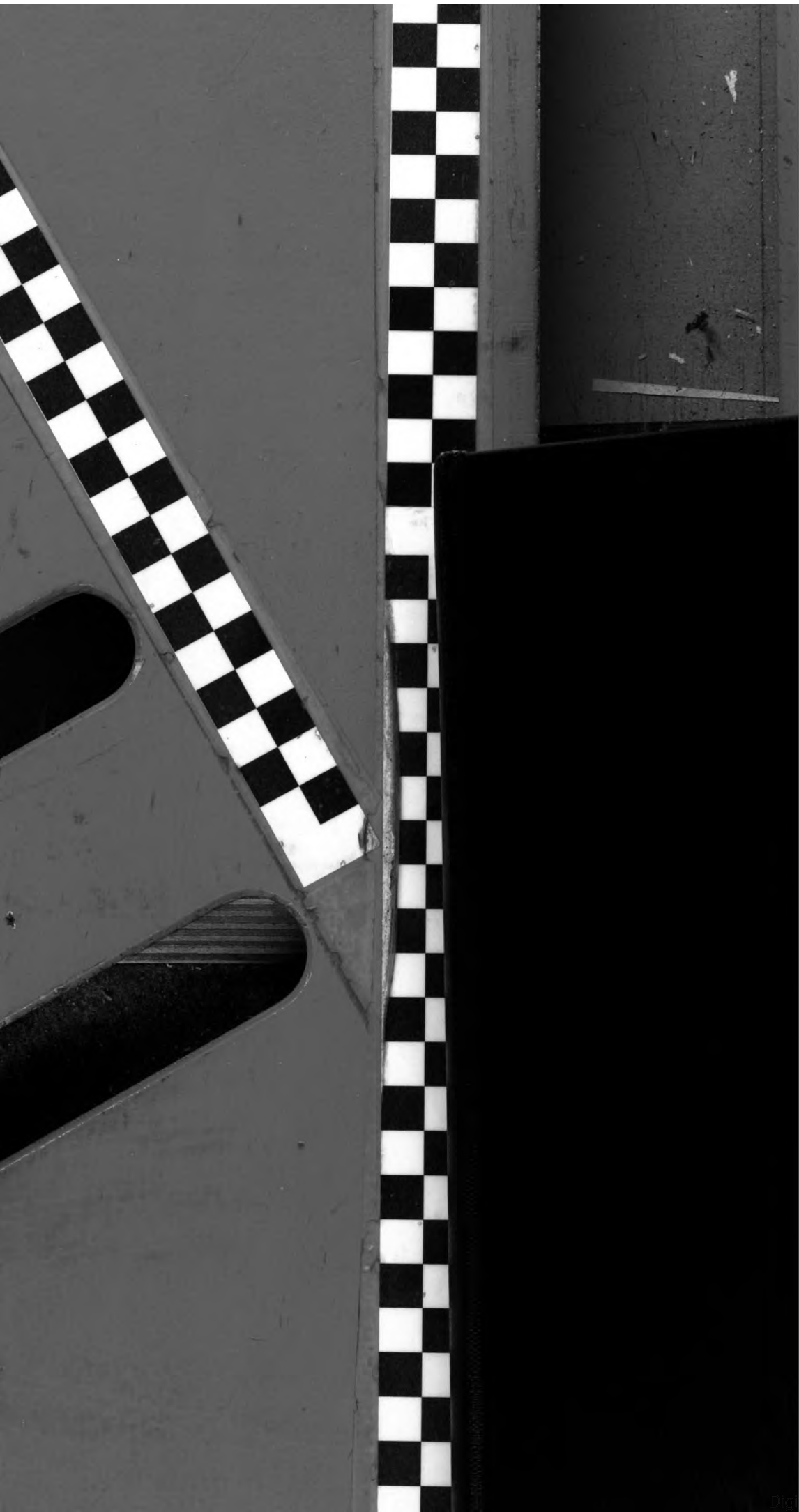
- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



C 447,241



C 447,241

PROPERTY OF

*The
University of
Michigan
Libraries*

1817

ARTES SCIENTIA VERITAS

THE AUTOMOBILE

WEEKLY

NEW YORK—THURSDAY, JULY 4, 1907—CHICAGO

10 CENTS

WORLD'S 24-HOUR RECORD IS BROKEN

—ON—

"Firestone"

PNEUMATIC TIRES

by a 6-cylinder Ford car on a Detroit circular track, June 21st and 22nd

FINISH
TL
1
.A96
V.17
July-Dec.
1907

The Test:

Twelve hours of the racing was done on tires made by three of the largest other makers. The other twelve hours were run on "Firestone" Tires.

The Result:

"Firestone" Tires made the greater mileage with one-fourth the tire changes. Also, "Firestone" Tires made a perfect score on four lighter cars, averaging 30 miles per hour, and came through without a scar.

The Reason:

UNVARYING HIGH QUALITY YIELDS UNVARYING GOOD SERVICE.

NEW CATALOGUE SENT UPON REQUEST

The largest exclusive rubber tire makers in America

FIRESTONE TIRE & RUBBER CO., Akron, Ohio

BRANCHES:

NEW YORK, 233 W. 58th Street, cor. Broadway
ST. LOUIS, 2226 Olive Street
DETROIT, 240 to 242 Jefferson Avenue

PITTSBURG, 5904 Penn Avenue
PHILADELPHIA, 211 N. Broad Street
BOSTON, 9 Park Square

CHICAGO, 1442 Michigan Avenue
BUFFALO, cor. Ellicott and Tupper Streets

Automobile Bodies and Tops

ALL STYLES AND SIZES

...IN...

**LIMOUSINE
LANDAULETTE
TOURING and
RUNABOUT
BODIES**

**BUILT TO ORDER
PROMPTLY**

In soliciting your business we are placing at your disposal the knowledge and experience of the past thirty years in the building of high-grade work, which, with progressive and up-to-date methods, is a guarantee of the high standard that will be maintained in our Automobile Body and Top Department.

SEND SPECIFICATIONS AND LET US QUOTE PRICES

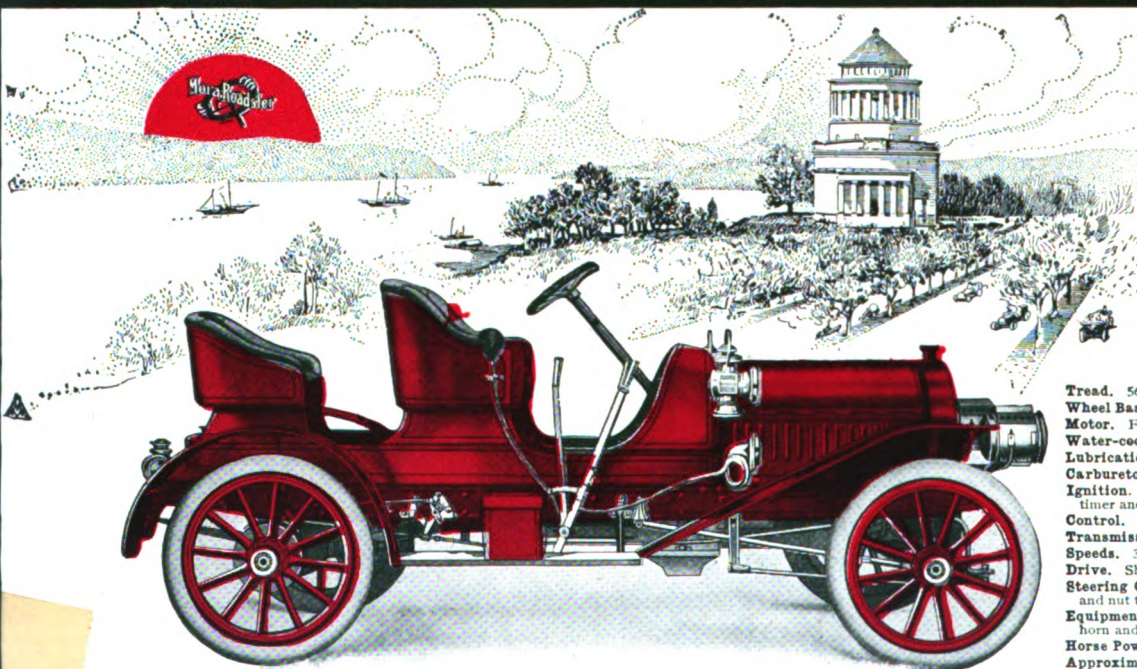
All our Tops are made of the highest grade Leather, Imported Twills, Pantasote, Government Khaki, etc., etc.

**BUILT TO ORDER TO
FIT ANY CAR**

HUME CARRIAGE CO.

Automobile Dept.

AMESBURY, MASS.



Racytype

Specifications:

Rear Axle. Timken Roller bearing
Front Axle. Tubular ball bearing
Springs. Transverse semi-elliptic front spring, platform type rear spring
Wheels. 32 inches, wood, artillery type
Tires. 32 x 3 1/2 Regular Clincher, G. & J. raised tread
Brakes. Two external, two internal, operating on drums attached to wheels
Tank Capacity. 15 gallons of gasoline

Tread. 56 inches
Wheel Base. 98 inches
Motor. Four cylinder 4 x 5 1/8, cast in pairs
Water-cooler. Capacity, 5 gallons
Lubrication. Splash system
Carburetor. Mora
Ignition. LaCosta Magneto, also coil, timer and storage battery
Control. Throttle and spark
Transmission. Sliding nickel steel gears
Speeds. 3 forward and reverse
Drive. Shaft
Steering Gear. Irreversible wheel, screw and nut type
Equipment. 2 oil side lamps, 1 tail lamp, horn and tools
Horse Power. 24. Mechanically Right.
Approximate Total Weight. 1750 lbs.
Price. \$2300

Built to meet the demand for a light, high grade, well accommodating driver, guest, and mechanic. Supplied consisting of four unit LaCosta coil, timer, and storage wired to separate set of spark plugs and working insures a smooth running reliable motor and transmission. moderate wheel base and light weight make the Racytype Roadster both a good cross country and around town car, because it is fast enough to go the pace that exhilarates cross country and easy to handle in traffic in town. The speediest light car at anywhere near the price.

Mora Roadster
MECHANICALLY RIGHT

designed and carefully constructed, speedy road car, with the highest possible grade electrical equipment, battery, and LaCosta high tension magneto, each system pendently. Mora Mechanically Right construction insure freedom from tire trouble. Its Large tires in proportion to weight of car insure freedom from tire trouble. Its moderate wheel base and light weight make the Racytype Roadster both a good cross country and around town car, because it is fast enough to go the pace that exhilarates cross country and easy to handle in traffic in town. The speediest light car at anywhere near the price.

MORA MOTOR CAR COMPANY,
WORKS, NEWARK, NEW YORK

18 MORA PLACE, NEWARK, N. Y.

THE AUTOMOBILE

THE GRAND PRIX



PRESS BUREAU, NEAR DIEPPE, July 2.—At an average speed of 70:61 miles an hour, Felice Nazzaro, on a Fiat machine, has won the 478.4 mile speed test of the Automobile Club of France against thirty-seven of the world's most formidable flyers. The pace broke all world's records. Last year, on practically the same machine, the dashing Italian was an indifferent second in the Grand Prix, being defeated by Szisz on a Renault. His record this year is particularly brilliant, he being the winner of the Targa Florio, the German Emperor's Cup and finally the French

Grand Prix, the *dernier mot* of the automobile world. His car was fitted with Michelin tires and rims and Simms-Bosch magneto.

Second place goes to François Szisz, last year's winner of the Grand Prix, who, again on a Renault, finished in 6:53:10. France secures all other positions, as follows: (3) Baras, Brasier, 7:05:05 3-5; (4) Rougier, Dietrich; (5) Caillois, Darracq; (6) Rigal, Darracq; (7) Barillier, Brasier; (8) Garcet, Bayard-Clement; (9) Fitz Shepherd, Bayard-Clement.

On the start being given promptly at six o'clock, Lancia, who had the good luck to draw first place, rushed away with his usual impetuosity, going round the 77-kilometer triangular course in 41:33, equal to an average of 68 miles an hour. Excepting that Heath had a little difficulty in starting his Panhard, and was left behind by Christie, timed out one minute later, all the starts were made successfully, the machines immediately setting a faster pace than has ever been known in any automobile race in Europe. Richat's Aquila-Italiana was the only non-starter.

Three minutes after the last competitor had gone away, Lancia finished his round amid the strains of a military band and hoarse cheers from thousands of throats. His time, though fast, was not to be the best of the day, for sturdy Duray soon rejoiced the hearts of French spectators and admirers by a forty-minute trip. When Wagner roared through on a Fiat and the figures on the huge score board indicated 39:53—which means that he had traveled at 74.5 miles an hour—a yell of triumph went up from Italian and French throats, the former for the machine, the latter for the man. Hanriot, on a Darracq, made a good showing

GRAND PRIX
L'AUTOMOBILE CLUB DE FRANCE
Le 2 Juillet
CIRCUIT DE DIEPPE

- 1.—NAZZARO, Fiat (Italy)
Time 6:46:33
Average, 70.61 miles per hour.
- 2.—SZISZ, Renault (France)
Time, 6:53:10.
- 3.—BARAS, Brasier (France)
Time, 7:05:05 3-5



on the first round, as did Szisz (Renault), with 40:39.

After the first three rounds the race settled down to a desperate struggle between Nazzaro, Lancia, Duray, Szisz and Wagner. Szisz was running with remarkable regularity and seemed likely to repeat last year's performance. Duray made a brilliant spectacular display, driving his huge Dietrich in a superb manner. When he finished the fifth round, half the race, he made his first stop on the wood side track, where the gasoline stations were located. Jumping from the machine the instant it stopped, he hurled

the cans of gasoline and water like one endowed with demoniac strength, took on board his full allowance and was away again—to a glorious victory, as it appeared—before the crowd could sufficiently recover from its astonishment to send up a rousing cheer. Sixth, seventh and eighth rounds were covered without any flagging of the killing pace, when just as the rumor was going round the stands "Duray is the winner," an official note appeared on the blackboard that the French champion was down and out with a broken bearing.

Christie's Ill-luck Followed Him to France.

Walter Christie, starting twelfth, had not been heard of when Lancia and Duray completed their second round. His first round was made in 1:20:13, in which time several had been round twice; his second round was completed in 2:9:2 elapsed time, and his fourth in 4:58. A broken valve caused serious delay, and a seized clutch finally eliminated the American candidate. Fitz Shepherd, driving the late Albert Clement's machine, did some fast running, but owing to minor troubles failed to get near the leaders. Heath's Panhard broke down without injuring the driver. At the right-angle turn at Londinières Richez, driving the third Renault, missed the turn and upset. Bablot, who was just behind him on a Brasier, swerved into the ditch to avoid an accident and damaged his machine. Richez was unable to continue, but Bablot after a little delay got under way again. Wagner's brilliant debut finally terminated in a ditched and abandoned machine. Mercedes again failed to make a showing, and English and

Belgian machines were no more successful than the American. On the last round, when almost certain of third position, Lancia's gasoline supply became exhausted and he was stranded by the roadside just as in the Gordon Bennett race of 1905. Strangely, it was again a Brasier, this time driven by Baras, which forged ahead and secured a victory at the expense of the Italian.

Animated Scene at the Starting Line.

PRESS BUREAU, NEAR DIEPPE, Tuesday, July 2.—Just as the town clocks in quaint Dieppe, three miles away on the coast line, were giving their six morning clangs, Lancia's huge Fiat was roaring with a harsh voice on the edge of the wooden loop track running into the upper leg of the 77-kilometer Dieppe circuit. The usual *êtes vous prêt—cinq, quatre, trois, deux—allez*, distinguishable above the roar of the exhaust only by those at the starter's elbow, and the intrepid Italian dashed off followed by a roar such as had never before been heard at a European auto race. With thirty-eight machines starting at intervals of one minute there is no lack of interest and no time to be lost on the part of the drivers and officials. In Indian file they stand on the wooden track, the first one with its wheels on the white line indicating the starting and finishing point, advancing with clock-like regularity at the call of the starter, cranking up as quickly as possible and darting away on the life and death struggle. There is less roar and smoke than on previous occasions, for not a drop more than 50.84 gallons of gasoline is available for the 478.4 miles to be covered at fantastic speed. Each man has drawn off a quart from his regulation allowance to prime his motor, but it is too precious to waste, and cranking at the latest possible moment is the rule.

the event is unique; the feverish anxiety of the start, a dash of speed in the distance, the enthusiasm of the enormous crowds securely walled behind stout barricades fringed by red trousered infantrymen accoutred for active service, and away in the rear—if one cared to look in that direction—the blue waters of the English Channel sparkling in the bright morning sun which has succeeded the rain and gray skies of yesterday. Fifty thousand persons are estimated to be massed in the grandstands, with an additional 150,000 scattered round the course. Americans are not very numerous, Jefferson DeMont Thompson, of the A. A. A. racing board, being the only prominent automobilist. Other Americans were visitors who happened to be touring France.

American interest is centered in Walter Christie at the wheel of the front drive machine which he built on the banks of the Hudson, starting twelfth, with sober Le Blon ahead of him on a Panhard, and Salzer, the acrobatic driver, behind him on a Mercedes. At the last moment Fitz Shepherd has entered on the scene and is piloting 32-BC—the Bayard-Clement, which Gaudermain would have driven had not one of the saddest of accidents removed Albert Clement from our midst. All three Bayard-Clement machines have been sold, Albert Clement's mount to M. de Bourbon, who put Pierre Garcet in charge of it; the second to Baron de Dorlodot, with Venus, young Clement's mechanic in many a race, now driving; and the third to Fitz Shepherd. No. 5 arouses Yankee interest, for although the Porthos is built almost at the doors of Paris, Striker, who is at the wheel, does not hide the fact that he is a naturalized American. Page, too, on one of the Motoblocs from Bordeaux, has a real interest in the land of the Stars and Stripes.



THE GRAND PRIX CIRCUIT NEAR DIEPPE.

Total length of the circuit is 76 kilometers 088 meters, which, allowing for the turns, is officially considered as 77 kilometers (47.84 miles). Ten rounds have to be covered by Grand Prix racers, giving 478.4 miles. Sporting Commission Cup machines cover only six rounds, or 287 miles.

Fuel allowance for Grand Prix machines is 50.82 gallons, equal to 0.50 miles to the gallon. Sporting Commission Cup machines are allowed 15.2 gallons, requiring 19 miles per gallon.

Away over to the right, across country, a flash can be seen at intervals of one minute as the machines speed along the second leg of the triangle toward Londinières. As a spectacular display

Rigal, on No. 30 Darracq, which Wagner deserted some time ago, receives a sympathetic send off, for everybody knows that half his fees and half his winning premium—if he wins—will be handed over to the widow and children of Marius Pin, who was killed on the same car down at Rambouillet but a few weeks ago. Nazarro, the hero of Sicily and the Taunus, is distinctly favorite; Lancia is in good favor; though Wagner receives a rousing cheer it is intended more for the driver than for the machine which he mounts. The feeling of certain individuals can be gauged by the fact that they would have shut out the Fiat team on the ground that the cars did not comply with Art. 3, declaring that "each constructor shall have the right to enter three cars." The application of such a rule would have had a boomerang effect, disqualifying three Darracqs and the three Bayard-Clements at the same blow, and was wisely dropped.

Order in Which the 38 Machines Got Away.

Full list of starters, together with their time, is as follows. It will be noted that numerous changes have been made since the first official list of drivers was produced:

Car	Country	Driver	Start
1. Fiat (Italy)	Italy	Lancia	6:00
2. Corre	France	D'Hespel	6:01
3. Darracq	France	Caillols	6:02
4. Lorraine-Dietrich	France	Duray	6:03
5. Porthos	France	Striker	6:04
6. Dufaux-Marchand	Switzerland	Dufaux	6:05
7. Bayard-Clement	France	Garcet	6:06
8. Motobloc	France	Page	6:07
9. Renault	France	Szisz	6:08
10. Germain	Belgium	Degrals	6:09
11. Panhard-Levassor	France	Heath	6:10
12. Christie	America	Walter Christie	6:11
13. Mercedes	Germany	Salzer	6:12
14. Weigel	England	Harrison	6:13
15. Gobron-Brille	France	Rigolly	6:14
16. Aquila-Italiana	Italy	Richat	Retired
17. Brasler	France	Barillier	6:16
18. Fiat	Italy	Nazzaro	6:17
19. Darracq	France	Rigal	6:18
20. Lorraine-Dietrich	France	Rougler	6:19
21. Bayard-Clement	France	Venus	6:20
22. Motobloc	France	Pierron	6:21
23. Renault	France	Edmond	6:22
24. Germain	Belgium	Roch-Brault	6:23
25. Panhard-Levassor	France	Le Blon	6:24
26. Mercedes	Germany	Jenatzy	6:25
27. Weigel	England	Laxen	6:26
28. Brasler	France	Baras	6:27
29. Fiat	Italy	Wagner	6:28
30. Darracq	France	Hanriot	6:29
31. Lorraine-Dietrich	France	Gabriel	6:30
32. Bayard-Clement	France	Fitz Shepherd	6:31
33. Motobloc	France	Courtade	6:32
34. Renault	France	Riches	6:33
35. Germain	Belgium	Perpere	6:34
36. Panhard-Levassor	France	Dutemple	6:35
37. Mercedes	Germany	Hemery	6:36
38. Brasler	France	Bablot	6:37

A distinctive color for the cars of each nation was adopted, as follows: Germany, white; America, white and red; England, green; Belgium, yellow; France, blue; Italy, red; Switzerland, yellow and red. A letter or combination of letters identified each team, the combination being made as far as possible of the initials of the firm. Individual cars in each team were numbered 1, 2 and 3.

Distinct from the Grand Prix there are two other contests held at the same time, one the Sporting Commission Cup, for machines not consuming more than 7.26 gallons per 62.1 miles, and the other for tires. The smaller racers were sent away on the special loop track at intervals of five minutes, the first one leaving at nine o'clock. They were only required to cover six rounds, giving a total distance of 287.07 miles with a gasoline allowance of 15.2 gallons, which approximates 18 miles to the gallon. All Sporting Commission racers had to be painted iron gray with

their starting number in red. The nine machines with their drivers are:

1. Gillet-Forest (De la Touloubre).
2. Darracq (De Langhe).
3. Hermes H.I.S.A. (Depasse).
4. Porthos (Colin Defries).
5. La Bulre (P. Dumaine).
6. Darracq (Demogeot).
7. Hermes H.I.S.A. (Moulin).
8. La Bulre (Mottard).
9. La Bulre (Dessaigne).

With the exception of the Hermes H.I.S.A. all the machines are French. Public interest in the tire test died as soon as it was discovered that only three firms, Hutchinson, Falconnet-Perodeaud and Boland, had entered. Better known firms, such as Michelin, Continental and Dunlop, engaged tire stands on the course, but abstained from the competition.

Some Previous Speed Records:

Last year's Grand Prix, run on two days over a total distance of 745 miles, was won by Szisz (Renault) at an average speed of 62.7 miles an hour. The fastest rounds on each day were covered respectively at 73 and 72 miles an hour, the circuit being 62 miles compared with 47 miles this year. In the Gordon Bennett race in Auvergne Théry averaged 48.8 miles an hour; the fastest time for any Gordon Bennett race was also by Théry, in Germany, when he averaged 59.6 miles an hour. On the Ardennes circuit in Belgium, which allows of a very just comparison with the Grand Prix, Duray averaged 66.05 miles an hour on a total distance of 372 miles. One hundred kilometers, flying start, were reeled off by Wagner at a rate equaling 70.5 miles an hour, which, although the official record for that distance, is considerably below the speeds attained on the Sarthe course. In Vanderbilt contests Hémy set the highest average in 1905, when he covered 283 miles at the rate of 61.49 miles an hour. Wagner had almost as good a record with 61.43 miles an hour. Heath, in 1904, only averaged 52.2 miles an hour.

NEW MASSACHUSETTS LAW IN EFFECT AUG. 1.

BOSTON, July 2.—Governor Guild has signed the new automobile registration bill. The bill does not mention the much-mooted sliding scale registration system, but provides for a flat annual registration fee of \$5 for automobiles and \$2 for motorcycles.

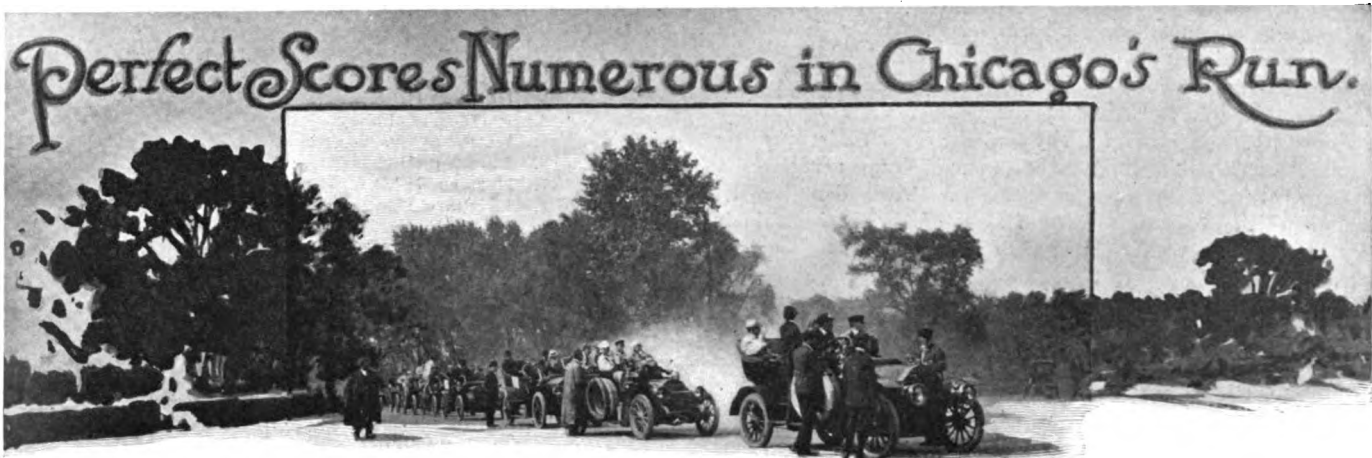
The fact that the new law becomes effective August 1 will mean that the 15,000 or more automobile owners in Massachusetts will be obliged to have their cars re-registered, and will have to pay \$5 for the process, no matter if they have just paid \$2 under the old law. Moreover, the first of next January they will have to pay another \$5, as the law provides for an annual registration on the first of January of each year.

HEAVY FINANCIAL LOSS ON GERMAN RACE.

BERLIN, June 25.—\$40,000 constitutes the total loss of the German Imperial Automobile Club on the Emperor's Cup race held on the Taunus circuit. The organization, the most elaborate of any contest, called for an expenditure of \$100,000, to meet which the organizers have only the engagement fees and the guarantee fund of \$20,000 raised by the national club. Largely owing to the bad weather, very little was obtained from the rent of grandstands.

NO BAGGAGE TRUCKS FOR A. A. A. TOURISTS.

At first it was thought that the custom of having a baggage truck accompany the A. A. A. tour would be followed again this year and the Reliance two-cycle truck was to have been given the honor for the 1907 event, but it was recently decided by the committee that they would not undertake to carry the baggage of the contestants in this year's tour, so there will be no official baggage trucks as hitherto.



CHICAGO, July 1.—Eighty-six starters, fifty-five machines with perfect scores, is the epitomized result of the reliability test planned by the Chicago Motor Club and the Chicago Automobile Trade Association and consummated June 28.

When last year's event was brought forth 88 machines responded; this year 95 entered their names on the list, and of this number 86 came to the starting line for the 148-mile run through Waukegan, Half Day, McHenry, Elgin and Aurora. The small ones only tackled the 148 miles trip, the big fellows running on and adding an additional 26 miles to their task. All, however, finished at Grant's Monument in Lincoln Park.

Bonnets were sealed down, the engine must never cease to turn over, and no water must be added to the quantity on board at the start. Gasoline and oil could be shipped aboard in any desired quantities, and no limit was placed on number of tires to be used or any penalty for attentions to them en route.

Under such rigorous conditions the percentage of perfect scores is surprising. It is equally satisfactory to note that they are well proportioned through all classes. In class I, machines listed under \$1,500, 12 out of 18 finished without a spot against them; class II, cars listing \$1,500-\$2,300, produced 7 clean scores out of 10 starters; class III, machines over \$2,300, 26 out of 39; in class IV, roadsters listing over \$1,500, 10 out of 12 starters finished with perfect scores. Of the 29 which incurred penalty points for various reasons, 7 only failed to finish the distance, showing that mechanical troubles of a serious nature were rare.

A side issue of the tour was a team contest in each class, prizes being offered for the team of three cars of the same make which did the best work. Twelve teams entered, of which Pierce Arrow and Haynes tied with perfect scores. National's chance was spoiled by Temple stalling his engine, while the Locomobile team lost through Leiser incurring 25 penalty points.

Machines That Finished with Perfect Scores.

Entrant	Class	Car	Driver
1—H. Paulman & Co.	3	Pierce Arrow	J. V. Lawrence.
2—E. W. McCready	3	Pierce Arrow	E. W. McCready.
4—Howard Hoopes	3	Haynes	W. H. Hoopes, Jr.
10—Branstetter M. Co.	2	Dragon	Fred T. Wilkins.
12—Matheson Co., N. Y.	3	Matheson	E. G. Buck.
13—Maxwell-B.-C. Co.	2	Maxwell	C. W. Price.
14—H. C. Shoemaker	3	Shoemaker	H. C. Shoemaker.
15—Wayne Motor Co.	3	Wayne	Frank Cressnel.
16—Locomobile Co. of A.	3	Locomobile	A. J. Banta.
18—Electric Vehicle Co.	3	Columbia	H. G. Cairns.
22—Maxwell-B.-C. Co.	2	Maxwell	H. M. Simpson.
23—Maxwell-B.-C. Co.	2	Maxwell	S. C. Skinner.
25—Githens Bros. Co.	3	Oldsmobile	H. A. Githens.
29—H. Paulman & Co.	3	Pierce Arrow	Paul Hofmann.
30—O. W. Lehmann	3	Locomobile	O. W. Lehmann.
32—Jackson Auto Co.	2	Jackson	R. Purcell.
33—Electric Vehicle Co.	4	Columbia	Roy Herrington.
34—R. W. Cook	3	Royal Tourist	R. W. Cook.
37—Frank Nutt	3	Haynes	Frank Nutt.
38—Pierce Engine Co.	3	Pierce-Racine	L. F. Stevens.
39—Bird-Sykes Co.	3	Corbin	G. H. Bird.
42—Buick Motor Co.	2	Buick	F. H. Moran.
43—Adams & Engs.	3	Prayer-Miller	Jack Barnes.
45—T. B. Jeffery & Co.	3	Rambler	Ted Collier.
49—C. A. Weidley	2	Premier	W. C. Brown.
50—H. O. Smith	2	Premier	H. Hammond.
52—C. Winslow	3	Haynes	C. W. Birchwood.
53—Ralph Temple	3	National	J. Aitkin.
55—Triumph M. Car Co.	4	Triumph	C. H. Tucker.
56—J. B. Diebler	4	Haynes	Ed. Noble.
57—W. E. Johnson	4	Packard	C. L. Johnson.
58—Ford Motor Co.	4	Ford (six)	R. P. Rice.
59—L. J. Reed	3	Simplex	C. Hinkelman.
60—Ralph Temple	3	National	H. L. Jenkins.
61—Diamond T. M. Co.	3	Diamond T.	C. A. Tilt.
63—G. E. Holmes & Co.	3	Queen	B. G. Tiffany.
65—Buick Motor Co.	3	Buick	W. R. Willett.
66—Adland Motor Co.	3	Lambert	V. E. Adland.
68—W. C. Sears	3	Craig-Toledo	W. C. Sears.
70—Moline Auto Co.	4	Moline	W. H. Van der Voort.
70—C. P. Warner & Co.	3	Moline	E. W. Nicholson.
72—O. F. Weber & Co.	3	Pope-Hartford	G. Schonneck.
73—Jackson Auto Co.	2	Jackson	F. L. Holmes.
76—Ford Motor Co.	1	Ford	T. Hay.
78—Maxwell-B.-C. Co.	1	Maxwell	C. Harmon.
79—Jackson Auto Co.	1	Jackson	H. A. Bisby.
80—Jackson Auto Co.	1	Jackson	E. F. Scheffer.
82—Buick Motor Co.	1	Buick	Frank Wing.
84—Holsman Auto Co.	1	Holsman	W. Hildreth.
88—Ford Motor Co.	1	Ford	A. M. Brianza.
89—Maxwell-B.-C. Co.	1	Maxwell	A. Holsman.
90—Ralph Temple	1	Jackson	A. J. Nicolet.
91—W. Elsom, Jr.	1	Maxwell	W. Elsom Jr.
92—Hagmann & H.	1	Cartercar	C. E. Hammerly.
95—Mason M. Car Co.	1	Mason	F. L. Dusenberg.

Machines That Were Penalized.

Entrant	Class	Car	Driver	Points
6—Knox Auto Co.	3	Knox	R. T. Alcott	908
7—W. W. Shaw	3	Berliet	W. W. Shaw	25
11—W. K. Young	3	Thomas	E. H. Young	50
17—Locomobile Co.	3	Locomobile	F. Leiser	75
19—Ford Motor Co.	3	Ford Six	W. G. Ribble	25
20—Cornish-Fried'g Co.	3	Aerocar	C. Friedberg	269
26—F. W. Cornish	4	C. F. car	L. K. Cooper	35
27—Cornish Fried'g Co.	2	C. F. car	J. Duke	100
31—Pullman M. Car Co.	3	Chicago Pullman	R. W. Harroun	85
35—M. A. Mead	3	Pope-Toledo	R. A. Mead	100
46—Knight & Kilbourne	3	Silent Knight	D. Kilbourne	25
48—Premier M. Mfg. Co.	2	Premier	J. W. Moore	250
51—Chicago Auto G. Co.	3	Gaeth	B. Hedges	75
54—Ralph Temple	3	National Six	R. Temple	25
64—G. E. Holmes & Co.	3	Queen	Mrs. F. Thayer	25
67—White Company	3	White	C. E. Denzer	75
74—Mora Motor Car Co.	3	Mora	W. H. Birdsall	125
77—W. B. Jameson	1	Maxwell	W. B. Jameson	65
83—T. B. Jeffery & Co.	1	Rambler	R. Schumacher	65
85—C. H. Bryan	1	Holsman	C. H. Bryan	15
86—Holsman Auto Co.	1	Holsman	B. Heinemann	25
87—A. M. Brianza	1	Ford	A. M. Brianza	5
*3—Branstetter M. Co.	2	Moon	H. P. Branstetter	..
*5—Branstetter M. Co.	2	Dragon	D. Boswell	..
*4—Githens Bros. Co.	3	Stearns	C. Chevalier	..
*41—Kline & Co.	4	Napier	Fred Kline	..
*62—Ralph Temple	2	Jackson	J. D. McKean	..
*75—Knox Auto Co.	3	Knox	W. W. Hodge	..
*93—H. B. Staver	1	Staver	H. B. Staver	..

* Did not finish.

Standing of the Teams in the Different Classes.

CLASS I

Jackson, 79, 80 and 90—perfect scores.
 Ford, 76, perfect; 87, penalized 5; 88, perfect.
 Holsman, 84, perfect; 85, 15 points; 86, 25 points—total, 40.
 Maxwell, 77, 65 points; 78, perfect; 89, perfect—total, 65.

CLASS II

Maxwell, 13, 22 and 23, perfect.
 Premier, 48, 250 points; 49, perfect; 50, perfect.
 Dragons, did not finish; 10, perfect; 28, did not start.
 Jackson, 32, perfect; 62, did not finish; 73, perfect.

CLASSES III AND IV

Pierce, 1, 2 and 29, perfect.
 Haynes, 37, 52 and 56, all perfect.
 National, 53 and 60, perfect; 54, 25 points—total, 25 points.
 Locomobile, 26 and 30, perfect; 17, 75 points—total, 75 points.



FROM Cleveland, in the early morn of Wednesday, July 10, there will start the fourth annual touring cavalcade of the American Automobile Association, present indications being that a hundred and more cars will participate in what will be the greatest affair of the kind in the history of automobiling. The touring car entrants will strive for perfect scores and the possession of the Charles J. Glidden trophy, while the runabout division will contend for the ownership of the Frank B. Hower trophy, offered by the chairman of the Touring Board, who has worked conscientiously and successfully in planning the details of the 1,500-mile journey which will have its ending in New York City on Wednesday, July 23.

The original plan of scoring club teams competing for the Glidden trophy having been found, upon careful reconsideration, to be disadvantageous to the smaller teams, the Touring Board's executive committee, which had accepted the finding of the manufacturers in the first place, listened to the protests of entrants and last week modified the rules in such a manner as to give the minor teams the same chance as the larger ones.

Preceding the start at Cleveland the Cleveland Automobile Club will entertain the entrants on the previous night. Chicago will extend the glad hand through its two clubs, and there will be more or less hospitality all along the line. It might be remarked, however, that as the tour progresses its participants will gradually adopt the early-to-bed habit with increasing unanimity.

A Preliminary Scurry Over Part of the Route.

A four and a half day trip of interest to those who are girding up their loins for the tour was made recently by the first of the 1908 Peerless cars under the guidance of Designer Charles Schmidt, with Vice-President E. H. Parkhurst as one of his companions. The run was primarily to test out the Cleveland factory's product and was consequently undertaken under touring conditions, with a full load of passengers and no elimination of baggage or fittings. At the same time it gave an excellent opportunity to study road conditions over the severest part of the Glidden Tour route—the Allegheny Mountains and the sections where road building is not.

The run was begun on Sunday morning, June 16, when the car left Cleveland running to Canton, O., for luncheon. During the same afternoon the trip was continued to Beaver, Pa., where the party stopped for the night. On Monday the road lay through Pittsburg as far as Bedford Springs. On Tuesday, over the mountains the road led to Baltimore. On Wednesday the run was from Baltimore to Philadelphia, on Thursday from Philadelphia to New York, a half day only being consumed in the latter trip.

Canton was the first stop, and to reach it the road led through Bedford, Twinsburg, Hudson, Tallmadge, Monroe Falls, Springfield, Uniontown, New Berlin. At Canton there was luncheon at the Courtland House, a modern fireproof hotel which will be the

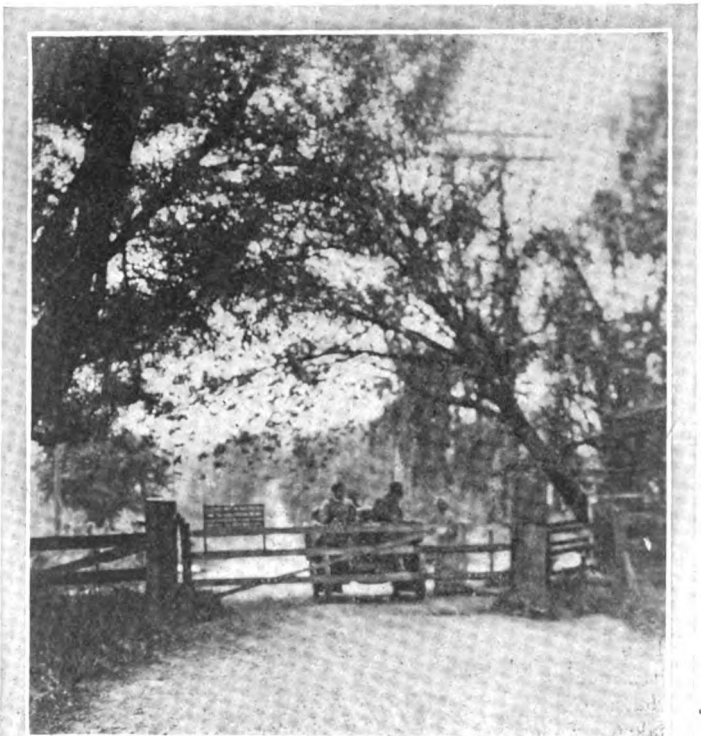
lunching place for the tourists Friday, July 19. A. B. Tucker tells of the trip in this most interesting manner:

"We departed from Canton by East Tuscaroras street at 2:49 in the afternoon, which is somewhat later than the hour at which the big tour will start. The city streets and the road into which they lead are not good for more than a mile. Then the tourists will plunge into a fair dirt road for about four miles, and following that a stretch of some ten miles, a very bad, hard clay highway with many turns on hills. But these troubles will be offset by delightful scenery which begins to flash upon the eye of

the passenger soon after leaving Osnaburg.

"Lisbon is reached through a road cut into the mountain side and a high iron bridge 125 feet below, which is Beaver Creek, one of the prettiest of streams. From this point on there was no further trouble with road directions, for it is a straight highway through to Beaver, by way of Clarkson and Frederickstown. Beyond Frederickstown the water-breaks become more frequent. These devices, contrived by some degenerate of revolutionary days and maintained in all their crude simplicity by the patient custom-followers of this district, are from 12 to 16 inches in height and are made by digging a ditch across the road and at a slight angle—so slight that the ditch almost seems to run straight across the highway. They must be approached cautiously, crossed as much on the bias as possible, and the engine throttled down until there is barely enough power left to lift the rear wheel over the obstruction.

"Beaver was reached at 7:55 in the evening, the odometer registering 426 miles. During the day 117 miles had been covered in about eight hours. This made a running schedule of about fourteen miles an hour. Our experience proved to us that if a



PEERLESS REACHES TOLLGATE AT BELLAIR IN MARYLAND



LOG-KEEPER E. H. PARKHURST AND PILOT CHAS. SCHMIDT.

schedule for the afternoon of July 19 should be made at a greater rate than ten miles an hour many of the cars in the tour will not be able to make the controls. Ten miles an hour will be the utmost which most cars can be expected to make, with comfort to the passengers and safety to the vehicle. It has been intended to run to Pittsburg before nightfall, but the hard road encountered and the hardest road known to be waiting us, made the stop at Beaver an act of discretion.

"The party was up and out of the little Pennsylvania hamlet at 7:25 the next morning. The main road which we traversed was in the throes of the construction of a new trolley road. The road from Beaver is across a bridge into Rochester, a railroad center and a mass of factories and car shops. From there the route follows the Ohio River into Pittsburg. The road out of Pittsburg is an involved one by way of Wilkinsburg, Swissvale and up a very long hill perfectly paved with vitrified brick, following a trolley line as it climbs a mountain, to Braddock. From the top it is a short run to East McKeesport, where begins the old Greensburg pike, which is no race track. It is carved out of the rock and on it are several thousand water-breaks. But it is through the foothills of the Laurel Mountains, and the country through which it passes is as beautiful as any the sun shines on.

"After passing Greensburg the road became even worse than before. It was only a worn way through the sand and boulders, and there had been frequent washouts on the hilltops. But for the greater part of the distance there were few curves. At one point, from the top of a hill, the road can be seen for six miles as it runs straight as an arrow through a valley and up a mountain side. The pike makes its way straight through Youngstown, Ligonier, Jennerstown, Stoystown, Kantner, Wolfsburg, to Bedford. We were tired from the bumps as we drew into Bedford Springs at 6:50 o'clock. This is the night stop for the A. A. A. tourists on July 20, Saturday night.

"Our odometer registered 550 miles at Bedford Springs. This means that we had covered 124 miles since 7:25 in the morning. Allowing for our stop in Pittsburg and at Greensburg for luncheon, and the stops for pictures and bothered horses, we had run about eight and a half hours. The hourly average was not flattering—about fourteen and a half miles. But it will be too fast for the tour schedule.

"The run of the next day was from Bedford to Baltimore. Practically it consists of two distinct portions—first the crossing of four mountains with a better road than had been encountered previously, but with more frequent bumps—and second, the level Hagerstown pike and the good toll roads which follow it. The bad road is followed as far as McConnellsburg, and just beyond that town, by bearing right at the forks, the Hagerstown pike is taken. From Bedford the tourists will pass through Everett, Ray's Hill, Breezewood and McConnellsburg.

"At McConnellsburg the toll gates first begin to be an institution. There are still three mountains to be crossed. One of

the grades is about a four-mile climb. But these would not be difficult if it were not for the water-breaks which are here found most frequently. It is on these descents that the car seems to yearn to float down into the valleys.

"It is a most restful feeling which comes over the tourist as he passes through Mercersburg and realizes that the mountains are sinking into the distance behind him, while ahead is a level, white, clean, smooth, macadam pike, capable of being covered at any reasonable speed with small danger except from teams upon the road. We stopped for luncheon at Green Castle, the last town before crossing the Maryland line.

"The going is good all the way to Baltimore. It is all historic ground and it is a pity that the schedule conditions will preclude stops at Bolivar and Frederick.

"The roads from Baltimore to Havre-de-Grace were the best encountered on the trip. Designer Schmidt opened the throttle and we ran for miles and miles at sixty miles an hour, with the speedometer once hitting 62.

"Of the last half-day of running across New Jersey little need be said here. The route by way of Bristol, Pa., Morrisville, N. J., Trenton, New Brunswick, Metuchen, Rahway, Elizabeth, Newark, is too well known to need comment."

What Two Bisons Deducted from a Run.

Having covered the entire route of the Glidden Tour in nine days from the time they started from Cleveland, George M. Davis and E. C. Richard returned to their homes in Buffalo with the Thomas Speedway Flyer in which they made the trip. Among the many things which the two in the Thomas say they learned regarding this year's tour are:

That very little level country will be seen after the tour leaves Columbus, O.

That it would be well for the tourists to brush up a bit on their Civil War history in order that they may understand the battlefields over which they pass.

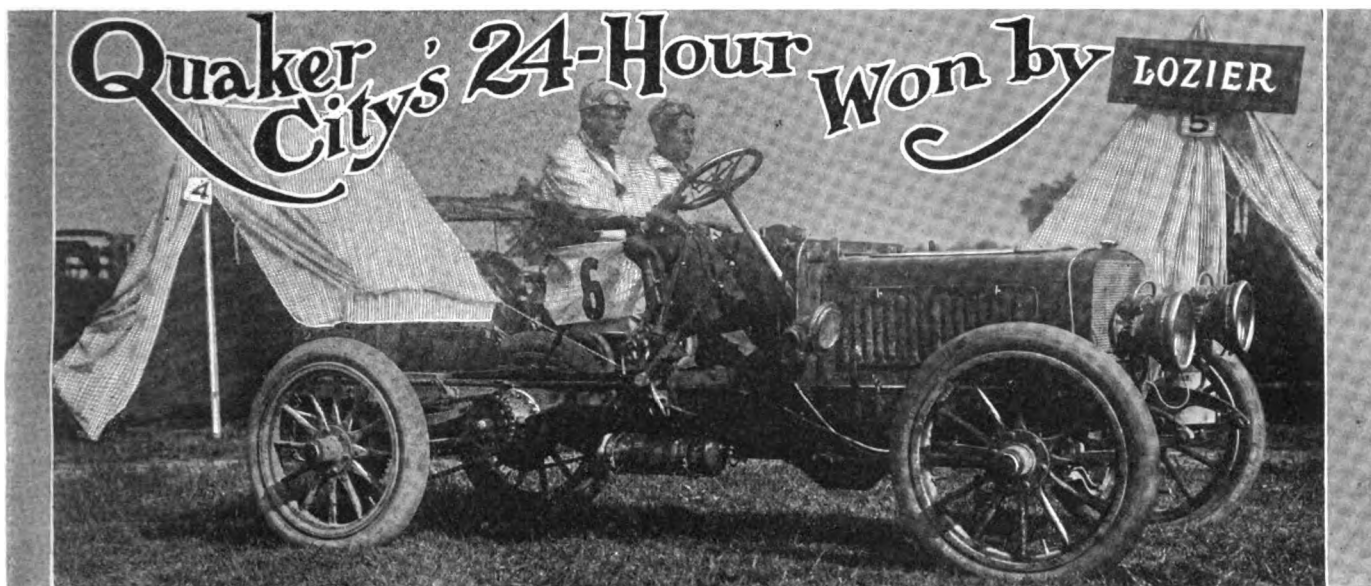
That tolls will amount to much more than they did in Canada last year.

That the people of Maryland, particularly those living on farms, are most cordial to automobilists.

That the tour will not be any easier than it was last year, despite some opinion that it will be.



A BALTIMOREAN GLIMPSE: WASHINGTON MONUMENT.



MICHENER, CHIEF PILOT OF THE WINNING CAR, IN FRONT OF HIS HEADQUARTERS INSIDE THE TRACK.

PHILADELPHIA, July 1.—Marred from the spectators' viewpoint by a pitiless storm, the 24-hour Endurance Derby of the Quaker City Motor Club at Point Breeze track came to a finish at 5:18 last Saturday afternoon, after a most sensational battle. H. A. Lozier's 40-horsepower Lozier captured the honors with a score of 717 miles; the Philadelphia Motor Car Company's 50-horsepower Frayer-Miller finishing second with 711 miles; C. A. Schroeder's 40-60 Darracq, third, 683 miles; Girard Motor Car Company, 30-35 Cleveland, fourth, 564 miles; Philadelphia Motor Car Company's 24 Frayer-Miller, fifth, 507 miles, and Penn Auto Company's 12-horsepower Flying Dutchman, sixth, 379 miles. Four other starters were withdrawn, three of them after being ditched and wrecked.

Up to 3 o'clock Saturday morning everything augured deep cuts into the Soules brothers' figures established at Columbus, O., on July 4, 1905—the only accepted record that could be used for a comparison. The Mercedes "60" had ground out 44 miles in the first hour and the Frayer-Miller began at the second to cut under not only the Soules figures, but its own, made on the same track four weeks ago. At the end of the fifth hour the big air-cooled car had covered 211 miles, as against the Soules' 198 and its own 199.

At the end of the tenth hour—just as the first sprinkle of what later developed into the heaviest rainfall of the season became evident—"Dan" Webster had driven the big Frayer-Miller 412 miles, which was an even 50 miles better than the Soules record and 34 more than his own best. Even at the end of the fifteenth hour, after five hours' driving rain had transformed the entire track into an oily mush, the Frayer's 559 miles was 36 miles ahead of the Soules figures and 30 better than its own.

Indeed, it was not until nearly the end of the eighteenth hour, at 11:18 A.M., that the execrable going put the Frayer one mile behind the record of 616 miles. At this point Webster and Knepper had a lead of 31 miles over Michener and Mulford in the "40" Lozier. The "F.-M." crew now seemed to be weakening and changed often, both men driving on their nerve.

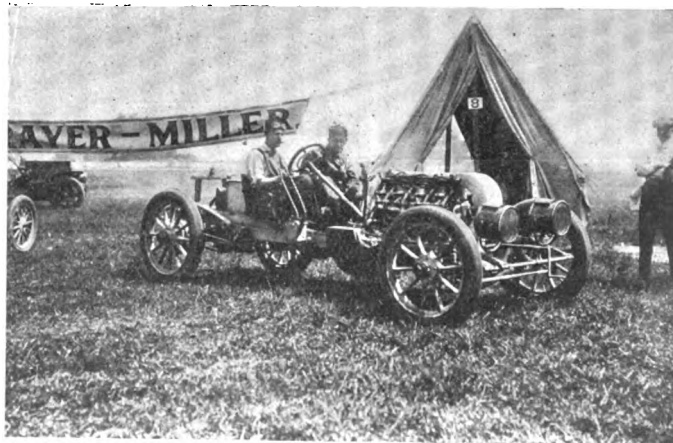
The completion of the nineteenth hour saw the gap separating the contenders reduced to 23 miles. The next two hours saw this lead still further cut to 10 miles, and now ensued a fierce battle between pluck and tired nature. Knepper, as a result of inflammation of the eyes due to the oily slime which trickled into them behind his goggles, could not see at all, and Webster, who had done the bulk of the driving, was in a state of collapse. He insisted, however, on going ahead. The 24 Frayer-Miller, which was in fifth place, was temporarily withdrawn and Lawwell, one of its drivers, was put up in Webster's place. Before this

was done, however, at 3:05 P.M., the Lozier had gained the lead. The completion of the twenty-third hour showed the Lozier eight miles to the good, and as the rules required all cars to be on the track and running, to be considered as finishers, the Frayer "24" crew had to go back to their car, and Ernest Kelly, who gained fame last winter by piloting the Thomas to its record-breaking non-stop record, volunteered to relieve Webster. The latter, having been struck in the eye by a piece of flying mud, had temporarily lost control of his car, which had skidded into the fence. "Dan," to shield himself, put out his hand to ease the force of the impact, and received a frightful cut on the wrist. That finished him. The ambulance was called.

Kelly tried in vain to reduce the Lozier's lead, but Michener and Mulford would not be denied, and when Wayne Davis' gun cracked at 5:18 their lead had not been materially decreased.

The result of the race was a practical triumph for every one of the six cars which finished. Never in the history of track racing had such conditions been encountered. Indeed, shortly after daybreak some of the contestants appealed to Referee Johnson and the other officials to call the race off and finish it some other day, meanwhile impounding the cars under guard. But after a hurried council of war the Quakers decided that a 24-hour race could not be run in two sections and the harried and exhausted crews were hurried on.

With each succeeding minute the conditions grew worse. Despite chain grips, all the cars skidded badly on the turns, even at the twenty-mile gait, which most of them found all too speedy. Each attempt to "hit it up" caused the cars to skid like a boy's



KNEPPER AND FRAYER-MILLER THAT FINISHED SECOND.



WHERE THE CAMPS OF THE VARIOUS COMPETITORS WERE LOCATED IN THE INTERIOR OF THE FIELD AT POINT BREEZE TRACK.

sled rounding a right-angled corner on an icy pavement, and a shower of oily liquid mud oftentimes hid the car and its occupants from sight when the twenty-mile limit was exceeded. The few hundreds of spectators who huddled in the grand stand and on the clubhouse porches were frequently impelled to shout unheeded warnings to the drivers during the Lozier-Frayer duel in the last two hours of the race.

On the very last lap of the contest the Lozier's left chain broke on the far turn after a wrenching skid, but Michener brought the car round to the tape with only the right sprocket pulling. No better idea of the hardships encountered can be had than from the statement that the drivers during the last half of the race were seldom able to retain their places more than half an hour without being relieved. The relieved crews were immediately rushed into the sodden tents and after having eyes, ears and nose relieved of the omnipresent mud, were plied with warm drinks and tended as carefully as infants until the men they were to relieve staggered into the tent for a short respite from the relentless pelting of rain and oily mud.

There were two Loziers in the race. "No. 5," however, was transformed into a condition closely resembling scrap iron, when, about 11 o'clock Friday night, it skidded into the rail on the tricky first turn and turned turtle, without, however, injuring either of its occupants. This accident, it turned out, was a god-send, inasmuch as it enabled the entire team to center their attention on the remaining car, and gave Michener and Mulford much-needed relief when the crucial hours arrived later.

About an hour after the Lozier smash-up, the Mitchell, in attempting to pass the plodding 12-horsepower Flying Dutchman at the half-mile post, came into collision with it when the latter skidded into Driver Harkins' path. The latter tried to avoid the crash by making a quick turn to the left, but lost control of his car and crashed into the rail, the Mitchell toppling over on him. The "first aid" bunch in President Swain's Jack Rabbit quickly

rushed to the spot and, gathering up Harkins' inanimate body, ran it around the track, into the ambulance and thence to the Methodist Hospital, where the unfortunate driver later regained consciousness. The car was put completely out of commission.

The "60" Mercedes driven by Schill and Stillman had extremely bad luck, going through the rail in broad daylight, when the race was but two hours old, owing to a skid at a spot where the oil man had been a trifle too liberal. Straight into the rail the big car plunged, Schill and Stillman taking the air route ahead of it, and emerging from a soft spot in the ditch looking like trench diggers after a long day's job. They considered themselves lucky at that, although the Mercedes' left front wheel was broken off short and the car otherwise so badly injured that its withdrawal was imperative.

The Flying Dutchman "12," despite the shaking up it received from the Mitchell collision and an earlier dip into the ditch, was patched up sufficiently to allow of its proceeding at about a twenty-mile gait. It was one of the six survivors, despite its mishaps, which its drivers, George Stranahan and Frederick Lindner, look upon as a virtual triumph for their low-powered car.

Notes of Interest Gathered at the Track.

The "curtain raisers" on Friday afternoon were marked by fast time and fairly big fields. A peculiar feature of these preliminaries was that the Motor Shop, the local agency for the Stearns and the Oldsmobile, and which had entries in four of the five events, captured the honors every time—four firsts, three seconds and a third—thanks to the skillful work of Guy Vaughn and T. W. Berger. The Stearns was first three times.

If the Autocar managers carry out their announced intention the coming week will witness the hurling of a defi at the Lozier agents to meet their car, which won the May 24-25 race, in a 24-hour race on Point Breeze track on a date mutually agreeable. The Lozierites, it is understood, will accept the challenge.

TABLE SHOWING NUMBER OF MILES COVERED AT END OF EACH HOUR.

No.	CAR AND H.P.	DRIVER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
6	Lozier, 40.....	H. Michener..... Ralph Mulford.....	41	82	118	161	202	232	273	306	345	380	407	441	475	493	519	536	556	584	602	625	652	676	698	717
8	Frayer-Miller, 50.....	Dan'l W. Webster..... H. H. Knepper.....	40	84	125	167	211	250	293	334	375	412	444	477	513	540	559	579	592	615	625	646	662	670	690	711
3	Darracq, 40-60.....	William Wallace..... Philip Kirk.....	42	84	121	160	205	236	282	323	352	396	435	471	507	530	546	563	569	575	579	596	607	625	645	683
10	Cleveland, 30-35.....	Geo. Ruhland..... M. La Roche.....	41	77	102	124	161	197	212	234	266	300	329	363	397	422	438	456	473	490	504	508	522	535	554	564
1	Frayer-Miller, 24.....	Frank Lawwell..... Frank McGonigal.....	40	80	114	155	195	231	269	302	326	328	355	387	423	440	459	464	482	493	493	494	494	494	494	507
7	Flying Dutchman, 12.	Geo. S. Stranahan..... Pred. Lindner.....	21	50	77	97	128	153	175	198	219	239	259	266	266	280	296	311	327	338	352	364	370	370	370	370
2	Mitchell, 35.....	H. F. Greenawalt..... J. A. Harkins.....	39	74	108	146	177	210	223	(Ditched and battered in collision with Dutchman; withdrawn)																
5	Lozier, 40.....	W. H. Linkroum..... L. Smelser.....	41	84	123	142	169	193	(Ditched after skidding in oil pool; badly battered; withdrawn)																	
9	Mercedes, 60.....	Paul Schill..... H. B. Stillman.....	44	75	76	(Ditched after skidding in oil pool; smashed; withdrawn)																				
12	"Bougiewah," 12.....	W. I. Gilmore.....	21	(Drooped out)																						

BALL BEARINGS FOR AUTOMOBILE CONSTRUCTION*

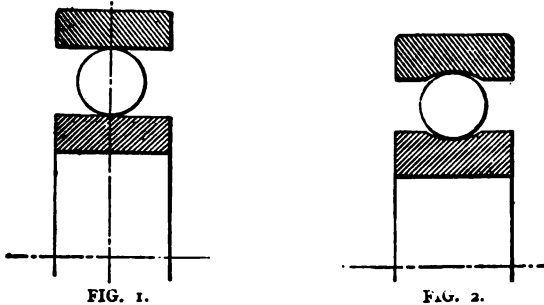
By HENRY HESS.

In the automobile, as in all other mechanisms, the journals deal with loads having various directions. In the order of their occurrence and importance they are:

Radial loads—acting at right angles to the shaft axis;

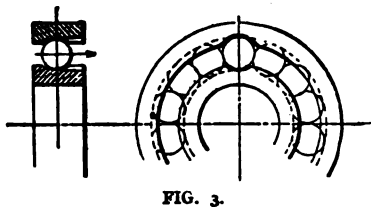
Thrust loads—acting parallel to the shaft axis;

Angular loads—these may always be resolved into, or considered as made up of radial and thrust components.



Other things being equal, it is always best to arrange sustaining surfaces at right angles to the load direction. That gives the design of Fig. 1. Better carrying capacity is had from the modification in Fig. 2, in which races of curved cross-section are substituted for the straight line ones of Fig. 1. These grooved races have the advantage of greater sustaining capacity, as referred to more in detail elsewhere; as the tangent to the curve is normal to the direction of the radial load, the bearing is of the radial type. As is shown elsewhere, the sustaining capacity of the bearing is dependent on the degree of curvature of the race cross-section, being greater as the latter more nearly approaches equality with the ball curvature.

Cutting a local groove from the side into a race for the purpose of assembling the balls between the two races is general (see Fig. 3), but is not good practice. If such cut is confined to one race



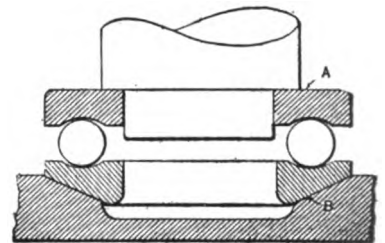
which is then so held in the mountings as always to keep the opening at the unloaded side of the journal, this is at least defensible practice. The carrying capacity is then not decreased, as the load is carried by cross-sections of maximum sustaining ability. Unfortunately, this demands

the use of two differing designs; the one with the cut in the outer race, the other with that placed in the inner race, according as the shaft or the housing rotates; the first case is the usual one of an ordinary journal; the second is found in wheel-hubs, etc. That occasional arrangement in which both hub and shaft rotate cannot be taken care of by this design.

It may be said here that high loads are dealt with. So long as the loads are low enough to be within the sustaining capacity of the straight line cross-section, such local straight section at the filling opening is of no moment. At high speeds this does not hold true, since then the catching of the balls at the junction of the filling opening with the race, results in damage to the balls and, through these, to the race surfaces. With the cut in both races the carrying capacity is reduced to that of the straight line section at the side of the cut, since one or the other must come under the load in each revolution.

The requirement that the sustaining surfaces should be at right angles to the direction of the load is responded to by the collar type of Fig. 4. What has just been said of the cross-sectional

shape of the race surfaces in their relation to carrying capacity in radial bearings applies here also to the thrusts. Since the two races and the ball series do not form a unit handling as one piece, the need of a filling opening for the balls from the side does not arise. These bearings are frequently made with the surfaces *A* and *B* parallel. Provided such parallelism is secured, the design is good. Practically it is not realizable, since also similar parallelism between the collar of the shaft and the seat of the housing, though possible of initial attainment, cannot be maintained under the slight deflections due to the load. It must be borne in mind that initial errors in workmanship or deflections of a thousandth of an inch will cause the balls at one side to carry the entire load. For a given case this demands a bearing of needless size. By seating the one plate on a spherical surface, as *B*, this plate adjusts itself in such wise as to distribute the load over the entire number of balls. Speed very decidedly enters into the carrying capacity of this type of bearings as a factor; so much so, in fact, as to greatly reduce its utility for speeds above 1,500 revolutions per minute.

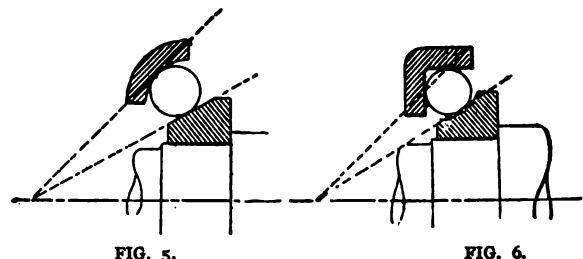


Angular Load Bearings.

Of these there are shapes and modifications innumerable. Figs. 5, 6, 7 and 8 may be taken as typical and representing two, three and four-point contacts. In order to secure rolling, the contact points of balls and races should form points of a cone of rotation, whose apex lies in the center line of the shaft, or they may form points on the surface of an imaginary cylindrical roller that is parallel to the shaft. The defect in all of these forms is their adjustable feature. This places them absolutely at the mercy of every one capable of wielding a wrench; a bearing that has been properly proportioned with reference to a certain load, will be enormously overloaded by a little extra effort applied to the wrench. Or the bearing may be adjusted with too much slack with consequent rattle and early demise. The prevalent idea that these bearings may be adjusted to compensate for wear is erroneous. Wear will form a groove on the loaded side of the race deepest at the point of maximum load, about as in Fig. 9.

It is obvious that adjusting the cone endwise will only cause the balls to be more tightly pinched between the sound portions of the races, probably with sufficient pressure to overload; that will then cause an early flaking out, as shown at *A* in Fig. 10. These rough surfaces will quickly attack the balls and, progressively, the entire race.

The annular non-adjustable type of bearing will always, other things being equal, perforce have the important advantage of immunity from overload by maladjustment, no means for adjustment



being provided. Theoretically it would seem that the radial bearing would be incapable of carrying thrust load, owing to the wedging of the balls between the races. Fig. 11 shows the condition with the balls absolutely filling the space between the races. Fig. 12 shows the ball not quite filling this space. Fig. 13 shows the

* Extract from paper read at the Indianapolis, Ind., meeting of the American Society of Mechanical Engineers. Continued from page 1029, issue of June 27.

condition of Fig. 12 under the influence of a thrust load. The ball does not come in contact with the race grooves where these are deepest, but on one side, so that the tangent to the race curvature at the contact point forms an angle with the line of thrust. For

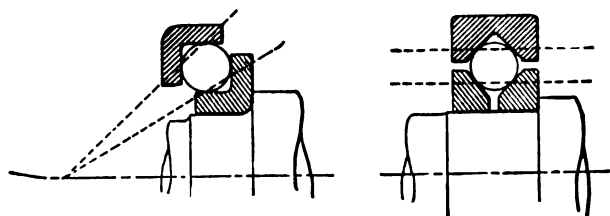


FIG. 7.

FIG. 8.

Fig. 11 this angle would be infinitely small and the wedging action considerable. A calculation of the amount of the wedging action for Figs. 12 and 13 with the radial freedom permissible in the bearings still indicates an inadvisably large amount of wedging. But actual running tests as well as a large fund of accumulated

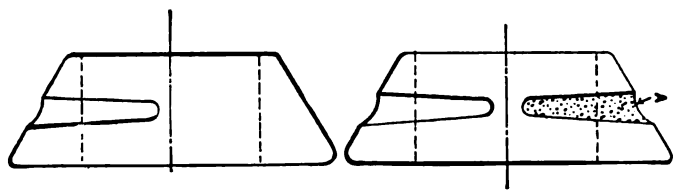


FIG. 9.

FIG. 10.

experience have absolutely proven that these bearings will carry much more thrust load than the calculation of the theoretical wedge angle indicates as possible. It is probable that the deformation which we know occurs at the point of ball contact and that results in small actual surface areas of contact instead of mere

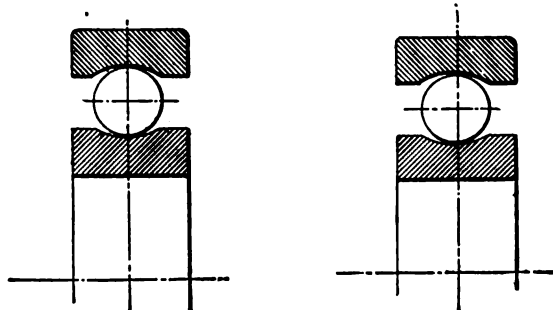


FIG. 11.

FIG. 12.

points, has a mean tangent to such compression surface of greater inclination and that the wedge is therefore more blunt.

It has been experimentally determined that the thrust carrying capacity of the uninterrupted type of an annular bearing is to the radial capacity as 1-10 to 1-4 to 1, depending upon the relation of

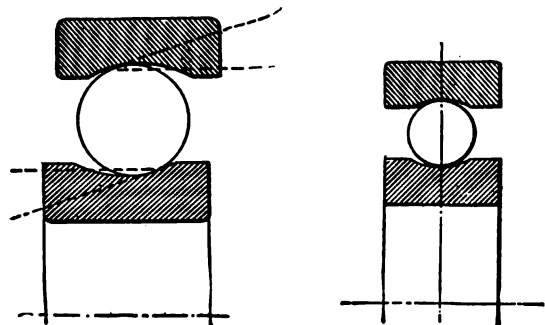


FIG. 13.

FIG. 14.

ball diameter, race curvature, and number of balls. It has also been experimentally found and confirmed by experience that speed has very slight influence on this thrust carrying capacity; for speeds above 1,500 revolutions per minute these radial bearings of the uninterrupted race type are more efficient thrust carriers than the collar type.

This is characteristic, however, only of the uninterrupted radial type. Those forms in which the balls are filled in through an opening in the side, Fig. 14, may manifestly not be subject to end thrust, as that would cause the forcing of the balls into the interruption and their destructive pinching.

It is held by many designers of ball and roller bearings and others as well—that in such bearings adjacent balls or rollers are pressed against one another with considerable force. With the inner race of Fig. 15 rotating as indicated, the balls or rollers will also roll as indicated. The surfaces of the balls or rollers roll in

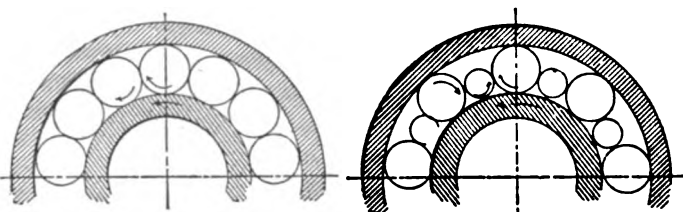


FIG. 15.

FIG. 16.

opposite directions, and therefore with sliding friction. This is assumed to be a serious defect by those who reason that these surfaces contact under pressure. The same general cure in forms innumerable has served to glut the records of our and various other patent offices. This cure, see Fig. 16, consists in the provision of smaller balls or rollers interposed between the larger ones, so that all contacting surfaces roll relatively to one another. This remedy is, however, fallacious in that it brings about the very condition it seeks to avoid. If two large balls, Fig. 17, compress a smaller one between them, and the three have their centers connected by a straight line, they will retain their relative positions.

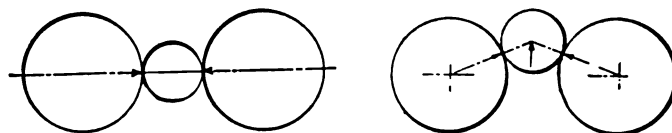


FIG. 17.

FIG. 18.

If, however, the interposed roller or ball, Fig. 18, has its center to one side, then this roller or ball will be forced outward. The resort to a cage for retaining the interposed roller or ball, results in the latter being pressed against the sides of the cage and in the forcible sliding contact that it was intended to avoid.

In another design, Fig. 19, the interposed member is brought into contact with the race. Following out the directions of rotation shows that the various rollers or balls are in rolling contact, but that the interposed member has the wrong direction with reference to the race against which it is forced. These designs are all based on a failure to recognize an axiom in mechanics, according to which a force whose direction is normal to the supporting surface has no component in any other direction.

If a loaded plank, Fig. 20, is carried on two rollers, and plank and ground are parallel, the rollers will neither approach nor recede from one another. If the plank is not parallel to the ground, but bent down between the rollers, Fig. 21, the rollers will be forced apart. If the plank were oppositely curved upward, the rollers would be forced toward one another.

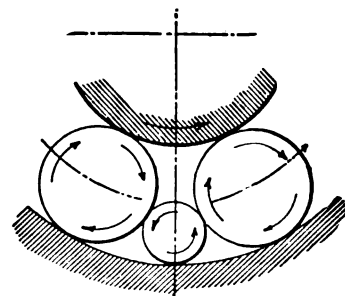


FIG. 19.

As parallelism is concentricity with an infinite radius of curvature, the parallel plank and ground may be regarded as elements of a roller bearing of infinite diameter. A mere change in diameter, while retaining the concentricity of the two races, does not alter the conditions, from which it follows that the load carried by a ball or roller does not press the balls or rollers against one another.

This may be considered in another way. With the shaft of Fig. 22 loading the inner race the latter is (fallaciously) assumed to act as a wedge, forcing the balls at the bottom apart and consequently producing pressure between the balls at the top. In that case the space d must be rather smaller than a ball diameter d . The rotation of the inner race carries the balls around the bearing; the diameter d is therefore forced through the smaller space b . To do this the ball must lift the inner race. The force to do this is imparted by the load, and is equal to the rolling friction and

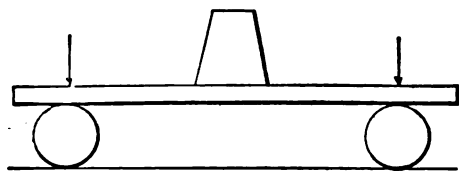


FIG. 20.

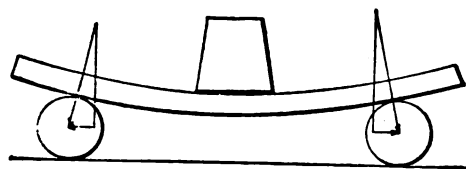


FIG. 21.

can therefore amount to but a fraction of that load. We would then have the absurd condition of this smaller force overcoming the larger original force. Were we to assume that the inner race is not raised by the ball in passing, but that the ball compresses sufficiently to get through, it would mean that the absurdity of the small force represented by the rolling friction was sufficient so to deform the ball or roller.

If a vertically loaded bearing which is not quite filled, as Fig. 23, be rotated slowly enough for observation it will be found that the balls are separated near the top and slightly forward of the vertical in the direction of rotation, and that the balls, under the influence of their weight, drop through this gap with a slight click; this click is familiar enough to those who have not yet entirely forgotten the days when their noses cultivated the intimate acquaintance of their bicycle handlebars. It is this click which is

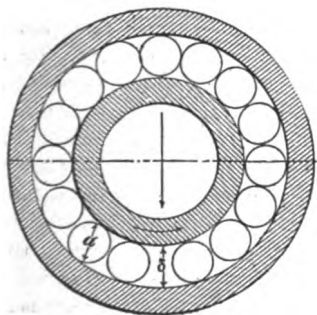


FIG. 22.

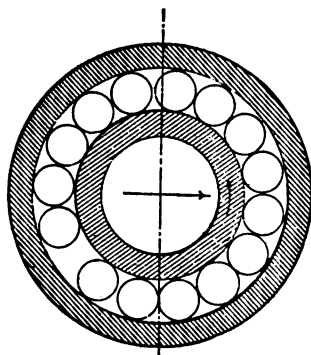


FIG. 23.

responsible for the high note of the high speed ball bearing of that type in which the races are filled with balls. I may seem to have dwelt unnecessarily long on this fallacy of ball and roller bearing design; its surprising prevalence must be my excuse.

NOVEL ELECTROMOBILE BAGGAGE TRUCK.

To facilitate the work of removing heavy loads of baggage and mail sacks from through trains at stations where short stops are made, as well as to lighten the labor of the baggage handlers, one of the railroads has adopted a number of electrically-driven baggage trucks. The outward appearance of the latter is the same as that of the standard truck and it is somewhat startling to see one man apparently hauling a ten-foot stack of trunks as if it were a child's wagon he were dragging. Closer inspection reveals the secret, as what appears to be a drag rod is used only for steering and turning the current on and off, for which purpose it carries a ring on the end. These trucks have been in operation for several months.

FOR DETERMINING TIRE TEMPERATURES.

It is a matter of common knowledge that as the result of friction both with the road surface and that produced by the relative movement of the inner tube and shoe of the tire, the latter reaches a high temperature when the car is run at great speeds, but up to the present little or no attention appears to have been paid to the matter of investigating this phenomenon. Observation has shown that the tires of a racing car reach a temperature that cannot be borne by the hand placed on the outside of the shoe, which would appear to indicate that the temperature of the interior of the tire might at times approach perilously near to the melting point of the rubber itself. In fact, some autoists have accepted this theory as being responsible for the partial dissolution of the inner tube generally termed "blowouts," but experience proves this to be erroneous, many of such injuries being nothing more or less than the result of carelessness in replacing the tube in the shoe, as a consequence of which a portion of it becomes pinched between the beads.

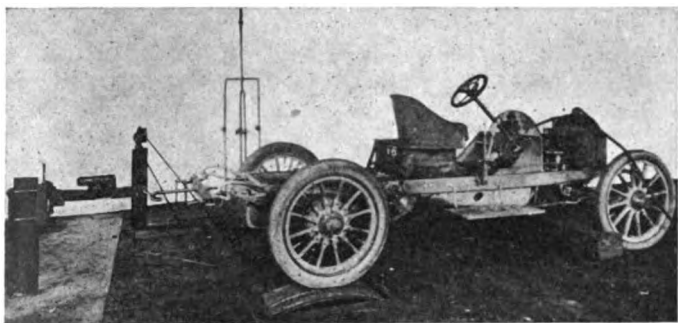
It is, in consequence, of interest to learn that a French autoist—Lucien Périssé, secretary to the Technical Commission of the Automobile Club of France—has devised a means of investigating tire temperatures somewhat more closely than the present method of feeling the exterior with the hand. Writing of his experiments in the *Bulletin Officiel de la Commission Technique*, he says:

"I have combined this device by means of utilizing a Sclavland pressure indicator and a thermometer, with the aid of M. Morin, the maker of the former useful instrument. The pressure gage consists of a needle operated by an exterior button passing through an air-tight joint and so placed as to operate the stem of the valve, while the instrument itself is designed to be screwed on the shell of the latter in place of the cap.

"But in order to avoid the necessity of removing the instrument when it is found that the pressure of the tire is insufficient, a side outlet has been provided on the stem of the pressure indicator. Ordinarily this is closed by a regulation style cap, which may be removed whenever further inflation is necessary. It is to this opening that I have applied my temperature-determining apparatus, which consists of a chamber communicating with the atmosphere through the medium of a pet-cock. In the center of the chamber in question there is placed the bulb of a thermometer graduated to 120 degrees Centigrade. The thermometer is held fast in place by a packed joint and protected from injury by a casing.

In order to ascertain the temperature of the interior of a tire immediately after the conclusion of a race, or after having been run at high speed for any length of time, it is only necessary to remove the valve cup of the tire and substitute in its place the pressure gauge, press the button in order to permit the hot air from the interior of the tire to escape into the chamber containing the thermometer, and a double reading may be taken—that of pressure of the expanded air and its temperature. In order that the latter may more closely approximate the exact temperature of the interior of the tire, it is necessary to open the pet-cock slightly, thus allowing the air to escape slowly. Otherwise the metal of the gage and of the containing chamber would be apt to rob the small amount of air necessary to fill the chamber but once of such a large proportion of its heat as to render the reading worthless. After the air has been escaping through the pet-cock for half a minute or so, the entire apparatus reaches a uniform temperature and the reading practically represents the condition of the interior of the tire. Experiments with the device should reveal some interesting facts in this connection, as little or nothing is definitely known on the subject of tire temperatures apart from the fact that is a matter of common knowledge they do get most uncomfortably hot when run very fast—a condition that is not conducive to longevity.

*Translation from the *Bulletin Officiel de la Commission Technique de l'Automobile Club de France* by Charles B. Hayward.



CHASSIS-TESTING PLANT OF AMERICAN LOCOMOTIVE WORKS.

THE BERLIET CHASSIS-TESTING PLANT.

In addition to being constantly on the alert to devise new methods of construction as well as to obtain the very best materials procurable, the automobile manufacturer had found it incumbent upon him to subject his product to more and more strenuous tests before turning the cars over to the purchaser. The practice of running-in the motor while driving it by external power in a flood of lubricating oil, and that of giving it a thorough test on the stand under its own power and with its own accessories, is quite usual, as is also that of thoroughly testing the complete chassis out on the road. A final step in these numerous testing processes has been introduced by some of the factories, among them the American Locomotive Works, of Providence, R. I., the builders of the Berliet. The accompanying illustration pictures the new chassis-testing plant of this firm, so that not alone the motor, but the efficiency of the transmission as a whole may be tested and its operation followed under the equivalent of actual operating conditions. The power is absorbed by a hydraulic brake similar to that used in the motor-testing plant, and is measured by a Giddings recording dynamometer, registering the horizontal pull in pounds, while the peripheral velocity of the driving wheels is indicated by a tachometer, giving the feet per minute factor for the horsepower calculations.

The driving wheels of the car rest upon two wrought steel drums approximately seven feet in diameter by sixteen inches face, the latter being coated with a material producing a coefficient of friction between the tires and the wheels, which is equivalent to that of dry macadam. These drums are carried on pillow blocks set in a pit, one end of their supporting shaft also carrying a two-speed sliding gear to which the hydraulic brake is attached. The latter is of the same type as that described in *THE AUTOMOBILE* recently in connection with the brake tests of the Berliet motors. Every American Berliet chassis after finishing its road test is placed on this dynamometer and put through a series of tests on the different gears and at speeds varying from the minimum to the maximum of which the car is capable.

SEEKING GASOLINE SUBSTITUTE IN ENGLAND. ¶

Consul Albert Halstead, of Birmingham, England, reports as follows on the efforts now being made in the United Kingdom to find a substitute for petrol (gasoline) as motor fuel:

The advance in the price of petrol, due to the more general use of motors for pleasure and commercial purposes, and the certainty of an increasing demand because of the immense development of the motor industry, leads to efforts to find a suitable substitute for this fuel. Then there is apprehension that petrol may be raised more in price than is legitimately justified by its greater use, because motorists are so dependent upon it. As possible alternatives or substitutes, crude petroleum, paraffin (kerosene), shale oil, benzol, alcohol, and acetylene are mentioned in "Motor Traction." Some of these, though unsuitable for use alone, are said to give better results when combined with another hydrocarbon. Crude petroleum is regarded as unsatisfactory because of its heaviness, except in specially designed engines, such as are not now generally in use. Paraffin, though efficient and powerful, is held to be objectionable because of the difficulty of starting up an engine from the cold, and because the oil has a tendency to creep over the motor and injure its contents. It appears, however, that

the use of a small amount of petrol makes paraffin more adaptable, but this can be advanced in price as easily as petrol if it should come into use as a motor fuel. Shale oil is obtained from a bituminous shale found in the coal of the Midlothian district. Though it is said to have good results, the supply is comparatively small. Acetylene has been used successfully when combined with paraffin or with alcohol, and when water is injected into the cylinder of the engine during the firing stroke. It is feared it will be found too costly under present conditions of manufacture, but it is argued that a tendency to use acetylene might easily result in reducing the cost of manufacture; used by itself it is thought to be likely to strain and damage a motor engine, through the great force of its explosion.

Alcohol and acetylene have been combined experimentally for motor-fuel purposes with some degree of success, but the difficulty is in ascertaining what should be the relative proportions of the two ingredients. This combination cannot, it is felt, become commercially useful in the United Kingdom for motor purposes until alcohol can be produced much more cheaply. The high inland revenue tax now keeps up the price of alcohol, though it can be produced very cheaply from many substances of little value. If alcohol alone were used for internal combustion engines, the design of such engines, it is said, would have to be changed to insure complete combustion. The difficulty in starting an engine from alcohol because of the cold can, it is asserted, be overcome by using either a vaporizer or a burner or a small quantity of petrol in the initial stages.

Benzol is regarded as perhaps the alternative fuel most likely to aid in the solution of the question. It is produced during the distillation of coal at gas works, and it is thought that it can be manufactured in sufficient quantities and sold at a fair price if the demand arises for it. It is more powerful than gasoline, and experiments made with it are said to have been most encouraging, although the small percentage of sulphuric acid it contains gives rather an unpleasant odor to the exhaust.

With the amount of investigation that is now being made on the subject of a substitute for gasoline, which is constantly increasing in price, it would seem as if considerable knowledge of value to the automobilist should be forthcoming.

SOMETHING NOVEL IN THE LINE OF PROTECTORS.

Whether the inventor of the Mandeville steering wheel Auto-Muff would have won the prize offered by an enthusiastic French autoist for a device of this kind a few years ago cannot be said, but it is only necessary to note the simplicity of the device as pictured by the accompanying photograph to see that it has merit and is well designed to accomplish the object in view. Perfect protection is afforded both the arms as well as the hands, and at the same time the control or ease of handling the wheel is in no way interfered with. Two different styles are made, the one for summer consisting of a lightweight rubber cloth that is both rain and windproof and which is so compact as to be readily carried under the seat, while the winter style is leather-covered and fur-lined, making an extremely warm combination when the best gloves made are none too much protection against the biting cold which bothers the driver's hands more than anything else.



MANDEVILLE AUTO-MUFF FOR COVERING STEERING WHEEL.

ON THE LIGHTER SIDE OF TECHNICAL MATTERS

By CHARLES B. HAYWARD.

IT is quite safe to say that nothing has done so much to educate the man in the street on mechanical matters to anything like the extent for which the automobile is responsible. Further, it has done more to arouse an enthusiastic interest and a desire for information on technical matters on the part of the average layman than have the combined inventive results of a quarter century of the most marvelous progress the world has ever seen. Naturally enough a thorough knowledge of any piece of mechanism, or of its underlying principles, is not to be gained by scraping a bowing acquaintance with it; such lore as may be accumulated in this manner must necessarily be purely superficial even though it does permit its possessor to talk learnedly of what a newspaper man has aptly characterized as "that bunch of go-dinkusses and duflickers called an automobile." In the acquisition of this store of knowledge on the part of thousands who truly did not know enough to distinguish their right hand from the left when it came to things mechanical, it was inevitable that many highly amusing situations should be brought about, and it is the object in the present instance to review a few of them. To the wise ones, they are one and all mildewed chestnuts, but unfortunately the category referred to is not an extensive one, so that both the country at large and the automobile industry is safe for some time to come.

The Old, Old Tale of the Missing Cylinder.

Probably the man who invented the missing cylinder story was responsible for the advent of an epidemic of similar crimes, but however that may be, the idea was a clever adaptation of a quasi-technical term—a bit of the current automobile vernacular in brief, to an existing situation, the recital of which has been responsible for many a smile. It was originally told—if the actual origin or the natal form of such circulatory whisks can ever be really traced—regarding an old lady who was out driving in the park alone with her chauffeur. The latter brought the car to a stop several times by the roadside and tinkered with something under the bonnet, while the old lady maintained a posture of dignified serenity in the tonneau, one of those lady-with-the-parasol-in-the-brougham attitudes, utterly oblivious of the interested group that watched John try to fuss about and keep his livery immaculate at the same time. After two or three such halts, womanly curiosity got the better of mi-lady and she inquired. "John, what can the matter be? Why are you stopping so often to look at things?"

"A couple of the cylinders is missin', ma'am, and she don't pull well," replied the puzzled ex-jehu.

"Well, are you quite sure you did not leave them behind in the garage, John?"

This naturally precipitated a host of "missing" stories based on the same fundamental idea, though probably the cleverest modification was the work of a Chicago scribe, who twined his recital about a "Cholly" boy who had a plethoric bank account and "nothing on his mind but his hair." All attempts to sell him an automobile had hitherto proved futile, his chief amusement consisting of chair-warming in one of the windows of his club. A mutual friend finally introduced a Chicago dealer, who managed to land an order for a high-priced car with all the "trimmings" he could possibly think of to bring up the amount of the bill. The new owner engaged a high-priced chauffeur and invited his friends for a trial run. Not many miles out of the city there were signs of trouble, and the chauffeur began to tinker about the motor to the host's great surprise.

"Now, what on earth is the matter?" he inquired peevishly.

"The motor's missing, sir," replied the hired man in the uniform.

"Just as I expected," retorted his employer for the benefit

of his guests. "Even your friends do you. I trusted that man to get me the best machine on the market and to see that I got everything that ought to go with it, and now there's something missing. I'm going back to the city to get that motor if it costs me ten dollars for a cab."

Would-be wise owners are also responsible for many of these "breaks," not a few of which are highly diverting, to say the least. For instance, a quite newly fledged owner, who was riding beside his driver while treating some friends to a spin, took occasion to ask his hired man some questions in order to display his knowledge.

"Why doesn't she pick up better on hills?" he inquired, as the motor slowed down and began to labor, due to the fact that the driver was trying to take a rise on the high gear that was too much for the car.

"She's losing compression," was the reply.

"That's so," remarked his employer in a relieved tone of voice, "I thought I heard something dropping back there," and he looked anxiously back along the road to spot the lost compression lying on the dusty highway.

Those Who Like to See the Wheels Go Round.

The man who is never satisfied with any piece of machinery that comes into his possession until he has taken it to pieces to investigate its interior, usually finding himself in a predicament when it comes to reassembling it, is also responsible for not a few of the gems that go to make up the shining array. One, for instance, and a minister at that, bought a motorcycle, and after he had had his first ride on it—it may have been before, for that matter—started to dismantle it and distribute its various component parts round about the adjacent scenery, so that by no possibility could he find them handily when it came to putting the machine together again. He got the cylinder off and took the piston out, and then and there he made a most wonderful discovery. Every one of the piston rings was broken! He immediately took to pen and ink and wrote the manufacturer of the machine a sermon on the evils of trying to deceive innocent purchasers such as himself by sending out a machine in such a condition. He would please forward a new set of unbroken rings immediately or the motorcycle would be returned at his expense and he would be sued for the money.

Another equally good one that concerns the owner of a motorcycle relates to the oft-used theme of compression. He had had his machine for some time and it had given good service until recently when it failed to develop its customary power, would not climb hills formerly made light of and more to the same effect. The owner was the only motorcyclist for a good many miles round, and his only haven in case of need was a bicycle repairer, whose knowledge of such things probably did not greatly exceed the legitimate allowance, though he correctly diagnosed the case by informing his inquirer that what was needed was "more compression." Whereupon the motorcyclist, quite satisfied at having learned the trouble, was at pains to sit down and write to the maker requesting that he kindly forward him a "package of compression by express" as the machine was quite useless without it.

This was equaled, if not exceeded, by the plaint of the buyer of a new car who found it impossible to make the motor go, close following of the maker's instruction on every point to the contrary notwithstanding. He then set out to make an investigation on his own hook and was quite satisfied that he had found the root of the trouble when, on dismantling the muffler, he discovered a peculiarity of its internal construction with which he was evidently not very familiar. The usual irate letter to the manufacturer telling him how little he knew about automobiles

in general and how very little he knew about the particular one that he had sold or rather palmed off fraudulently to the writer of the letter. "How on earth can you expect me to make your old machine go," he concluded, "when the pot on the end of the pipe that comes from the motor is as full of holes as a sieve?"

Newspaper Men Among the Worst Offenders.

But, after all, the tyro and the beginner are not the only ones who fall by the wayside when it comes to realizing the limitations of their own knowledge where the technical side of automobiling is concerned and who fail to go slow until sure of their ground. The foregoing are naturally but a few of the very many stories of this kind that could be told—new ones are coming to light every day, though the old ones seldom fail to bring a laugh. In fact, it would require a small volume to do justice to the number of these tales now current and many of which are destined to live for years to come, if not as long as the automobile lasts, through the unending repetition that is given them wherever autoists congregate. Many of the stories told of the landlubber and the greenhorn on a yacht are the same to-day as they were a century ago, so it is reasonable to believe that a few of the automobile classics will suffer the same fate.

I presume an apology should really be in order before dragging the following to the light again, as within the inner circle an attempt to tell it is usually heralded with groans and it is universally regarded as one of the many that will simply not down. But then the inner circle is a very small thing, indeed, and there are doubtless far more autoists who have never heard it than the reverse—probably a hundred to one would be a good proportion. It seems that an elderly woman had met with a most peculiar accident in which an automobile was the chief aggressor. In short, she had simply been run into and knocked down at one of New York City's bad traffic spots—the corner of Forty-second street and Broadway. She was not killed, nor in fact very badly injured, despite the fact that both her age and the speed of the car in striking her were certainly not in her favor. Had there been no other circumstances connected with the accident, it might have passed almost unnoticed as but one of the many that appear to be inevitable, whatever the nature of the vehicle, under such crowded traffic conditions and careless humanity in getting in the way of moving objects. But the car caused the woman to measure her length directly in front of it and then passed over her without the wheels touching her; after it passed her clothing was found to be in a brisk blaze. There must have been an automobile "stringer" on the spot and he took two of the scribes representing leading New York dailies in tow and told them all about how it happened. As a result there was a front-page story in two of the next day's morning papers to the effect that a woman had been run down by an automobile and her clothing had caught fire from "a hot coal which dropped from the carbureter." A handy policeman extinguished the flames promptly, but it never developed that he found any hot coals or any ashes to explain the cause of the fire. The motor must have been running on a very rich mixture or with the spark very much retarded, with the result that the charge was still burning as it issued from the muffler, so that it was the exhaust which set fire to the woman's clothing as the car passed over her.

Then there was the two-column Saturday evening automobile story, which one New York daily makes a specialty of, that quoted Joe Tracy at great length on the peculiarities of the internal combustion motor, after reading which most of his friends thought the honorable Joseph, of racing fame, must have either been out the night before or had got his theories mixed. Of course the inner circle was wise; "green reporter" explained things, but a reference to the fact "that the carbureter pushes the piston up and down in the cylinder on which account the stroke cannot be lengthened," or something equally accurate, will still cause Tracy to smile audibly and look distinctly weary.

It would seem as if the fraternity must have missed an ex-

cellent opportunity to perpetuate a good show-time story by not patterning after Mark Twain's amused query at the end of a lengthy and much involved explanation of the working of the automobile, from beginning to end. The well-known humorist had requested to be inculcated into the mystery of transforming gasoline into speed and the demonstrator had been at pains to describe every step in the operation down to the last detail, including the characteristics of each part of the mechanism in its function of transmitting the power. *

"But what makes the car go?" asked the writer, in a most puzzled tone of voice at the end of the long explanation.

But getting into the realm of the demonstrator's and salesmen's stories opens up too broad a trail to pursue much further, as the number of these that can be told is only limited by the memory of the teller. Their name is legion and a booklet filled with them would make interesting reading. To cite but a single instance, there may be recalled the "spiel" of the new salesman who reduced the explanation of the motor's working to the vernacular. "You see," he said to the seeker after information, "a lump of gas is sucked into the inside right here, the piston comes up and hits it a whack, the spark jumps in and there you are," he concluded, with a flourish that could not be equaled by the solver of the most involved problem with his final *Q. E. D.*

HOW TO SELL AUTOS IN BRAZIL.

Consul-General George E. Anderson, of Rio de Janeiro, sends further particulars concerning autoing and automobiles in Brazil. He says that French machines are most admired, and that the Brazilian coffee producer has the conviction that the French automobile is the only one on the market worth considering. The Consul-General adds:

"Practically all of the French machines are represented by up-to-date agents in the field and the men in the garages understand French machines better because they work with them more, and, perhaps, because of other reasons. To get a Brazilian interested in an American car is difficult, but it is done nevertheless, and after he is once interested and after he investigates there is a chance of selling him an American machine, provided that at the same time he is willing to do business as the American company says he must—meet its terms, subscribe to its specifications, bear with more or less careless manner of shipment on slow steamers, and in other ways and manners depart from the accustomed methods of doing business in Brazil. One must appreciate the hold of French and other European motor cars upon the Brazilian market.

"The Brazilian motor buyers just now want as large, fast, and reliable a car as they can get for city use, one that will seat as many people as possible. A superabundance of power is a defect generally, and is a requisite in the case of only a few cars whose owners make a specialty of scaling a mountain range. Brazilian motorists are inclined to low, rakish, European machines. They like plenty of brass and showy accessories, and when they buy they want time. The dealer wants time to sell the machine and the buyer wants time to pay for it. The dealer is willing to pay interest from date of invoice, and will furnish good reference.

"I know of only two traveling representatives of American motor-car makers here now. Both are doing well. It is unfortunate that many American manufacturers seem to think they can do business with Brazil at long distance. With a traveling agent, a local agent follows as a matter of course. There seem to be plenty of Brazilian business men ready to make contracts for the sale of American autos when once an agent places the matter before them fairly. To properly push American machines there must not only be American agents to sell them, but local men to look after them when sold. The lack of good mechanics for repair work is felt by all makers. It is felt especially by American representatives, since with the great number of European machines here the latter are better cared for.

"Motor men who have been here representing American concerns have seemed to be very well pleased with what they have done. Their chief business has been done in Rio de Janeiro and Sao Paulo. They have come down the coast from Pernambuco, and most of them leave for Buenos Aires or Montevideo from Santos. This has been a mistake on the part of some of them, inasmuch as some of the best, if not almost the only good roads in Brazil are in Rio Grande do Sul, and the government of that State has been granting concessions to syndicates to place lines of automobiles in service between certain cities not served by railroads."

LETTERS INTERESTING AND INSTRUCTIVE

Using Non-Vibrator Coils with Two-Cycle Engine.

Editor THE AUTOMOBILE:

[801.]—Being a constant reader of your valuable magazine, I want to inquire if the non-vibrator jump-spark coil can be successfully used on a two-cycle engine, two-cylinder, or will I have to use an independent vibrator, and will one of these do for two coils?

I think this will be of interest to others, and I would like to hear from some that have tried this method; in case I use the independent vibrator, what size wire should I wind the small magnet with and how many turns, also give diagram of the wiring. Any information you can give me on this subject will be very much appreciated.

Could I also use a two-cycle vertical engine in an automobile by laying it down flat with the spark plugs toward the dash? In case I use the engine this way, would the splash system oiling work as well as when run vertical?

West Liberty, Iowa.

FLORENCE.

There is nothing to prevent the use of a non-vibrating jump spark coil on a two-cylinder two-cycle engine, nor, for that matter, on any type of automobile engine. Coils of this kind were long a feature of some well-known makes of French cars and are still employed on motorcycles to a very large extent, particularly in this country. So far as their electrical operation is concerned, this has been found to be superior to that of the usual type with a trembler or vibrator, as they are much quicker and surer in action, approximating the service given by a magneto in this respect, but mechanical difficulties connected with their use have been such as to render them impractical, so that except in connection with a magneto the non-vibrating coil is practically obsolete on the automobile. The reason lies in the fact that a quick, sharp break of the primary circuit is essential, and it has not been found possible to construct a contact breaker that will accomplish this and still be sufficiently durable in constant service for practical purposes.

You will not need an independent vibrator and particularly not an electric one, in order to use a non-vibrator coil with your engine. A mechanical contact breaker that will meet the above mentioned requirements is all that is necessary. The scheme of using a separate electrical vibrator in order to operate the coil is entirely impractical on the car, chiefly due, not alone to the complication of the apparatus involved, but also to the largely increased current consumption. If you have an opportunity to inspect an old De Dion motor in your vicinity, you may see the type of contact breaker used with a non-vibrator coil, unless the motor you find has been rebuilt in this respect. If you still wish to try an electrical independent vibrator, the cheapest and easiest way to improvise one would be to take an electric bell, which can be purchased as low as twenty-five or thirty cents, and simply remove the bell and hammer. This will give you a vibrator designed to run on battery current and one much better made than the average amateur could turn out. The wiring is so simple that a diagram is unnecessary to understand it. Connect one battery wire to one terminal of the primary, or heavy winding, of the jump spark coil; lead the other battery wire to one terminal of the bell winding and connect the other bell binding post to the second terminal of the primary coil winding. The secondary connections are the same as ordinarily used, direct from each coil to the plug, where there is a coil for each cylinder, or to the distributor and thence to the plugs, where but a single coil is used, this usually being the case with a non-vibrating coil.

There is no reason why you cannot place a two-cylinder two-cycle engine, ordinarily designed to be used in a vertical position, in a horizontal position in your proposed car. The splash system of lubrication has been found to give perfect satisfaction with horizontal automobile engines, though some modifications might be necessary to adapt the motor you have to this purpose, as it was not originally designed therefor and trouble might otherwise be experienced with its use in the new position.

Advisability of Installing an Auxiliary Exhaust.

Editor THE AUTOMOBILE:

[802.]—I am a constant reader of "Letters Interesting and Instructive," and have noticed several articles about the auxiliary exhaust as being a great improvement applied to certain motors. We have a four-cylinder, four-cycle 4x4 air-cooled motor, which will overheat if used on low speed very much. I have thought of putting on auxiliary exhausts. The builder of the motor advised us not to do so, saying that the cylinders would be apt to get out of round, etc. My idea is to make $\frac{1}{4}$ -inch round holes in the cylinders near the bottom (to commence to open 40 degrees before the end of the stroke), then pipe from these holes to the main exhaust pipe ($1\frac{1}{4}$), not using any valves. The regular intake and exhaust valves are operated by push rods. Of course two ports would always open together.

I would like your opinion on such an arrangement.

Moline, Mich.

SUBSCRIBER.

We concur in the opinion of the builder of the motor in not recommending the installation of an auxiliary exhaust, but not for the same reason. There is very little to be feared from the cylinder becoming out of round or other similar damage occurring to it, if the work is properly done, but we think it is very doubtful if the result will be an improvement that is worth the trouble involved in making it. Instances have come to our knowledge where old single-cylinder motors as used on motorcycles have been improved considerably by the use of an improvised form of auxiliary exhaust such as you mention, but they can hardly be said to form a precedent for the same thing in connection with a four-cylinder engine. While we cannot lay claim to having had any personal experience with such an engine, we have always understood that the makers of the Franklin car, who are the exclusive builders of an air-cooled motor with an auxiliary exhaust, did not find the latter entirely satisfactory until valves were introduced in connection with it. Though termed an *auxiliary* exhaust, as used on the motor in question this would appear to really constitute the exhaust proper, while the ordinary exhaust valves are utilized to permit the escape of the remaining hot gases swept out by the piston on what is virtually a scavenging stroke and which is one of the chief contributing elements to the wonderful efficiency of these motors.

An Australian Favors American Two-Cycle Cars.

Editor THE AUTOMOBILE:

[803.]—Enclosed please find P. O. money order for 18s. 9d. in payment of my subscription to "The Automobile" for December 31, 1908. My present subscription runs out on June 27 this year, and so as to make it expire at the end of the year I am sending you a renewal for a year and a half. As I keep my old copies of "The Automobile," I would be pleased to receive index numbers for the past couple of years, say 1905 and 1906, and as they appear in future issues. This will save me a lot of trouble in looking up anything I want to find in back numbers.

I have a 16-horsepower, four-cylinder Minerva car, and have run it about 2,500 miles. It goes well, but I think I will try an American car next time and of the two-cycle type, as I notice by your paper that there are now several makers in this line. You will remember me asking about the Elmore car and requesting that some questions be inserted in "The Automobile" for me, but you did not do so, and by not doing so I inferred that the Elmore was not the best of cars and so did not give them my order. The "Autocar" often inserts questions asking motorists' opinions of different cars. I should often like to ask questions through "The Automobile," but it takes so long to get a reply, and you do not seem to go in for answering questions like some of the papers do.

Glenslov, Young, N. S. W.

J. H. McFARLANE.

Unfortunately we do not recall your ever having asked us any questions regarding the Elmore car, as they certainly would have been given due attention under this heading. Either your letter did not reach this office, or, containing a communication to the subscription department, this was attended to and the letter then placed on file inadvertently without being referred to the editorial department. We regret that you should have come to the

somewhat strange conclusion that you mention through our failure to answer the question as anticipated, particularly as this was the deciding factor in the placing of your order, though we presume it must be somewhat discouraging to indulge in further letter writing when a first communication goes unanswered and three months are required for a return mail. We are somewhat surprised that you should be of the opinion that we do not devote any energy to the maintenance of a correspondence department, as we have been running two to four pages of letters from subscribers right along and have been in receipt of numerous complimentary letters regarding the helpfulness of this feature of *THE AUTOMOBILE*. Our only restriction is that the letter should be of more than individual interest; there must be something of general interest to warrant publication, otherwise replies are made by mail. Regarding your reference to the correspondence department of the *Autocar*, we may say that the English are a nation of confirmed letter writers and doubtless the editor of that excellent journal could frequently fill an issue from cover to cover with letters alone did he so desire. To exaggerate a bit, an English autoist thinks accidentally dropping a wrench on his big toe while on a run sufficient provocation to fly to pen and paper and ask the editor if he does not think the manufacturer ought to know how to make a wrench that would not hurt. He not only writes one letter, but he sends a copy of it to every automobile paper he knows of. Hence the extremely well-padded letter columns. Americans have not contracted the letter-writing habit so badly and, moreover, would not wade through a lot of such trivial communications, though naturally all are not of this class by any means. We shall always be glad to hear from you on any subject of more or less general interest concerning automobiling for publication in this department, or if of personal interest to reply to the best of our ability by mail direct.

Will "Gasoline Sal" Kindly Oblige a Troubled One?

Editor *THE AUTOMOBILE*:

[804.]—I am a reader of your valuable magazine, and in your issue of June 13 one of your readers who signed himself "Gasoline Sal," to letter No. 783, interested me very much, and I would like to communicate with him.

He is able to get more mileage from a set of batteries than I ever heard of, and I would like to know what he is using, and particulars, as I am only able to get 600 miles on ten batteries with my four-cylinder machine.

Champlain, N. Y.

BERT F. PAINE.

As the sole object of the writers of letters who append such signatures as the one in question to their letters is to hide their identity, we are naturally not at liberty to divulge their names and addresses without their sanction. However, as you append your full address and the sponsor of the communication referred to is a regular reader of *THE AUTOMOBILE*, he will no doubt notice your request for further information as above set forth and correspond with you directly.

Why Do Seized Pistons Cause Damage, and How?

Editor *THE AUTOMOBILE*:

[805.]—Is it possible to allow a two-cylinder car to run without cylinder oil till it becomes so hot the engine stops on going downhill, without injury to the cylinders or pistons, and if they are injured in any way, how will the car show it, and in what way will you know whether either the cylinders or pistons have been damaged?

Hamburg, N. J.

O. E.

It is possible to run a two-cylinder or any other engine so long without cylinder oil that the pistons will seize and the engine will stop, even though the car be coasting and trying to drive it while going down hill, but it is doubtful if this can be done without at least some injury to the pistons or the cylinder walls. The stoppage is caused by the unequal relative expansion of the cylinder and piston, the latter finally attaining a size which would be slightly larger than that of the cylinder bore were it not restricted by the latter. But before it finally reaches this point it becomes large enough to exert considerable pressure on the cylinder walls and its continued movement is apt to scratch

or score the latter. This damage will be apparent on dismounting the motor, or if this is not done and the injury is considerable, the motor will show it by a loss of compression and a consequent falling off in power, the hot gases leaking around the piston through the channels thus made.

Information Wanted Concerning New York State Law.

Editor *THE AUTOMOBILE*:

[806.]—Being a subscriber of yours, I take the liberty of writing you for some information in regard to license in your state.

What license do they require for the owner or the operator of car, and from whom shall I make application for same?

An early reply will be appreciated, as I wish to use a car during the months of July and August and expect to take it to Chautauqua in about ten days.

Pittsburg, Pa.

ADDISON S. ALTAFFER.

As you are already a car owner and your automobile is duly registered in your home State, carrying a Pennsylvania identification number, you will not need to take out any license to bring your car into this State, and you may drive it within the New York State limits indefinitely, in which respect the New York law is far in advance of either the Pennsylvania or New Jersey laws, which do not recognize other State registrations. For full information concerning the regulations in force in the different States we would refer you to the *Automobile Blue Book*, which is very complete in this respect.

Some Reasons Why the Gear-Set Is Necessary.

Editor *THE AUTOMOBILE*:

[807.]—I have noted your recent article regarding the elimination of the change-speed gearing from the automobile. This was an editorial, and the opinion was expressed therein that there did not seem to be much chance of such a great improvement as this coming to pass—at any rate, not in the near future. I am very much interested in the automobile, but must confess that there are a great many things regarding it that I do not understand very well, and would like to trespass on your time to the extent of having some of them made clear. No doubt there are many others whom such an explanation will benefit.

For instance, you say "For very obvious reasons, this is one of those questions that simply will not down."

What are these reasons, or, in other words, why should it not be possible to eliminate the change-speed gearing or transmission by improving the engine still further? I have had some experience with stationary gasoline engines, and have had occasion to see quite a number of them working at different times, but have never noticed that it was necessary to provide anything of this sort in order to enable the engine to carry the load, no matter how much was put on it within its capacity. Why is this?

Can you also tell why the steam engine has such a great advantage in this respect over the regular automobile motor? Of course, I realize that the power is generated in very different ways, but in the end 10 steam horsepower and 10 horsepower from a gasoline engine are one and the same thing, are they not? Can it be that the method of production influences the use of this power? For instance, a locomotive will start a tremendously heavy freight train from a dead standstill, the engine hardly making a stroke per second in starting, but even a light automobile has to have its motor humming at high speed before the power can be applied. To choose an example nearer home, the steam automobile starts with the first puff of its engine, but the gasoline motor must be running quite fast before it can be used. Some light upon these, to me, puzzling questions, will be appreciated.

Newark, O.

PUZZLED.

Your questions regarding the necessity for employing a change-speed gear on the automobile go to the very root of automobile engineering, where the application of the internal combustion motor to a road vehicle is concerned. While it may be natural to compare the stationary gasoline engine with the automobile motor in this respect, a little consideration will serve to show that the service rendered is no more alike than that of the stationary engine is to that of the locomotive hauling a heavy train of loaded freight cars, which you cite.

Stationary engines are usually designed to carry a more or less steady load; though, as you say, they will operate without the necessity of any intermediate steps in the way of gearing from practically no load up to the extent of their capacity, which would seem to place them in somewhat the same category as the

automobile motor. The chief point on which the difference hinges is that of speed; that of the stationary motor can be regulated so as not to vary more than 5 or 6 per cent. regardless of the load, but this is not possible with the automobile motor. The stationary motor is essentially a slow-speed power generator, many of them running at but 200 to 300 r. p. m., and it will be evident that such an engine can stand a great reduction in speed and still develop a large proportion of its rated output. For instance, a 25 per cent. drop in the 300 r. p. m. engine would only mean a reduction to 225 r. p. m., whereas the same drop in an automobile motor, designed to run at 1,000 r. p. m., would mean a reduction to 800 r. p. m., so that some form of gearing is imperative to permit the motor to run as closely as possible to its normal speed.

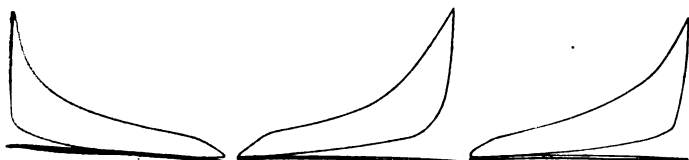
The difference between the steam and gasoline engines is even more marked. A single-cylinder double-acting steam engine is the equivalent of eight four-cycle gas engine cylinders, so far as the number of impulses received is concerned; the former receives two per revolution while the latter gets but one every other turn in each cylinder, so that this number is required. This is not the only difference, however, as the steam exerts its power expansively throughout the greater part of the stroke, whereas the explosion in the gas engine cylinder expends the greater portion of its power before the piston has traveled more than a third of its stroke. The steam engine action may be compared to an irresistible ram at slow speed, while the gas engine produces a blow, and it will be evident that a number of blows quickly repeated are necessary to equal the pulling power thus exerted, hence high speed is essential in the latter. This also enables the steam engine to start under load. The gas engine's reserve power lies in its running at normal speed, while that of the steam engine is pent up in the boiler. Ten horsepower always represents that amount regardless of the manner in which it is developed; but to make a ten-horsepower gasoline engine develop that much energy it must be run at the proper speed. To put it technically, the torque curve of the gasoline engine drops off at an alarming rate with a decrease in its speed, so that it has little power comparatively when running much below its normal r. p. m. rate.

CORRECTION REGARDING FRANKLIN MOTORS.

Editor THE AUTOMOBILE:

[808.]—In your issue under date of Thursday, June 6, we note an article on "Air Cooling of Automobile Engines," by our Mr. John Wilkinson. On page 930 there is an indicator card termed Figure 3, which is supposed to represent a card from a Franklin engine, on which is marked the point where the auxiliary exhaust opens, and attention is called to the effect of the auxiliary exhaust. Instead of this card being from a Franklin engine, however, it is in reality from another make of automobile.

It can be seen on this card that the back pressure at the end of the stroke is very high, and on the cards which we are sending you, at the same time, the effect of the auxiliary exhaust upon our en-



BLUE PRINT No. 13.

BLUE PRINT No. 15.

BLUE PRINT No. 7.

gines is very evident, a drop in pressure from a probable 45 lbs. down to anywhere from 1 to 4 lbs. This is the great advantage of the auxiliary exhaust, and it is our opinion you would like to correct this and show the true results as given by Mr. Wilkinson.

The three cards that we are sending you are as follows:

Blue Print No. 13—H.P., 10.75; R.P.M., 700; Cyl., No. 3.

Blue Print No. 7—H.P., 15; R.P.M., 1,000; Cyl. No. 2.

Blue Print No. 15—H.P., 20.4; R.P.M., 1,200; Cyl. No. 4.

You will note from this list that we are giving you three different cards at three different speeds and at practically 10, 15 and 20 horsepower. These cards show very decidedly the great advantage of the auxiliary exhaust.

Of course these cards, being indicator cards, not only show the wonderful drop in pressure, but show at the end of the power stroke that there is practically no back pressure upon the engine when the piston starts back on the exhaust stroke. These cards do not show the large amount of heat which is carried out through this

auxiliary, and by so doing maintain a lower minimum temperature in the cylinder wall. However, to one having an engineering education, it is possible to deduce these from the cards and the advantage of the auxiliary exhaust is very evident. To the layman the great drop in pressure is apparent, and there is no question that the elimination of back pressure at the end of the power stroke is a tremendous advantage.

These cards were all taken from a Schultz manograph and are to our way of thinking very reliable cards and very excellent records.
Syracuse, N. Y. H. H. FRANKLIN MFG. COMPANY.

MORE ABOUT THE ROADS ENTERING PARIS.

Editor THE AUTOMOBILE:

[809.]—Supplementing the letter of "W. F. B." in "The Automobile" of May 30, concerning the roads in and out of Paris, the writer of these lines acknowledges gratefully the correctness of the statements therein. There is, however, rather more pavé—all the way from Chatou to Nanterre and Puteaux—than your correspondent admits, and it is only avoidable by literally "finding one's way" via Ruell, by a crossroad none too plainly marked.

From Versailles the good road into Paris starts out by being a good road, but like the curate's egg, it is good only in parts, for it descends into the classification of a Chemin de Grande Communication, and the truckman and market-wagon driver who ought to keep to the Route Nationale, which goes by the way of Viroflay, goes where he pleases and makes the terrors of one road as great as those of the other, and incidentally damages a good road surface far more than the rouges ferrés or the antiderapants of the automobilist. The fault of all roads entering large cities and towns lies in the mixed classes of traffic which they carry.

The point the writer wishes to affirm is that the roads in and out of Paris are—as they are bound to be by nature and under existing conditions—entirely unworthy, and not at all suited to fast automobile traffic. The habituated Parisian chauffeur or the octrol smuggler knows some by-paths, no doubt, little frequented and perhaps possessed of good surfaces all of the way, but for obvious reasons they are not practical for the stranger tourist, and anyway the modern well-built and well-sprung automobile robs bad roads of a certain amount of the terrors which ruined many a gas-pipe chassis in the old days. It is the class of road and the class traffic, combined, that make the entrance to Paris so disagreeable.

The plea of the writer is for automobile, or "fast traffic," entrances and exits for large towns and cities, and encircling boulevards (as are so frequently found in France), which will enable one to pass around rather than pierce the heart of some old-world town with crooked, badly-paved streets. This is the case at Rambouillet, as your correspondent suggests, but these encircling roads should be better marked than they are.

The little pocket map, reduced from that of the Service Vicinal, shows plainly how bad the exits and entrances of Paris really are. It is because all classes of tax-paying traffic have a right thereon. Some day, surely, there will be automobile roads pure and simple as accessories to all large towns and cities, and Paris may be depended upon to have them as soon as possible, but why should not America inaugurate the idea? It is the automobilist, the man behind the wheel, who is to be the molder of public opinion, so let us all hang together.

Les Andelys, Eure.

FRANCIS MILTOUN.

REGARDING THE RITES INERTIA GOVERNOR.

Editor THE AUTOMOBILE:

[810.]—Relative to your reply under "Letters Interesting and Instructive," No. 772, June 6th issue, "The Automobile," page 935, you advise that you do not know the "Rites governor."

The writer would state that on page 189 of Gillingham's "Oil Engines," there is an illustration of the "Rites inertia governor," as applied to gas engines. This governor was originally gotten up for use on steam engines and then arranged to operate and change the point of cut-off. This is considered one of the most efficient types of the inertia governor ever gotten up. It was patented by Mr. Rites, a Cornell Civil Engineer School instructor.

Hoping this may furnish the desired information, I am,
New York City.

FRANCIS G. HALL.

A SOLUTION FOR CARBURETER POPPING.

Editor THE AUTOMOBILE:

[811.]—Regarding the trouble complained of by J. C. Moore in a recent issue, all else being right, it seems that the entire trouble is in the carbureter. At high speed there is not enough gasoline to mix properly with the increased amount of air taken in. Would advise making the hole where the gasoline enters the carbureter a trifle larger. I think if he will run his motor at a high speed he will find that the gasoline level in the carbureter is way too low—in other words, the gasoline does not come into the carbureter as fast as it goes out; in which case it will surely backfire.

Los Angeles, Cal.

GEORGE ARBUCKLE.



JUDGING from the present rate at which new cars are making their appearance in the Middle West, it seems to be a foregone conclusion that this part of the country is destined to be the center of the automobile industry in the United States. The latest arrival to bid for favor is termed the Halladay and is the production of the Streator Motor Car Company, Streator, Ill. The mainstay of the line is the 35-40-horsepower touring car known as Model B, which forms the subject of the illustration at the head of this page. A glance at the photograph shows that it is patterned on attractive and business-like lines so far as outside appearance is concerned, while a review of its specifications shows it to be designed after sound and well-approved engineering standards. The power plant consists of a four-cylinder water-cooled 35-40-horsepower Rutenber motor, the chief characteristics of which are too well known to require description.

Ignition is of the high-tension type, using a set of six-volt seventy-ampere hour accumulators as a source of current supply, with a supplementary battery of dry cells for emergency use. For the former a Duro storage battery is regularly supplied, while the coil is of the four-unit dash type and of Splittorf make. In fact, particular pains have been devoted to making the equipment representative of the highest grade accessories that the American market affords, as will be evident from the use of the latest pattern Schebler carbureter to provide for this essential of the motor and a Hill Precision sight force feed oiler to take care of the lubrication. A Briscoe radiator of attractive outline forms the mainstay of the cooling system and is supplied by a gear-driven pump as well as being supplemented by a fan.

The groundwork of the chassis consists of a pressed-steel frame of the standard channel section and of substantial weight, heavily reinforced. This is carried on four well-proportioned semi-elliptic springs, the running gear consisting of 34 by 4 inch artillery wheels, carried on double ball bearings. Four-inch tires are fitted front and rear and while Diamonds or Marsh quick detachable rims form the regular equipment, the purchaser is given an option on this essential. The front axle is a one-piece drop forging of the customary I-beam section, with considerable drop under the motor, while the rear axle is an example of the latest improvement in the floating type. In this the weight of the car is entirely carried by the housing and the driving portions are readily removable for inspection and repair. The change speed gear is of the sliding pattern, with progressive form of operation, and provides the usual three forward speeds and reverse. It is supported about midway the length of the chassis on substantial cross girders, with a short shaft for the final drive, compensated by universal joints to provide against vertical and lateral play.

The clutch is of the standard conical type that is still favored by such a large number of makers, despite the improvements made in the multiple disc form. It consists of a leather-faced cast-aluminum cone engaging a recessed member made integral with the flywheel. A series of helical springs is placed between the aluminum cone and the leather facing, thus insuring steady and gradual engagement, as well as minimizing the wear on the facing and preventing its burning out, which was a common fault in earlier types. Four brakes are provided, two of the internal-expanding and two of the external-contracting type, all being centered in special hubs forming part of the rear wheel, in accordance with what has come to be regarded as the very highest form of standard practice for this important part of the car. The internal-expanding set constitutes the running brake and is pedal-operated, while the other set is the emergency and is worked by the hand lever. The latter is inter-connected with the clutch and its application disconnects the motor from the road wheels, both sets of brakes being properly equalized in order to prevent danger of side-slipping when suddenly used. The gear ratio of the transmission is designed to give the car a speed range of from five to fifty-five miles an hour on the direct drive or high gear. The wheelbase is 108 inches and the tread standard. Control is of the regulation type, employing small hand-operated levers placed on a stationary sector located over the steering wheel, while the coils, sight feeds and similar accessories are protected by a recessed dash formed of a curved steel stamping, brass bound. Fuel is fed by gravity from a tank located under the forward seat and having a capacity of fifteen gallons of gasoline, in addition to which an auxiliary tank is provided.

A laminated wood body, with divided front seats, attractively upholstered in durable leather and having a seating capacity of five to seven passengers, is provided, the tonneau being very roomy and affording plenty of space for the use of two revolving extra seats when desired. Rather an innovation has been introduced in body finishing by upholstering the rear face of the front seats, thus preventing the defacing of the varnish of this part of the car, as invariably happens under ordinary circumstances. Side doors are made amply wide and are hung so as to fold clear back over the mudguard, thus giving a full opening. The weight of the car all on is 2,600 pounds, and with the customary equipment of Solar searchlights and generator, as well as Solar side and tail lamps, horn, tool kit, and the like, the Halladay lists at \$3,000. It will be evident from the above that the makers have not attempted to introduce any startlingly original or revolutionary design, but have, in fact, assembled an up-to-date car from the highest grade of standard parts.

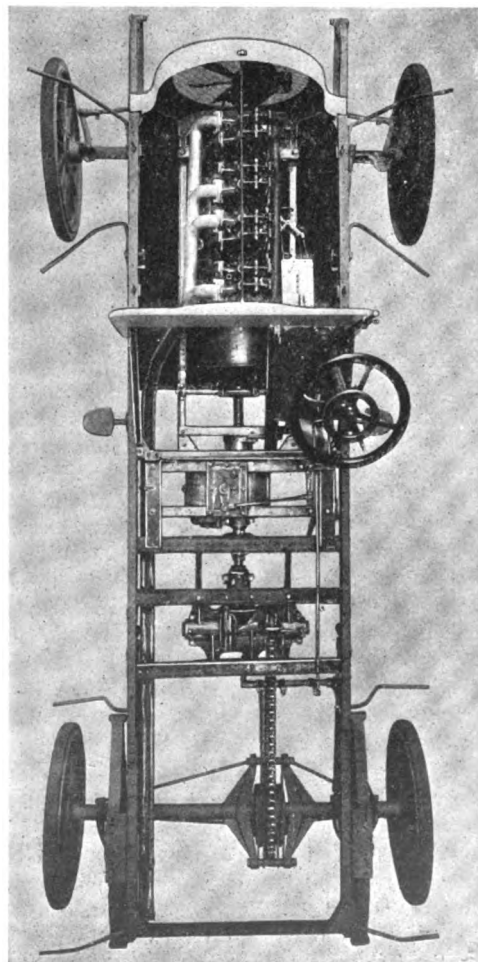


IN line with its policy of devoting considerable attention to the production of commercial vehicles, the Logan Construction Company, of Chillicothe, O., has just placed on the market a new Logan light delivery wagon, which may be known as Model R and list at \$1,800. It is designed to have a capacity of 1,500 pounds useful load and will consist of a standard pattern of chassis driven by a four-cylinder 20-24-horsepower air-cooled motor. The frame is of the standard pressed steel type, with ample reinforcement, while the running gear consists of fourteen-spoke artillery wheels mounted on large hubs specially designed for the builders. The motor has been subjected to the most severe tests that its designers could possibly give it, and the successful outcome of the latter has proved beyond a doubt that it will more than fulfill the expectations of its makers. In view of the use to which it is to be put, the chief requirement is that it should show the maximum of efficiency and reliability in unskilled hands, and the fact that it is air-cooled tends considerably to the realization of this object. It has usually been considered by builders of gasoline-driven commercial vehicles generally that the matter of noise was something which they did not have to consider, and as a result some of these cars are most objectionably noisy. The builders of the Logan, on the other hand, have paid particular attention to this essential, considering it equally important in the case of the commercial as the pleasure car, and in consequence it is claimed that the motor of this new car is practically noiseless, due in large part to the special construction of its valve-operating mechanism.

The same painstaking study to make the power plant as simple as possible in order to meet every requirement of this exacting service under the lack of care usually accorded the mechanism by the

average truckman, has also been devoted to the other essentials of the car. The clutch has been designed so that disalignment is practically impossible, and it is also self-adjusting to an extreme point, while any taking up required may be effected in a very simple manner. The change speed gear is of the sliding type and is designed to give a direct drive on the high gear, with none of the pinions in mesh, to make the car absolutely noiseless. The countershaft is mounted on large roller bearings, with liberal end thrusts, final drive being by means of chain, long and careful experimenting on the part of the builders having demonstrated that this form of drive is not alone the most reliable but very much more durable under the trying conditions of commercial service. The chain is so placed as to give a direct pull and the radius rods are constructed so that the ends meet the centers of both the driving shaft and the rear axle, holding them rigid and equidistant, thus preventing all jerking movements of the chain regardless of the character of the roads. Four independent brakes are used, two on the rear axle, one on the countershaft, and one on the clutchshaft, the latter operating simultaneously with the disengaging of the clutch. This prevents continued rotation or spinning of the clutch in gear-shifting and facilitates the latter by an unskilled driver. Large universal joints are inserted between the clutch and the gear set, and between the latter and the countershaft. The matter of accessibility and ease of repair so essential in any commercial vehicle have come in for special attention and any part of the mechanism may be readily removed.

Every part of the mechanism is thoroughly encased, while the driver is protected by a glass wind shield and storm curtains, the body being of the regular solid panel order, with screen sides and end, the open space generous in size.



CHASSIS MODEL B LOGAN DELIVERY.



THE CURÉ DE GRAINCOURT AND HIS HOME-MADE AUTOMOBILE

SINCE tearful April was ushered in, a visit to the circuit on which Szisz, Wagner, Lancia and other speed kings will give their magnificent display this week has been the fashionable excursion of all Parisians. To follow the fashion, to visit charming old Normandy, and to inspect the circuit about which the whole world is talking, made a three-fold attraction far stronger than any that Paris can offer.

As Pierre Garcet fingered with the lever of a handsome Bayard-Clement, the artist, O'Galop, called out, "Don't forget to visit the Curé de Graincourt." "Entendu" came the brief response as the fast machine cut through the vigorous morning air.

It is only a run of about three hours to the track, but in much less time than that the peculiar charm which Normandy alone possesses makes itself felt to the traveler. Up the Seine Valley are vistas of the shimmering river, of ancient chateaux, of quaint Norman churches and solid picturesque towers, which cause a regret that they should be left behind so rapidly. Here is Eu. We are on the triangular circuit. Two kilometers ahead is the little village of Graincourt.

Over there to the right, peeping out above the mass of fresh spring foliage, is the white stone tower of the antique Norman church. A narrow, hollow road leads up to the small white sanctuary dominating the village from a small eminence. To the rear of the edifice is the *presbytère*, a modest dwelling just sufficient for the modest wants of the humble village curé. There is an electric bell—a rarity in unchanging Normandy. We ring, but nobody replies. From a low outhouse in the rear a cassocked figure comes out to meet us.

A tall, powerful, athletic looking man, used to manual labor, as is shown by the well developed muscles of his bare arms; an intelligent face, encircled by an iron-gray beard—a typical missionary fig-

broken a few spokes or bent a crank. My reputation grew; visitors to the seaside resorts heard that I was not a bad hand, and customers increased.

"Then the motor came along. I took to that naturally. Here is a little voiturette I made myself."

It was a low-built, simple little car, with a single-cylinder engine carried well forward and a plain wooden box behind the steering column; roughly finished, but showing considerable mechanical skill. At our request the curé changed his skull cap for a broad-brimmed wide awake, gathered up his long black soutane and posed for his picture, his handy boy and *mecanicien* sitting on the floor board beside him.

"This motorcycle is my own," continued the priest when the photographic operation was over. "It is catalogued 23-4-horsepower, but by tinkering with it I have managed to get its power up to three. I should like to do more, but it is too costly for a simple parish priest. What I earn from repairs helps me along a little with these experiments. After all, one can be a faithful priest, administer the sacraments, attend to confession, and handle the file and the wrench. Besides, it is useful to lots of people.

The door opened and the village postman stepped in. "Ah, you have come for your bicycle. It is not quite finished yet, *mon ami*, but you shall have it this afternoon. A few balls are broken and a bearing needs truing up."

He accompanied the rural letter carrier to the door, and stopped surprised at the sight of Garcet's Bayard-Clément. He raised the hood and remained in silent contemplation before the powerful cylinders, finally murmuring "*C'est tout de meme beau.*"

A run round the circuit was proposed. In a few minutes the greasy mechanic's soutane was changed for a clean gown reserved for ecclesiastical purposes. Garcet opened out, the indicator traveled round rapidly to 100. In the tonneau the Curé de Graincourt remained silent, the shadow of a smile on his lips.

ure. We are invited to the rear, into an open courtyard with several sheds leading off it. Three or four bicycles are turned upside down, in various stages of repair. There is a motorcycle, the motor dismantled and lying on the ground. Scattered about are empty gasoline cans, tools, oil cans, and the usual accompaniment of a mechanical repair shop.

"Are we at the village mechanic's, or at the curé's house?" one of the party asked.

"Both, monsieur," replied the curé. "I am the bicycle, motorcycle and automobile repair man of the district. For fifteen years I have been consulted by the inhabitants of the district on all kinds of mechanical difficulties. Formerly I was just an amateur mechanic; now it has become almost a trade."

"Why?"

"Well, times are hard, and the pay of a country curé is not sufficient for even his modest wants. Years ago I did a little bit of everything. Then the bicycle came along and I became interested in it. Little by little I became skilled in mechanics, and was often useful to members of my flock who had



WITH THE SWEAT OF HIS BROW.



HIS SPIRITUAL WORKSHOP.

HOW FRANCE CONTROLS HER AUTOMOBILISTS

By W. F. BRADLEY.

THE story is often repeated in Parisian motor circles of the American manufacturer who decided to introduce his steam automobiles into Europe. He broke ground at Paris, opened a store, advertised largely and was preparing to do a big business, when one day an officer stepped in and asked for the *certificat de conformité* for the demonstrating cars standing outside.

A look of bewilderment passed over the manager's face, followed by an expression of surprise when he learned that every machine before being sold in France must be approved by a government department known as the *Service des Mines*. Application was made for the necessary certificate; the machine, when examined by government experts, was not considered safe; modifications were ordered; they were costly and unsuited to the type; finally, in disgust, and with the loss of a few thousand dollars, the manufacturer abandoned the whole business.

What he should have done before attempting to place a machine on the market was to have obtained a *certificat de conformité*, or government approval of the model. It is a regulation to which all have to submit, both French and foreign makers, and applies not only to the first machine turned out of the factory, but to every subsequent new model.

All New Models Must Receive Government Approval.

Suppose, for instance, that an established constructor has produced a new six-cylinder chassis. He must apply to the *Service des Mines* a complete description of the model, giving power of the engine, speed at which it is run, dimensions of all working parts, a description of the clutch and type of transmission, stating the size of gears for each speed, show in detail how the braking systems are applied, give details of the carbureter, ignition and the size and nature of the exhaust.

When the sketches and descriptions have been approved—which they nearly always are—the machine itself must be presented for examination. Instructions given to the engineer of the *Service des Mines* are that the tanks, piping, etc., to contain explosive or inflammable matter shall be perfectly safe; that the machine shall not be of a nature to frighten horses or cause unnecessary smell; that all controlling organs shall be so grouped that they allow the car to be operated without drawing the driver's attention off the road; that steering gear must be safe and of a nature to allow the machine to turn within a reasonable angle. This is a matter that receives close attention, a machine faulty in this respect being rigorously refused. If the automobile exceeds 770 pounds in weight it must have a reverse gear. There must be two distinct braking systems, each one capable of stopping and holding the machine, and one of them being on the road wheels or drums forming part of the road wheels. This, too, is one of the matters given special attention. Legally no automobile may travel at more than 30 kilometers an hour in France; yet it is one of the happy inconsistencies of the French system that while one paragraph cuts down speed to 30 kilometers, another makes special provision for machines capable of traveling at a faster rate than a modest 18 1-2 miles an hour. There is a regulation which declares that any speed above thirty must be put out of use by means of a bolt fixed on the change speed sector; but this is always ignored.

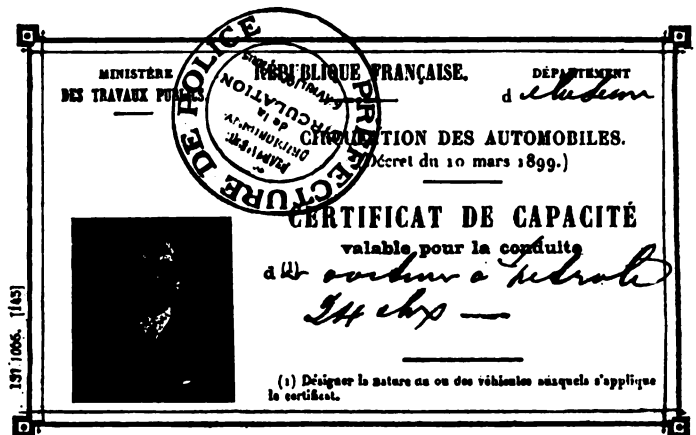
A *procès verbal* is supplied to the constructor when his model is approved, this document giving him the right to construct any number of vehicles similar to the one officially approved. A copy of the *procès-verbal* must be furnished to each purchaser of a car, the constructor declaring that it is an exact duplicate of the model therein described, and the paper is accepted by the authorities as a guarantee that the machine is safe for service. Thus one detailed examination suffices for any number of machines of a type having received governmental approval.

Compared with the free American system by which any man who thinks he knows how can build an automobile and place it on the highways, the French method seems very officious. In general,

however, the regulations have a healthy tendency, for they exclude from public roads machines which are likely to be dangerous, and always keep off the market the products of men who would sacrifice all elements of safety in a desire to "get rich quick." As an example, firms we have been acquainted with have had a desire to suppress one braking system, believing that there was sufficient safety in a single set, and have reduced the strength of the rear axle, on a cheese-paring policy, to danger limits, only to be stopped by the *Service des Mines*. If enforced literally they would, like most regulations, be harsh; but there is a desire to help, not hinder, automobilists in France, and though regulations may be out of date, the application of them is generally of a very satisfactory nature.

Regulations for Owners and Operators.

A private automobilist, a newcomer to the game, is concerned with two regulations. He must register his machine, and he must obtain a driving license, both of which documents are accepted in the whole of France and the neighboring colony of Algeria. To



DRIVING LICENSE DELIVERED AFTER OFFICIAL EXAMINATION.

register the machine he must be armed with a copy of the *procès-verbal* supplied by the manufacturer, which declares that the automobile is a type which can be put into circulation. A registration number being allotted, and attached to the front and rear of the car, all that remains to be done for the machine is to pay the annual tax, based partly on horsepower, and varying somewhat according to locality. In Paris, a 30-horsepower machine would pay \$48 per annum, \$18 of which would be a fixed tax, and \$30 a tax on horsepower. It will be readily understood how strong is the temptation to underrate the power of a car. A gray card (*carte grise*) is the official receipt of the registration of the automobile, and must always be carried by the driver of the machine. It does not indicate that the tax has been paid, that matter being left entirely with the revenue officers, and in no way concerning the police or the gendarmes.

His machine *en règle*, the driver must obtain an operating license. Beyond the stamped paper on which the application must be made there is no expense in connection with a driving permit. The request is sent to the Prefect of the department in which the automobilist is living, or to the Prefect of Police in Paris, and must be accompanied by three small unmounted photographs. From the police department the application is transmitted to the district engineer of the *Service des Mines*, who calls upon the applicant to present himself with the machine he wishes to drive. The standard of efficiency required depends entirely on the inspector; sometimes a twenty-mile run is taken with frequent stops and restarting, changes of gear, reverse driving, and difficult traffic work, followed by a series of questions on the construction of the machine. At other times the inspector is satisfied if

the car is successfully negotiated round one busy block. If a license is required for every make of machine, the applicant must go through a practical test with at least three well-known makes and must submit to a close verbal examination. Immediately it is over the inspector writes out a temporary driving license declaring what make of machine the holder is entitled to drive, gasoline or steam, its horsepower, or giving permission for all systems, without limit of power.

A Rigorous System of Identification.

A few days later the temporary license is replaced by the official red card, issued by the police authorities, bearing on one side the name, address, age and birthplace of the holder, and on the other a photograph of the chauffeur. The two duplicate photographs are filed at police headquarters. So long as he retains his driving license (*carte rose*) and his registration card (*carte grise*) in his possession the chauffeur is certain of reasonable treatment by the police. Woe betide him, however, if at any time he is captured without these documents, or with cards not perfectly in order. Two condemnations in one year for inconsiderate driving would cause the card to be withdrawn and would put an end to the holder's career as a chauffeur.

The most valuable feature of the French system is the absolute identification which it affords. The first words of a *gendarme* or *sergent de ville* who has held you up for speeding or other offenses, are, "*Les papiers.*" In an instant the numbers on the gray card are compared with those hung on the front and rear of the automobile, and the photograph on the red card is compared with the features of the driver. All being in order, the officer makes a note of your name, address, and registration number and, unless the charge is a criminal one, leaves you free to continue your journey. Later you will be called upon to answer the charge in the courts, but you will never be hauled by the ears to the nearest police station and made to pay according to the fancy of a country judge with autophobile tendencies.

Thanks to this thorough system of identification, the way is paved for the abolition of arbitrary speed limits and the substitution of individual responsibility for accidents, a system which automobilists all over the world are endeavoring to obtain. Practically that is what it now amounts to in France. You cannot do what you like, as some foreign visitors seem to imagine, and if you drive recklessly Lepine's subordinates will act as harshly as any American constable armed with an unreliable stop-watch. There is an all-important difference, however, between the two systems. Lepine has said to his cyclist police: "Be guided by conditions and circumstances; ten miles an hour, though legal, would be dangerous under certain conditions; thirty miles an hour under favorable conditions would be reasonable." You may be stopped in Paris, at the end of a long, dirty ride and invited to clean the dust off your rear number; you will certainly be stopped if your exhaust is unnecessarily smoky; you must strictly adhere to the rules of the road, and must not drive recklessly in crowded thoroughfares; but on the open highway, where speed is safe, no one will interfere with you if you go "all out."

TO DISCUSS CHAUFFEUR EXAMINATIONS.

Many an observant person has been struck with the unsatisfactory nature of the automobile law in this country, by which any person, no matter how inefficient or physically unfit, can obtain a license to operate a powerful automobile. Grandmotherly legislation is not desired, but most automobilists would favor a system of examination for would-be chauffeurs, graduated according to the power of the machine that the applicant wished to drive. Many a man who is capable of handling a small runabout is altogether unfitted by training and temperament to handle a fast, powerful car, yet the law allows any person to take out a machine of unlimited power without any guarantee that he is a fit person to handle such a vehicle. With a rigid examination and a thorough system of registration and identification, automobilists could more strongly appeal for the abolition of many

of the petty annoyances to which they are now subjected by the police. Examination and registration would give official status.

Speaking on this subject to THE AUTOMOBILE representative recently, R. B. Whitman, head of the New York School of Automobile Engineers, said that he had assurance that the question of a compulsory examination for automobile drivers would be brought before the Legislature at Albany next session by two strong political organizations and vigorously pushed forward. "As the law stands at present," said Mr. Whitman, "our pupils, often ignorant of the very elements of automobiling, first get their operating license, then learn to handle a machine. A training and examination ground should be established in the suburbs of New York, where newcomers could learn to drive without any danger to the public, and where State examinations could be held. An examination would have a most beneficial influence in raising the standard of operators, reducing the number of incompetents, and would give the public a distinct assurance of safety that cannot be had under present conditions."

STEEL PAVED ROAD EXPERIMENTS IN FRANCE.

PARIS, May 21.—As an experiment, a portion of the roadway in the Rue Saint-Martin, Paris, has been paved with steel, according to a system invented by M. Chaumeret. The paving consists of a perforated steel plate, on each surface of which are a number of parallel vertical steel rails. As for wood paving, a cement bed is formed, on which is laid the steel plate. Space between the rails on both upper and lower surfaces is filled in by cement, that on the under surface serving to hold the plate to the roadbed and the cement on the upper face forming a solid bearing surface. The steel rails are sufficiently close together for a horseshoe or an automobile tire to cover at least three of them.

CLUBS DISCUSS INTERNATIONAL RACE RULES.

HOMBURG, GERMANY, June 18.—No decisions have been arrived at by the international conference of recognized automobile clubs held here immediately after the German Emperor's race. France proposed that uniform race conditions should be 2,420 pounds minimum weight, with a maximum fuel capacity of 4.4 gallons per 62.1 miles. Italy favored entire liberty in racing conditions, and England asked for 2,640 pounds minimum weight with cylinder bore limited to 130 millimeters. Unable to come to a decision, it was decided to bring the matter up again at a future conference at Ostend in July. A special commission was formed to study the question of uniform automobile laws, especially with regard to penal responsibility. Germany, France, England, Belgium, Italy and Austria were represented at the conference. In addition two delegates were sent by the French government.

THE NATIONAL HYMN.

By DWIGHT W. JONES.

My auto, 'tis of thee,
Engine of delivery—
Of thee I sing!
Car for which I have sighed
Car that its makers pride
Let all that wish to ride,
Full oil cans bring.

My touring auto thee—
Car of rapidity—
Thy name I love.
I love thy repair bills,
My frequent fines and "spills"
Result of "pace that kills"
I do, by Jove.

Let chauffeurs levers seize,
And we then take our ease,
In tonneaus strong.
Let smells fill up our wake,
Let all that breathe partake,
And then their silence break,
With curses long.

WEALTH OF NATIONAL AUTO CLUBS.

Over 1,000,000 francs, to be exact and to employ more familiar American terms \$247,992, constituted the income of the Automobile Club of France for the year 1906. It is the largest amount handled by any automobile organization in the world, in addition to being the greatest sum per member. The Automobile Club of Great Britain, which, with its membership of 3,097, is numerically the most important of all national clubs, barely reaches an income of \$110,000. Compared with the two European clubs, the membership of the Automobile Club of America appears small, its number of adherents last year not exceeding 1,450, but its total income for the same period ran up to \$83,768. Comparatively the income per head of the three most important national automobile clubs for the financial year 1906 is: Automobile Club of France, \$102.70 per member; Royal Automobile Club of Great Britain, \$35.50; Automobile Club of America, \$57.78.

It is of interest to note from what sources the powerful French club obtains its huge income, and in what manner it spends its funds. It is not generally understood by the motoring public that the Automobile Club of France consists of two distinct associations, the Société d'Encouragement—a body concerned in the development of the automobile industry—and the Cercle, a merely social club. Practically the two form one, for it is impossible to be a member of the Cercle without at the same time forming one of the Société d'Encouragement. Contrary to what pertains in this country, the French club has a monopoly of all automobile events. The annual show is under its care, the Grand Prix is its especial work, and every important national event is either under its direct control or its patronage.

Subscriptions form the largest source of the club's wealth, the total amount obtained from members under this head being \$104,960. The social side of the A. C. F. contributes much to its financial strength, \$80,340 going into the cashier's hands last year from taxes on betting in the clubrooms. It is this phase of the life of the organization which from time to time calls forth a protest from more sober-minded individuals, who would fain see the organization expel the gambler and devote its whole efforts to the strengthening of the national industry. Others put forth the specious argument that it is better to take \$5 from a gambler, whom nobody obliges to gamble, than to tax a window that you are forced to have if you do not wish to die of suffocation. Forty thousand two hundred dollars were in hand at the beginning of the year. The last annual automobile Salon produced a profit of \$10,000, and a rather larger sum came in from various sources. Last year's income was:

Members' subscriptions	\$104,960
Percentage on bets and various.....	80,340
In hand	40,200
Annual Automobile Salon.....	10,000
Various	12,492
Total income	\$247,992

Deducting the amount in hand at the beginning of the year, the club had the respectable sum of almost \$208,000 to spend during its last financial year. Expenses of upkeep of the former royal palace on the Place de la Concorde are high, \$64,800 being paid out for the building and \$64,400 for internal expenses during the past twelve months. The club is now rich, but there was a time when it was poor, as is shown by \$20,400 for old debts and indemnities to relatives and injured persons in the Paris-Madrid race. The library and various commissions charged with touring, racing, technical and other matters, spent among them \$10,200. Last year's Grand Prix was an unprofitable venture, as is shown by a dead loss in the treasurer's books of exactly \$11,000. The government took \$8,800 of the club's money in taxes; occasional receptions and soirées ran off with an even \$4,000, and the art gallery and annual art exhibition cost \$2,600. Add to this \$12,560 for various expenses and a total expenditure for the year of \$198,860 is reached. Even with such a big expense sheet there is a substantial balance on the right side, the year's operations having brought up the amount of cash in hand to \$49,132.

THE AUTOMOBILE CALENDAR. AMERICAN.

Shows and Meetings.

- Oct. 31-Nov. 7.—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.

Races, Hill-Climbs, etc.

- July 4.....—Reading, Pa., Shillington Track, Race Meet of Berkshire Automobile Racing Association.
- July 4.....—Lowell, Mass., Straightaway Road Races, on Lowell-Kingston Boulevard.
- July 4.....—Harrisburg, Pa., Peter's Mountain Hill Climb, Motor Club of Harrisburg.
- July 4.....—Houston, Texas, Race Meet, Houston Automobile Club.
- July 6.....—Boston to Keene, N. H., and Return, Endurance Run of the Bay State Automobile Association.
- July 10.....—Cleveland, O., Start of Fourth Annual Tour of the American Automobile Association, for the Glidden Trophy. Finishes in New York City on or about July 23.
- July 13.....—Rochester, N. Y., Gymkhana Sports, Genesee Valley Park, Rochester Automobile Club.
- July 13.....—Chicago, Race Meet for the Entertainment of the Glidden Tourists, Chicago Automobile Club.
- July 25-28.....—Providence, R. I., Annual Meet of the Federation of American Motorcyclists.
- July 27.....—Schooley Mountain Hill Climb, near German Valley, N. J. W. J. Morgan, manager, Bretton Hall, New York City.
- Aug. 1.....—Algonquin, Ill., Hill Climb, Chicago Motor Club and Chicago Automobile Trade Association.
- Aug. 5-10.....—Atlantic City, N. J., Automobile Carnival, Atlantic City Automobile Club.
- Aug. 9-10.....—New York City, Brighton Beach Track, 24-hour Automobile Race, United States Motor Racing Association.
- Sept. 2.....—Bridgeport, Conn., Labor Day Hill Climb, Sport Hill, Bridgeport Automobile Club.
- Sept. 5.....—Chicago, Cedar Lake Economy Run, Chicago Motor Club and Chicago Automobile Trade Ass'n.
- Sept. 14.....—Albany, N. Y., 95-mile Road Race, under the auspices of the Albany Automobile Club.
- Oct. 19.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize. Aero Club of America.

Motor Boat Races.

- July 20.....—New York to Marblehead, Mass., 270-mile Motor Boat Race. New Rochelle Yacht Club.
- Aug. 13-15.....—Chippewa Bay, St. Lawrence River, Gold Challenge Cup Race; American Power Boat Ass'n.
- Aug. 22.....—New York to Jamestown (Va.), Annual Cruise American Power Boat Association.
- Sept. 2-6.....—Jamestown (Va.) Exposition, Motor Boat Races.

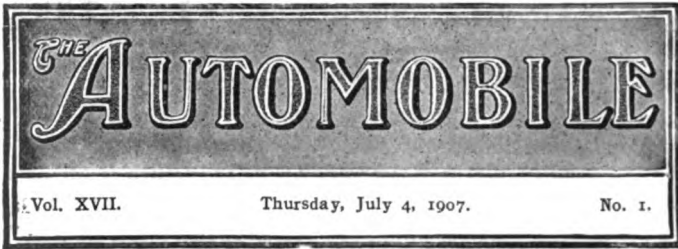
FOREIGN.

Shows.

- Nov. 11-23.....—London, Olympia Motor Show.
- Nov. 12-Dec. 1.....—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.

Races, Hill-Climbs, etc.

- July 14, 1908.....—Paris to London, Aerial Race.
- July 15-18.....—Ostend Week, Record Trials, Automobile Club of Belgium.
- July 25.....—Ardennes Circuit, Belgium (German rules).
- July 26.....—Ardennes Circuit, Belgium (Tourists).
- July 27.....—Ardennes Circuit, Belgium (Grand Prix rules).
- July 31-Aug. 8.....—Belgium Regularity Contest for Touring Cars, A. C. of Belgium.
- Aug. 1-7.....—Criterium of France, 1,750 Miles Touring Competition and 250-mile Race for the Press Cup. A. C. of France.
- Aug. 11-29.....—France, Coupe de Auvergne.
- Sept. 1-2.....—Italy, Brescia Circuit, Florio Cup. A. C. of Italy.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
L. R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. H. GILL, 836 Monadnock Block, Chicago, Ill

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union (including Canada) - - - - - One Year, 3.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Iliffe & Sons, Limited, 20, Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second class matter.
The Automobile is a consolidation of The Automobile (monthly) and the
Motor Review (weekly).

Copies printed in 1905, - - - - -	730,000
“ “ in 1906, - - - - -	791,000
“ “ This Issue - - - - -	16,000
“ “ Since January 1, - - - - -	439,150

The Glidden Tour in Its Aspect as a Test of Endurance. Added interest is lent to the holding of this year's A. A. A. Tour, which is to start from Cleveland for New York, via Chicago and Pittsburg, on Wednesday next, due to the totally unexpected outcome of the Sealed Bonnet contest, run off so successfully by the Automobile Club of America a fortnight ago. It will be remembered that it was seriously suggested that the same rules which characterized the latter contest should also be made to apply to the running of the tour for the Glidden and Hower trophies, but no one except the sponsor of the suggestion itself could see the possibility of holding a prolonged test of endurance under such conditions. It is generally conceded that the A. A. A. tour is the most trying test of the enduring qualities of a car that is held, but the number of successful contestants that marked its close during the past two years show conclusively that the automobile has reached a stage of perfection that is far beyond the standard of the tests designed to try its staying qualities to the utmost and in every way.

No such radical change in the rules under which next week's tour is to be held is possible at this late date, but it is evident that in the future endurance runs and similar tests will be such in name only unless a complete revision of existing standards by which the cars are judged are brought about. The regulations, as laid down for the holding of this year's celebration of America's classic long-distance try-out, have been carefully prepared with a view to preventing the unsatisfactory state of affairs that is inevitable when a large number of the contestants finish with perfect scores, and, in view of the conditions extant at the time they were prepared, there naturally appeared to be no alternative but to adopt some

such arrangement of this kind. With the amendments that have been made since they were first published, they are probably as agreeable to the competitors as any that could be devised; but there appears to be little doubt that another year will see the adoption of far more stringent conditions. As it is, the success of this year's tour already seems assured, and the working of the carefully prepared plans for its regulation will be watched with interest. Any car that can survive the 1,500-mile journey has reason to exploit its reliability and staunchness, and in confidence bid for the patronage of the automobile-buying public.



Great Future of the Original American Automobile. It is extremely interesting to note what a complete reversion to the type of self-propelled vehicles, originally brought out in this country, has taken place within the past few years. Pioneer builders found so very little material available to their needs that it was only natural that existing forms should have been impressed, and a horseless carriage that was true to its name should have been the result. Its shortcomings were painfully apparent, even to its own builders, despite which they clung to it tenaciously. Foreign designers pointed the way to progress, and it was not until the buggy was abandoned that a real advance was brought about, and that along totally new lines.

One, or possibly two, American makers still cling to it, but for all practical purposes its existence had been ended as completely as was that of the high bicycle with it was superseded by the low two-wheeler. Unfortunately, the automobile, as we know it today, does not lend itself to production at a figure within the reach of a very large part of the population; and, even though obtainable at a greatly reduced initial cost, its maintenance is a tax of too burdensome a nature for the many. This led to the revival of what one maker has aptly termed the "buggy-about" a few years ago, and this light, easily handled and cheaply kept vehicle bids fair to become a tremendous factor in the American automobile industry. With its small power plant, few parts and easily understood mechanism, it is simplicity itself, and that it is capable of covering long distances at a minimum cost is evident from the recent performance of one of these high-wheeled horseless carriages, which covered 200 miles, under most adverse conditions of road and weather, on eight gallons of gasoline and three pints of lubricating oil. The agricultural population is in pressing need of a quicker and better means of transportation, and there is little doubt that this American type of automobile represents the solution that will be availed of in thousands of instances.



Present Status of the Electric Automobile. Just because it is not as constantly in the public eye as its confrere, the gasoline car, many are prone to regard the electric automobile as a dead letter, confined, more or less, to a comparatively small number of cabs in the larger cities—and many of them out of date at that—a slightly less number of heavy trucks and a sprinkling of pleasure vehicles. Nothing could possibly be further from the reality as represented by existing conditions today. It would be idle to assert that the electric can ever hope to compete with the gasoline-driven car on its own ground, for obvious reasons, and it is usually the man who seriously considered the former as a serious competitor in earlier days who now regards it as having passed away altogether.

In its own particular sphere of usefulness there is nothing superior to the electric automobile, and that its radius is necessarily limited by the mileage obtainable from a single charge of the battery has not militated against it in the least for town service. If there were no other evidence forthcoming to show its popularity, the fact that an agent in an upstate city can order a trainload of electrics at a time should be conclusive. A report of the number of electric cars annually sold in this country and the constant use to which they are put would be little short of eye-opening.

THAT CHICAGO SHOW SITUATION.

Drawing for spaces at the next Chicago show was held at the headquarters of the National Association of Automobile Manufacturers, 7 East Forty-second street, on Monday, and was participated in by those members who are also members of the American Motor Car Manufacturers' Association. Prior to the actual drawing, however, a special committee composed of Benjamin Briscoe, Maxwell-Briscoe Motor Company; William Mitchell Lewis, Mitchell Motor Car Company, and Alfred Reeves, general manager of the Association, waited upon the Executive Committee of the National Association. The delegation from the independent camp, the first two of whom are also members of the National Association's committee, presented a formal petition asking that A. M. C. M. A. members be placed on the same basis as all others in the drawing. It was also proposed that members of the American Association should receive a pro rata share of the profits of the show, the total to be donated to the cause of furthering the good roads movement.

The suggestions from the delegation were embodied in the following terms, as sent out by the publicity department of the A. M. C. M. A.:

All recognized automobile manufacturers who support association work are entitled to consideration, proportionate to their outlay, in the distribution of any profits which they all create.

The fact that some manufacturers who have demonstrated their faith in organization by joining some other body are not members of the N. A. A. M. is due to the disinclination of the Executive Committee to admit them, and not to a disinclination to become members or lack of effort to secure membership.

Should these facts be allowed to operate against them for the advantage of other but more favored manufacturers?

In other words, should the N. A. A. M., Inc., receive not only the entire profits attributable to the exhibits of its own members, but also of the outside exhibitors who are denied the privilege of membership?

If not, and the premises are correct, the outside supporters of association work should be allowed such share of the profits as their payments for space bear to the whole amount paid for automobile space.

Hence it is suggested that the N. A. A. M. rebate that proportion of the profits of the Chicago show which the payments made by A. M. C. M. A. members who are not members of the N. A. A. M. bear to the whole amount paid for automobile space; the sum total to be donated to the good roads movement now forming.

In line with the above, it is felt that the members of the A. M. C. M. A. and the members of the N. A. A. M. should all stand on the same basis in the matter of drawing for space. It is felt that this would be fair and equitable, especially as it could not, under any circumstances, disturb the positions of the N. A. A. M. members who have shown in big spaces for any great length of time.

The Executive Committee of the National Association refused to agree to any of the proposals of the above resolution and the drawing took place as originally arranged for. Members of the independent association drew for their spaces as usual, which means that after the members of the N. A. A. M.—the promoting organization—had had precedence in the drawing, outside makers were allowed to take their chances on the remaining spaces. As until July 15 is allowed to ratify the drawing by making the first payment for the spaces, the outcome is still in the balance.

In the meantime the A. M. C. M. A. will hold a special meeting to consider the matter. The questions to be decided will be whether they will exhibit at Chicago or not, and whether to hold an independent show in conjunction with the Chicago Automobile Club, with a third and more or less formal question that is really part of the first in case this should be decided in the negative. This is, whether New York is not really the natural show place of the country and one show here is sufficient for all purposes.

It is expected that either Chicago will be dropped entirely or an independent show will be held in conjunction with the Chicago Automobile Club, it being understood that options have been obtained on two available buildings.

From N. A. A. M. headquarters came word that it had no announcement to make in reference to the matter, and that the action of its committee spoke for itself at this time.

JERSEY MAY GET VANDERBILT RACE.

There is a strong possibility that the Vanderbilt Cup race may be run on a New Jersey circuit this fall, the conference of A. R. Pardington, acting chairman of the Cup Committee, and Wilbur F. Sadler, Jr., president of the Associated Automobile Clubs of New Jersey, at Trenton on Monday last with Governor Stokes having borne fruit. The Governor was at first opposed to the holding of the race, but he saw a great light when informed that last year's event left \$600,000 in Nassau County. On the assurance of Mr. Pardington that all expenses incident to the race, repairing road damages, employing police and the like, would be paid by the Cup Commission, the Governor agreed to send a special measure to the legislature, urging the passage of an act legalizing the closing of county roads, provided the proper bill were ready for introduction; he was also agreeable to calling out the militia for the purpose of policing the course. Thirty-mile circuits over good roads are available in Mercer, Union, Essex, and Monmouth counties, the rivalry to obtain the race being greatest between Mercer and Monmouth, the board of trade of the former making strenuous efforts to land the prize.

The dates set are October 12 for the elimination and October 19 for the race proper, and up to last Saturday there was still some hope that the event might be held on Long Island as usual. On that day, a delegation composed of A. R. Pardington, President Oliver A. Quayle, of the New York State Automobile Association, and Sheriff Gildersleeve, of Nassau County, accompanied by his counsel, presented a petition to Governor Hughes at Albany with a view to having a regiment of militia detailed to patrol the course. But neither the fact that the Federal government patrolled water courses for boat races, the financial inducements involved, nor that New Jersey was willing to grant the request for troops, were sufficient to make the Governor take the petitioners' view of the question, the chief executive placing his refusal on the ground that such duty would tend to reduce the morale and efficiency of the National Guard, so that all chance of New York having the race has practically vanished.

N. Y. STATE ASS'N OF A. A. A. GROWING.

Four clubs were added to the roster of the New York State Association of the A. A. A. at the meeting of the board of directors held in New York City, June 29, at 437 Fifth avenue, the A. A. A. national offices. President Oliver A. Quayle presided, and Secretary C. D. Hakes and Directors S. M. Butler, C. M. Lowther, A. C. A.; A. H. Knoll, A. C. of Buffalo, and the National Secretary, F. H. Elliott, were present. The Long Island Automobile Club, Adirondack Automobile Club of Sandy Hill, Automobile Club of Schenectady, and Cohoes Automobile Club were elected to membership. N. M. Pierce resigned as director of the Binghamton Automobile Club and Guy Beardsley was designated. Mr. Pierce's removal to Buffalo accounts for his resignation, but he will retain the treasurership. N. Z. Yelverton was named as the Schenectady club director.

In his report President Quayle said: "The policy of this Association for the four years last past has been that of opposing legislation of any kind or character. The time has now arrived when it will be necessary for us to assume the more aggressive attitude of suggesting provisions of a new law, and I am personally hopeful that this Association will at the next session of the Legislature urge for passage a law which will provide for a more thorough means of identification; the absolute abolishing of all technicalities as to speed regulations, requiring simply that the automobile shall proceed at all times at a rate of speed which shall be reasonable and proper, due regard being given to the rights of all other users of the highway, whether it be in the open country or in the thickly settled portions of the city; that an annual registration fee be imposed and that all such money so derived, together with all money collected from fines, be appropriated and put into a fund to be used exclusively for the maintenance of the improved highways of this State."



LOOKING DOWN TRINITY BOULEVARD, ATLANTA, ORPHANS' DAY.

GEORGIA'S CAPITAL CITY HOLDS ORPHANS' DAY.

ATLANTA, GA., July 1.—Reports of the most successful celebrations of Orphans' Day that the country has seen still continue to keep coming in, owing to the fact that many cities found it inconvenient to observe the day formally set for the purpose and celebrated when it suited them best. This was the case of Atlanta, Ga., and the hospitable southerners did the thing up fine. In fact, Atlanta had more cars—big cars at that—and fewer orphans than any city that has yet placed itself on record as having given the orphans a bang-up time of it. There were 85 touring cars and only 335 orphans, and THE AUTOMOBILE's correspondent figured out that this band, the aggregate capital of which would not total 30 cents, took entire possession of automobiles valued at \$300,000 and made free with Ponce De Leon Springs, representing an investment of an additional \$200,000. There was a contingent from all the orphan asylums of the city, and the committee in charge composed of Robert F. Shelden, Edward H. Inman and Charles H. Ryan, who were assisted by a number of other enthusiastic autoists.

ST. LOUIS CLUB HOLDS SUCCESSFUL DAY.

St. Louis, Mo., June 28.—Probably few of the automobile clubs in other cities of the country made such a success of the Orphans' Day celebration as did the local club. June 19 was the date set, and the appeal for cars met with a generous response, some sixty odd cars being in line, while the arrangements for the entertainment of the city's waifs were perfect and every thing went smoothly. Even though the occasion was a special one, on which the most hard-hearted of upholders of the law could be expected to close an eye on a little speeding, all the drivers, who were in numerous instances the owners themselves, observed the law strictly, much to the disappointment of the children, who would have preferred to go a little faster. It was estimated that something like 2,000 children were entertained, those from the northern and western parts of the city being taken out Clayton road to Forest Park and the others being driven to Tower Grove Park, so that there really were two independent celebrations, each of which was an unqualified success that will long be remembered.

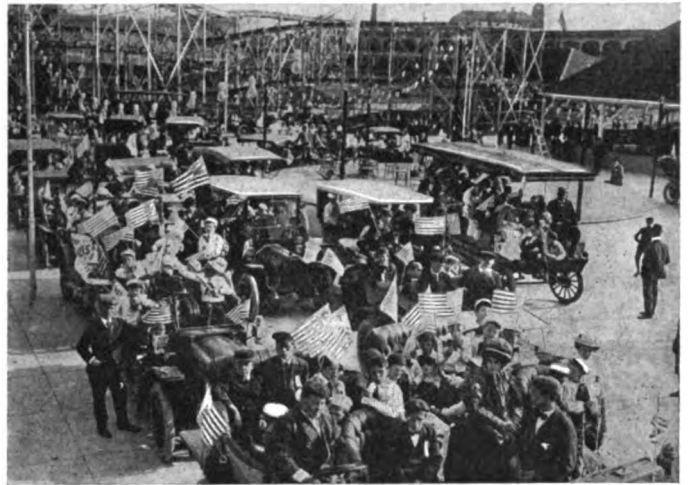


ORPHANS' DAY ON THE PACIFIC COAST, AT SEATTLE.

BUFFALONIANS GIVE ORPHANS AN OUTING.

BUFFALO, N. Y., July 1.—Twelve hundred orphans in Buffalo institutions were made exceedingly happy last Friday by the members of the Automobile Club of Buffalo and the management of Luna Park, a local summer resort. It was Orphans' Day in the annals of the Automobile Club. After energetic work Secretary D. H. Lewis managed to get 200 Buffalonians and business houses to donate the use of their private cars.

The parade started from the rooms of the Automobile Club at Main and Edward streets about 2:30 o'clock in the afternoon. The parade had a few accidents, such as slight collisions and burst tires, but no injuries were reported. The machines traversed the principal thoroughfares of the city and then took a drive through the parkways. The parade wound up at Luna Park, where Manager MacDroom saw to it that each little orphan was given a free pass to every concession in the place. They also received ice cream and sandwiches and had their pictures taken several times. The parade was headed by President Seymour P. White and Father Baker's boy band. It was divided into eight divisions in charge of A. B. Wright, Cary Rumsey, John S. McFarland, A. H. Knoll, C. N. Babbitt, Frank Snyder, Charles E. Throop and President White.



BUFFALO ORPHANS ENJOYING SIGHTS AT LUNA PARK.

ORPHANS' DAY IN THE SMOKY CITY.

PITTSBURG, PA., July 1.—Under the auspices of the Automobile Club of Pittsburg over four hundred happy orphans, each holding in his hand a small American flag, enjoyed the sights of Pittsburg Thursday, June 27. Special arrangements had been made with the weather man, and a more delightful day could not have been found. Eighty-two of the finest automobiles in Pittsburg were used to carry the children.

At Luna Park the children were given full sway, and remained a good part of the afternoon, making use of the amusement devices. This is the third year that the Automobile Club of Pittsburg has thus feasted the orphans, and although the event did not occur on the regular scheduled day, it was by far the most successful they have ever tried. The committee was composed of Edward Kneeland, Paul C. Wolff and Philip S. Flinn.

ORPHANS' DAY OBSERVED OUT ON THE COAST.

SEATTLE, WASH.—June 24.—Not to be outdone by any of the eastern cities despite their greater size and larger number of automobiles, Seattle went in for an Orphans' Day celebration which, except in point of size and the fact that it was held ten days later than the day set by the A. A. A., was as successful as any that have been held. G. W. Miller, manager of the local Winton branch, was in charge and took fifty-one children from the Orphans' Home for an afternoon of enjoyment.

ENERGETIC HAPPENINGS AMONG THE CLUB

Chicago Club's New Home Is Formally Opened.

CHICAGO, July 1.—It was at first intended to put part of the magnificent new home of the Chicago Automobile Club on Plymouth place in commission last week, but it was finally decided to await the completion of every department, so that the club's new quarters could be opened all at once, and this was done officially to-night, the ornamentation of the grillroom and some of the furniture for other parts of the building, which were the only things missing last Thursday, having been installed.

With the exception of some space reserved along the Plymouth Court frontage for two stories, almost the entire main floor is given over to the garage. For the living quarters the members must either descend to the rathskeller or go to the second floor.

The garage is entered from the street by a passageway which opens upon the entrance for the disembarkation of passengers. The entire garage structure is separated by a brick fire wall, unbroken except by a single iron door on each floor, from the rest of the building. The main part of the structure rises three stories above the garage, in order that better lighting from the east may be secured in the sleeping apartments.

Extending across the entire width of the second story is the lounging room, a colonial hall in gray wood and soft green decorations. Corresponding in location to the lounging room, but one story higher up, is the café, an old English eating hall with Dutch olive beams of massive dimensions, wall decorations of dark red and gray, and carpet and velvet window hangings to match. The companion eating hall is located in the basement, where a combination billiard room and grill has been devised.

The club is making elaborate plans for the reception of the Glidden tourists on their stop over here on July 12 and 13, a formal welcome at the Auditorium being the first event on the program, the club's new house being thrown open to the visitors during their stay. There will be a theater party on the evening of the day of arrival, with a run to Ravinia the next day.

How the Ontario League Discourages Recklessness.

TORONTO, ONT., July 1.—The Ontario Motor League has been active of late in discouraging reckless driving. It will be remembered that it was embodied in the constitution adopted at the recent organization meeting that one of the objects of the league should be to secure the proper observance of the law.

There have been the usual number of complaints about alleged misdoings of autoists from the public. The Motor League has taken steps to investigate a number of these, with the result that it has brought some of its membership on the carpet. In many cases, however, the trouble has come from chauffeurs who are irresponsible. It is somewhat difficult to discipline them, but the Motor League has been successful by personal interviews and threats and even by assisting in the prosecution.

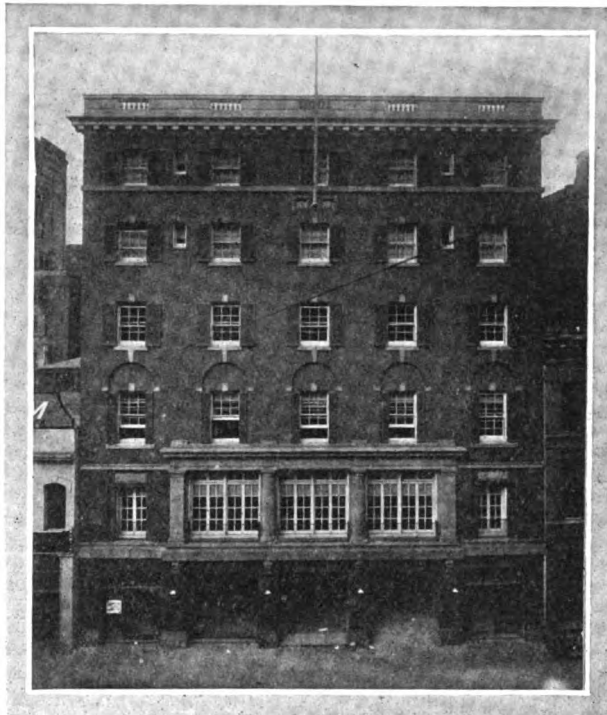
Canadians Want Reciprocity.

MONTREAL, QUE., July 1.—The Automobile Club of Canada is in communication with the American Automobile Association, Royal Automobile Club of Great Britain and the Automobile Club of France for a reciprocal arrangement whereby their members, while touring in foreign countries, could have granted them the privilege of these clubs. This will undoubtedly result in the

simplifying of the customs regulation governing the use of cars of tourists who wish to cross the border from either country, as well as providing of mutual benefits in various other ways.

Maryland Club Postpones Rowe Trophy Tour.

BALTIMORE, MD., July 1.—The first tour for the Rowe trophy has been called off until some time in September. These tours were to have been started this month, but the entry lists could not be filled out to the satisfaction of the promoters because of the fact that most of the members of the Automobile Club of Maryland, who were the only ones eligible to participate in the contests, will be out of the city during July and August.



CHICAGO AUTOMOBILE CLUB'S NEW HOME.



A CORNER OF THE CARD ROOM.

THE AMPLE COLONIAL LOUNGING ROOM.

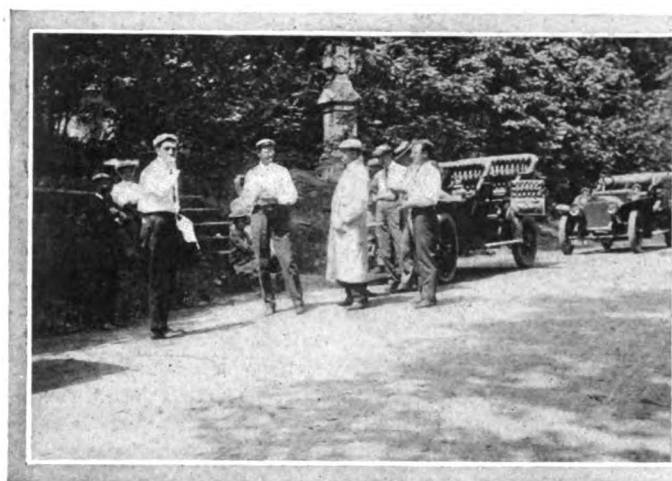
BACHELOR SUITE ON UPPER FLOOR.

Dr. Rowe has also decided to hold but one tour each year instead of three as originally intended. This tour will be at a distance of 400 miles, the route of which, however, has not yet been decided upon. It was at first intended to hold a series of three tours each year at distances of 100 miles, 200 miles and 400 miles, but all except the last has been abandoned.

Washington Club's Tour to Gettysburg.

WASHINGTON, D., C., July 1.—The Automobile Club of Washington this season is putting forth every effort to awaken interest in touring. C. Royce Hough, the newly elected captain, and his able lieutenant, T. B. Spence, are veterans at touring.

Probably the best trip the club has yet taken was that to the Gettysburg battlefield, June 22 and 23. The weather god was in a genial mood and the roads were in magnificent shape. The route was the familiar one out the Brightwood road to Olney, and thence to Ridgeville, where the National pike was taken into Frederick. From Frederick the Emmitsburg pike, one of the finest and best kept roads in this section of the country, was taken to Emmitsburg, while from the latter point to the edge



ON THE SUMMIT OF BIG ROUND TOP, GETTYSBURG.

of the battlefield the route was over a common dirt road, marked by deep gullies all the way. This bit of road is the only bad one to be found between here and Gettysburg, and leading as it does into the battlefield and being traversed by thousands of automobiles and other vehicular traffic, the wonder of it is that the Maryland authorities do not make some effort to put it into passable shape. The Glidden tourists will probably find this road the meanest in their long tour.

Maryland roads are infested with innumerable dogs and chickens, and in order not to offend the farmers, who are favorably disposed to automobilists, the tourists before starting were cautioned not to ruthlessly run over the pests. Several drivers had narrow escapes from running over dogs that persisted in lying in the middle of the road, while more than one car was brought to a standstill by an obstinate cow that refused the right of way and would not budge.

The most pleasing part of the trip was the ride between Frederick and Emmitsburg, a distance of about twenty-three miles. The pike is operated by several private companies which collect toll, and they never let the road get rutty. The pike runs through Frederick county, said to be the third richest agricultural county in the United States, and the well-tilled farm lands are a delight to the eye. A few miles out of Frederick is the old Schley homestead, where Rear Admiral Schley was born. It is just off the roadside, and its shaded driveway is one of its attractive features.

Entering Emmitsburg the tourists paused for a while and were soon surrounded by many inhabitants of the quaint little town. The town gains distinction from the fact that it was here that General Reynolds, commanding the first corps of the Army

of the Potomac, got his troops in shape for the march into Gettysburg. His troops marched over the road heretofore mentioned and the tourists as they bumped over the ruts and stones could not help but express pity for the soldiers compelled to march over such a road in the hot sun. In due time the edge of the battlefield was reached and then a quick spin over Confederate avenue soon brought them into Gettysburg. Headquarters were established at the Gettysburg Hotel.

After a good night's rest the tourists started early Sunday morning to inspect the battlefield. Under the guidance of Mr. Hoffman, who was born and raised in Gettysburg and who participated in the great three-day struggle, the tourists took in every part of the battlefield from Big Round Top to Little Round Top. Three hours were thus spent, and then after an old-fashioned country dinner the cars were started homeward.

Schenectady Club Organizes with 34 Charter Members.

SCHENECTADY, N. Y., July 1.—There is now a Schenectady Automobile Club to swell the large number of organizations that New York State boasts of. Oliver A. Quayle, president of the New York State Automobile Association, and C. D. Hakes, secretary of the Albany Automobile Club, made addresses on the purposes of automobile clubs and the good they are doing, at a meeting held here last week. The meeting was presided over by C. H. Benedict as chairman, who was later elected president of the newly formed club, with Gerardus H. Smith as vice-president, A. F. Knight, secretary, and J. W. Yelverton, treasurer. Good roads, national legislation and the suppression of lawlessness in the use of automobiles will be the chief aims of the club. The annual dues are to be \$5, with no initiation fee.

Successful End of Albany Club's Annual Run.

ALBANY, N. Y., July 1.—Fourteen of the sixteen cars that participated in the annual run of the Albany Automobile Club survived the 700-mile trip to Atlantic City and returned, according to schedule, on Wednesday last, several of them with perfectly clean scores, prominent among these winners being Miss Edith Franklin, who drove her Franklin throughout the tour. President McClure, who offered a cup to the contestant to finish with the best score, met with difficulties himself just outside of Trenton on the return trip and had to give up. The other contestant to be eliminated was A. C. Thorpe, who dropped out at Atlantic City. Just above Poughkeepsie, on the return trip, several of the party fell into a trap and were compelled to shell out for the support of the town and, incidentally, of the constables.

Sacramento Soon to Have an Automobile Club.

SACRAMENTO, CAL., June 26.—A large number of local automobilists met at the Chamber of Commerce in this city recently to discuss plans for the organization of an automobile club, which will affiliate with the Sacramento Country Club and erect a suitable clubhouse here. The latter organization has long been in need of larger quarters, and the suggestion that an automobile club be formed to co-operate in providing a modern and commodious clubhouse met with instant approval. R. C. Cash called the meeting to order and was elected chairman, with M. R. Upson as secretary. A site of 110 acres, adjacent to Orangevale Lake, was offered for \$20,000, and it is proposed to sell bonds to the extent of \$40,000. A committee composed of Messrs. Crowell, Hevener, Cash and Dr. Griffith was appointed to take charge.

Rain Caused Postponement at Rochester, N. Y.

ROCHESTER, N. Y., July 1.—Because of a drizzling rain which bade fair to develop into a downpour, the gymkhana sports of the Rochester Automobile Club, which were to be held this afternoon in Genesee Valley Park, were postponed until Saturday afternoon, July 13. About two hundred cars were lined up around the course, and several hundred spectators were present only to be turned back home disappointed.



KILOMETER STRAIGHTAWAY, JUDGES' BOX ON RIGHT.

LONDON, June 18.—Nineteen miles from Waterloo station Britain possesses the only race track specially constructed for automobiles to be found in the wide world. Speed restrictions have been so severe in the tight little island and the Britisher has had such scant opportunities of either witnessing or indulging in any rate of travel above the normal, that he is to be excused for his display of excitement when the scene of world's records is brought to his front door.

Nine months ago, on his private estate near Weybridge, Mr. F. Locke King began the construction of a special race track, designed to admit of speeds of 100 miles an hour with perfect safety. By employing large gangs of workmen night and day, the course has been finished in record time. It is pear-shaped, with curved ends, banked to a maximum height of 28 feet, and is 2 3/4 miles round. A straightaway, laid diagonally across the oval, gives an additional length of five-eighths of a mile. Average width is 100 feet. Some idea of the prodigious nature of the undertaking can be gathered from the fact that although the ground was favorable for a course, the total cost is estimated at \$750,000. The entire track is concreted to a depth of five inches, and it is considered that, despite the rapid construction,

the foundation has become sufficiently congealed to cause no future trouble.

Owing to the formation of the land, excellent accommodation is provided for the public, there being seating room for 5,000 people and standing room for 150,000. Within the track,

near the finish of the straightaway, are clubhouses with garage accommodation for a number of cars, and on the opposite side of the straight course the judges' box has been located, in front of which all finishes will be made. From the high ground of the island on which the judges' box is placed an excellent view of the entire course is obtained. Admission to this vantage ground is by means of a bridge spanning the track, or by a tunnel passing under it. Large score boards within the club enclosure opposite keep the public posted on the names of the competitors and their positions in any race. At the fork where the straight kilometer track leaves the main course the width is 250 feet.

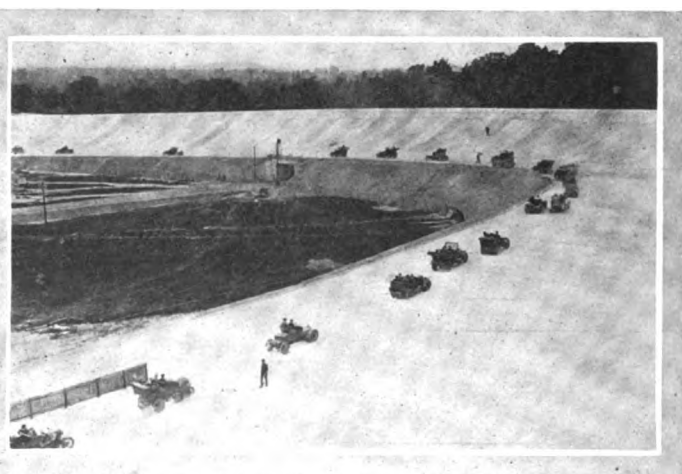
A double purpose will be served by the track. It will be used by the Brooklands Automobile Club for public races, the intention being to hold periodical meetings on much the same lines as horse races are held, and it will be a training ground for manufacturers. There is no doubt but that the track will be enormously successful as a public race ground. It is close to London, placed in a picturesque country, will offer more thrilling scenes than any race course, and promises to provide well for the public. Any day when there is no racing, with the exception of Sunday, manufacturers may use the course for testing cars on payment of a fee of five dollars. Members of the club have free use of the track, and it is expected that most manufacturers will apply for membership. Twenty-eight closed garages have been erected, to be rented to constructors in order that they may keep cars permanently on the track ready for demonstrations.

FIRST 24-HOUR RECORD AT BROOKLANDS.

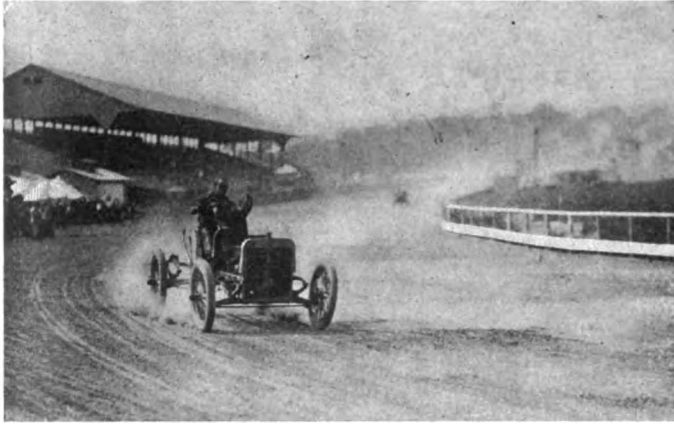
LONDON, June 29.—S. F. Edge has more than fulfilled the promise made a few weeks ago to travel continuously 24 hours at an average of sixty miles an hour, on the Brooklands track. Today, on a six-cylinder Napier, he covered 1,581 3/4 miles in 24 hours, which gives an average of nearly sixty-six miles an hour. The first 100 miles were covered in 85 minutes, and 1,000 miles in 14:54:15. As was expected, Edge has broken all 24-hour track records, for he is the only man who has yet had an opportunity of speeding on this unique automobile course.



BANKING 28 FEET HIGH, FOR 100 MILES AN HOUR.



AN ORDERLY, LEISURELY PROCESSION ON OPENING DAY.



KULICK DRIVING FORD SIX IN THE DETROIT RACE.

THAT RECENT 24-HOUR AT DETROIT.

DETROIT, July 2.—In winning the recent 24-hour race on the State Fair Grounds track, Frank Kulick did not lower the existing record held by Clemens and Merz with a "30" National and made at Indianapolis, November 16-17, 1905. Its total was 1,094 3-16 miles, and while Kulick and his occasional mate traveled 1,135 miles, the journey was accomplished with two Ford six-cylinder machines, so that the performance, though a most creditable one from every point of view, cannot properly be considered as an officially sanctioned record under the existing rules.

The wreck of the Pope-Toledo in the Detroit race will be handed down in automobile history. Lytle, for six consecutive hours, without leaving his car or touching it with a wrench, broke records for a circular track. At this point a rear tire burst, wrecking the car and throwing out the driver. The duplicate entry driven by Lohse having also met with an unavoidable accident before the race began, Lytle took a Pope-Toledo demonstrator of the same model, that had been driven over 22,000 miles, and continued the race, finishing second by only twenty-six miles, having gained the difference between the thirty-odd miles lost by the delay of accident. The Pope entries were regular stock cars and not Vanderbilt Cup racers, as reported.

FAST TRACK WORK AT ST. PAUL.

ST. PAUL, MINN., June 29.—Ralph Mongini, driving a Matheon, won the 24-hour automobile race at Hamline track with 1,037 miles to his credit. Zerbies came second with 918 miles, Eddie Bald getting third place with 445 miles. Bald ran up the biggest mileage for one hour, covering fifty-four miles. On the previous day Eddie Bald won the 25-mile championship in 30:28. E. Simpson was second in 31:50, and Winston third in 31:56.

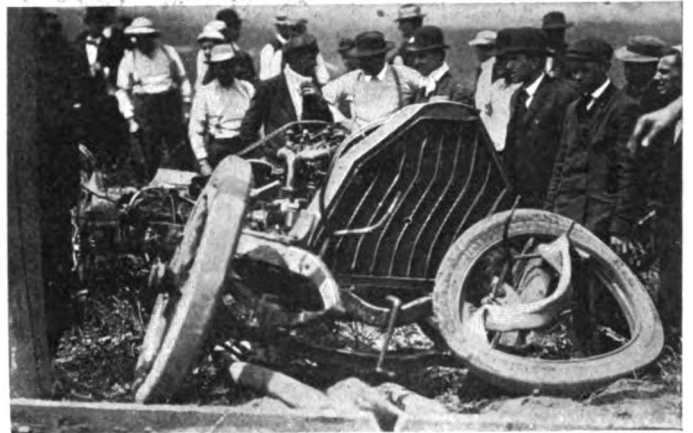


LYTLE IN POPE-TOLEDO TAKING DEADMAN'S CURVE.

AUTOISTS AVOID PASSING THROUGH POKEEP.

POUGHKEEPSIE, N. Y., July 2.—This city is fast achieving such a notorious reputation due to the pernicious activity of the local authorities in carrying the enforcement of the speed law to an absurd extent, that autoists generally are beginning to avoid the town on the banks of the Hudson, and with good reason. Since the opening of the touring season, trapping has been most active and fines have been imposed on the most flimsy pretexts. One of the familiar type, in which a rope arranged to be stretched across the road in front of an approaching car plays a prominent part, has been established at Hughsonville, about a mile south of Wappinger's Falls, while another one is in full blast about three miles north of the city, and it netted quite a bag of the returning competitors in the Albany Automobile Club's annual run a week or two ago. Not satisfied with working this game to the limit on the main road running north and south along the river, similar traps are also being started on the unimportant country roads leading in from the east, so that there is no avenue of approach to Poughkeepsie on which the autoist may feel safe from persecution.

Some idea of the absurd extent to which the enforcement of the law is being carried in the city itself may be had from the case of John Van Benschöten, who, with three of his drivers, was recently arrested, when showing the Georgetown 'varsity



WRECK OF LYTLE CAR CAUSED BY BURSTING TIRE.

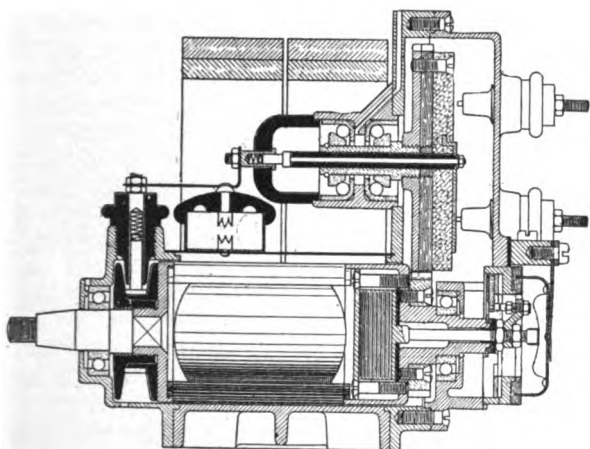
crew about, for having exceeded the legal limit of four miles an hour in rounding a corner. As the law stands there is some ambiguity, and hours have been spent in arguing whether the four-mile limit applies only to a car rounding a curve or not, one claiming that the situation in question is an intersecting highway, and the other that it is a sharp curve.

THE UBIQUITOUS MOBUS AND ITS MANY USES

LONDON, June 27.—The motor omnibus has found many spheres of usefulness during its short but energetic career, and its latest application is by no means the least promising. Mr. Charles Frohman is responsible for this recent idea, by which patrons who have booked seats for his theater are picked up at their residences by a special motor 'bus and quickly conveyed direct to the scene of their evening's enjoyment, the return at the close of the performance being made in the same convenient way. In the present initial stage of the experiment it is not found possible to serve the same districts on successive nights; accordingly at the time of booking seats information is given when the next 'bus will be in purchaser's neighborhood. If this does not suit the usual roundabout method of doing the journey must be resorted to. The innovation has aroused much attention, and even if the number of visitors conveyed in this way is comparatively small, the astute manager has secured the desired object in another way by booming his theater.

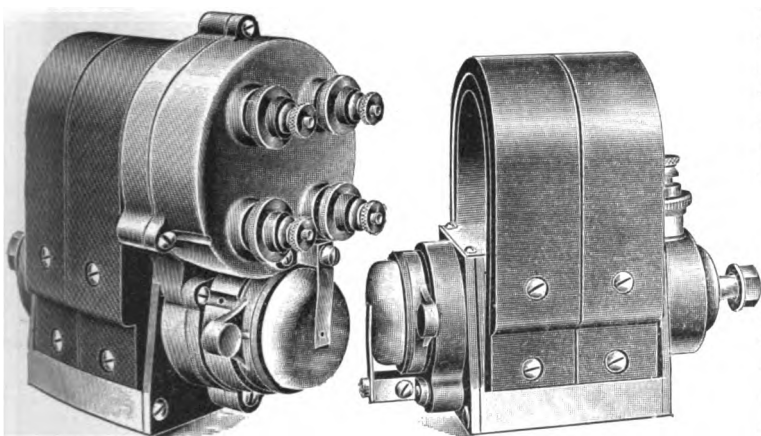
A NEW AMERICAN HIGH TENSION MAGNETO.

Under the title of the "Komet" the Dow Portable Electric Company of Braintree, Mass., has recently placed on the market a magneto of the true high-tension type, which, from the excellence of its electrical design and the painstaking care given to its construction, should make it an important factor in the ignition



SECTIONAL ELEVATION OF THE DOW HIGH-TENSION MAGNETO.

field in this country. The matter of employing only the very highest grade of materials throughout has also been given attention, a special class of imported steel being used in the manufacture of the field magnets. No attempt has been put forth to produce a revolutionary design, but the highest recognized standards of electrical and mechanical engineering have been followed in the construction of the machine. Both the primary and the secondary windings are placed on the armature of the generator, one end of the former being connected with the armature core, while the other is connected with a brass clip terminating in a stud. One end of the secondary winding is also grounded on the armature core, while the other is brought out to a revolving ring from which the current is collected by a spring-controlled carbon brush. The primary current is collected in the usual manner by means of



END VIEW HIGH-TENSION TYPE.

DOW LOW-TENSION TYPE.

a platinum tipped contact screw, resting against an interrupter spring which also carries a liberal-sized platinum point.

In this manner the primary winding of the armature remains short-circuited upon itself except at the points represented by the two elevations on the cam or interrupter disc, the space between the points not being more than 1/64 inch, this being regulated by the platinum screw. Thus two of the current waves produced at each revolution of the armature are utilized, the current being conducted through a spring-controlled carbon brush to the distributor. The latter consists of a disc screwed to a pinion driven by another pinion of half the size on the armature shaft, so that the operation of current generation and distribution is

synchronous. The condenser, connected in parallel with the primary circuit in which the interrupter is located, is mounted at the distributor end of the magneto.

A safety spark gap is provided so that should any break occur in one of the high-tension leads the current will bridge this opening in the circuit without damaging any part of the generator. The latter must be run positively from the motor at the same speed as the crankshaft in the case of a four-cylinder motor, and at one and a half times the speed of the crankshaft for a six-cylinder motor. The timing of the spark is effected by causing the interruption of the primary circuit to occur sooner or later, which is readily accomplished by placing the armature at the position of maximum induction to correspond with the upper dead center or earliest point of firing of one of the pistons. To stop the motor, provision is made for short-circuiting the primary winding of the magneto by means of a switch mounted on the dash.

MORA SEALED BONNET CAR REACHES CHICAGO.

Not satisfied with having come through the original sealed bonnet contest of the Automobile Club of America with honors, one of the Mora cars, driven by W. H. Birdsall, left New York City on Monday, June 24, for Chicago with its original seals still intact in order to participate in the contest of the same kind held by the Chicago Automobile Club on June 28. In dropping off a bridge west of Utica a spring was broken, which necessitated a slow trip to the factory at Newark, New York, where it was replaced. The car arrived in Chicago on Thursday morning June 27, at 10 o'clock, or with almost twenty-four hours leeway to start in the contest next day, having been driven by Birdsall, John David and J. H. Stickney in turns and having covered a total of more than 1,800 miles without an adjustment since the seals were first placed on it.

SHOTGUN TACTICS NOT UPHELD IN MICHIGAN.

LANSING, MICH., July 2.—Harry Kraft, a farmer of this place, has made a habit of carrying a loaded double-barrel shotgun with him since an automobile scared his horses, causing them to run away and ruin the buggy. He recently had an opportunity to make a display of the weapon when Louis Spice, driving a car, did not stop as quickly as he was commanded to do by the irate agriculturist. He aimed the gun at the auto party, and later decided to plead guilty to a technical charge of assault, on which he was let off with a fine of \$15 and \$8.50 costs. At this rate the shotgun will probably be left home in the future.

CLEAN SCORES NUMEROUS AT MILWAUKEE.

MILWAUKEE, WIS., July 1.—Fifteen perfect scores, five cars not completing the course and four penalized from 50 to 725 points, was the net result of the first annual reliability run of the Milwaukee Automobile Trade Association on Saturday, from Milwaukee to Madison and return. Road conditions were excellent and a few of the drivers who were unable to resist the incentive to speed were arrested. Perfect scores were gained by Buick, Wayne, Peerless, Kissel-Kar, Stoddard-Dayton, Mason, Rambler, Pope-Hartford, Premier, Winton, Buick and Reo.

SIXTY-ONE IN LOS ANGELES ENDURANCE.

LOS ANGELES, June 27.—Sixty-one automobiles of varying type and horsepower are speeding over 180 miles of diversified road between here and Lakeside. The occasion is the annual endurance run and economy test of the local Automobile Dealers' Association, and will require two days to decide. Starting from Eighth and Market streets this morning, Riverside, the noon control, was reached under a distressingly hot sun. Elsiene is the night control.

NEW PACKARD GARAGE IN NEW YORK.

One of the latest and most notable of the recent additions to New York's row of new garages is that of the Packard Motor Car Company on the northwest corner of Broadway and Sixty-first street, which is just having the finishing touches put on it.

The new Packard headquarters has a frontage of 114 feet on Broadway in the heart of the newest automobile row, and has a front of 196 feet on Sixty-first street. As the corner is less than a right angle, the north wall measures only 139 feet. The building rises to a height of four stories and has a deep basement.

The total cost of the building is approximately \$200,000. Except in the salesroom and offices, no attempt at ornamentation has been made, but every precaution known to building science has been taken to make the establishment proof against destruction by fire, and substantial construction and mechanical convenience have been striven for and secured. A steel skeleton supports the weight, and is encased in concrete walls and floors. The supporting steel columns are covered with cement, and no inflammable material is used except for window casings and, in the salesroom and offices, for wainscoting and furnishing. In the



PACKARD'S NEW ESTABLISHMENT ON AUTOMOBILE ROW.

basement is a 50,000 gallon reserve tank of water and on the roof is another of equal capacity, both connected with an automatic sprinkler system. A steam pump in the basement raises water to the roof. There is a low pressure steam heating plant in the basement, and the lighting throughout is by electric lights, so that there is no open flame. The gasoline storage is in a light court on the north side of the building outside of the building walls. Here a large number of tanks, each having a capacity of only one barrel, is embedded in cement. They have no opening to the air except by lead vent pipes rising above the roof of the building. Each is provided, of course, with filling and emptying pipes. Fire walls of brick separate the salesroom and offices from the garage portion of the first and mezzanine floors, and similar walls shut off the repair shop on the Broadway side of the third or top floor, corresponding with the fourth floor in other buildings, and also the stock room, tire room, coat room and other small rooms on the mezzanine or second floor. Fire doors, sheathed with copper, close automatically in case of fire.

All floors and the basement are connected by a pair of electric elevators on the west side of the building. Each of these measures 20 by 13 feet and is of five tons capacity. It is open at front and rear, so that a car can be run on at one end and off at the other on any floor. Directly in front of the elevators at each end on every floor but the mezzanine floor is a turntable 15 feet 4 inches in diameter. In the basement there is one turntable.

Of course, the show feature of the establishment is the salesroom. This extends across the full width of the Broadway front and has a large main entrance near the middle covered by an imposing metal canopy supported against the building. This is in

heavy iron and presents an effective contrast against the white front of the building. The show room has a depth of 84 feet on its longest side and a height of 28 feet, rising through two floors. Its area is broken by several fluted columns that support the ceiling. These columns and the sides of the room are paneled to a height of 8 feet with weathered oak, above which the walls are finished in imitation grained stone. Extending across the entire rear of the room is a mezzanine gallery 94 feet long by 20 feet wide, admittance to which is by a marble stairway at the middle. The stairway and balcony have an ornamental metal railing and the floor is covered with asbestolith. On this balcony the offices will be located. A passage from the gallery communicates with the mezzanine floor of the garage, where the directors' room, coat room, toilets, tire room and stock room are located.

Reception rooms for men and women are provided on the ground floor at the rear of the salesroom.

The whole of the second floor—above the mezzanine floor—is devoted to the storage of cars. It has a washing stand and on the north and west walls is a metal gallery for lockers.

The front of the top floor is occupied by the machine shop, which will be unusually large and well equipped. The rest of the floor is for car storage. Cement stairways, shut off by fire walls, extend through the full height of the building.

AUTOS PREVAIL OVER ROUGH ROADS.

Automobiles are superior to the roads they are given to traverse and the crying need of cross country travel is better highways. A good demonstration of the ability of autos to conquer roadstead difficulties was made last week by S. D. Waldon, sales manager of the Packard Motor Car Co., of Detroit, who, driving a 1908 Packard "30" test car, with a load of four persons and heavy baggage, came from Detroit to New York in two days, despite heavy rains and a succession of innumerable miles of torn-up and almost impassable roads.

The start was made from Windsor, Ontario, at 4:25 Monday morning. Windsor, by the way, is a peculiar place. There is no garage and no livery stable will take an automobile. The car was left standing in the street before a hotel during a heavy rain Sunday night.

Monday's course lay through Canada to Buffalo by way of London and Hamilton. The road during the morning was deep with mud. Near Niagara Falls a stop to fix a rear tire blow-out resulted in car and party going into receivership, the receiver being a country constable with a tin badge and blue pants. Some one in St. Davids had telephoned ahead that a certain car had exceeded the fifteen-mile speed limit of that village, and upon this absent evidence the Packard party was haled before the magistrate, chief of police, et cetera, of Niagara Falls, and mulcted \$25 and costs. This delay, on top of the puncture and the customs proceedings at the bridge, lost over two hours.

No stop was made at Buffalo, but about half way between there and Rochester a veritable cloudburst drove the tourists into a friendly barn for half an hour. Then, with tire chains on, a slippery way was made into Rochester.

The second day was like driving across a newly-plowed field as wide as New York State. Being in a hurry to spend the State road improvement appropriation, supervisors everywhere had plowed up the highways preparatory to laying stone roads.

By persevering going, however, the smooth road between Poughkeepsie and New York was reached before dark and the rest of the run was a quiet glide down to Manhattan.

In speaking of the trip Mr. Waldon said that the most remarkable point seems to be that if a car could traverse 797 miles of such varying and mostly poor roads in two days it showed a traveling possibility of which the public seems hardly to be aware. He concluded:

"Give us roads like some of the stretches along the Hudson, all the way from New York to Detroit or Chicago, and automobiles will develop a new mode of travel which will be simply amazing in its extent. Autos are good. We need good roads."



AMERICAN ROADS BETWEEN TWO IMPORTANT CITIES.

This photograph gives some idea of the class of roads encountered between the two important middle western cities of Toledo and Detroit. It was taken directly in front of the post-office of one of the villages on the route some weeks ago. The road has improved materially since, but it is almost impassable during the winter and early spring months owing to the rains.

AUTO STAGES ONCE MORE TO THE FORE.

SEATTLE, WASH., June 30.—Within a short time there will be a regular automobile stage service between Kirkland and Fall City, arrangements for the inauguration of the line already having been made by a number of business men in the former place where a garage is now being built to house the machines. As a starter a 30-horsepower gasoline 'bus with a seating capacity of twenty people will be put on.

TORONTO, ONT., July 1.—Under the Dominion charter recently granted a newly incorporated company, a 'bus line will be inaugurated in this city during the coming week. The first part of the equipment, consisting of five electric 'buses built by the Autocar Equipment Company, Buffalo, N. Y., has just been delivered here and will be put into service within a few days. The 'buses will be run on the Belt Line, along King street, up Jarvis to Bloor, along the latter to St. George, returning by way of Beverly and Queen streets to King. Four horse-drawn stage coaches have also been acquired, and it is expected that the equipment will have a capacity of half a million passengers annually. Similar systems will also be operated in Montreal and Ottawa.

FOR A NEW AMERICAN ANNUAL TOURING EVENT.

A. W. Church, of Wyckoff, Church & Partridge, has just come forward with a proposal to inaugurate another American touring event, for which he will offer a handsome trophy. Realizing the necessity for preparing an intelligent set of rules well in advance, the matter of formulating these has been taken up and it is expected to make them public early in August. The route has already been decided upon and will consist of a circuit of several hundred miles, starting and finishing at New York, via Hartford, Conn., Boston, Mass., Concord, N. H., Albany, N. Y., Columbus, O., Charleston, W. Va., Richmond, Va., Washington, D. C., Harrisburg, Pa., and Trenton, N. J. Each of these cities being the capital of its State, arrangements will be made to have the party of tourists meet the governor, presenting to him a complete report of the roads passed over in his jurisdiction, thus furthering the good roads movement at the same time. No date has been set for the starting of the event, but it will be held as early in the year as road conditions will warrant and the schedule will be such as to allow ample time for rest at each of the stopping places mentioned. Designs are being prepared for the trophy, which is promised to be as fine an example of the goldsmith's art as can be produced.

BALDWIN AIRSHIP'S SUCCESSFUL FLIGHTS.

HAMMONDSPORT, N. Y., July 1.—Capt. Thomas S. Baldwin made two very successful flights in his "Twentieth Century" airship at Hammondsport, N. Y., June 27. The first ascension was made with a single propeller and the second with a double propeller, driven by the G. H. Curtiss four-cylinder motor. The ship has a cigar-shaped gas bag, 57 feet long and 17 feet in diameter, built of balloon silk and covered with netting. The bag has a capacity of 9,000 cubic feet, and is filled with hydrogen gas. The car is 42 feet over all and 3 feet deep. The motor is a four-cylinder, air-cooled, 16-horsepower machine designed especially for this work. The ascensions were made from the factory of the G. H. Curtiss Manufacturing Company.

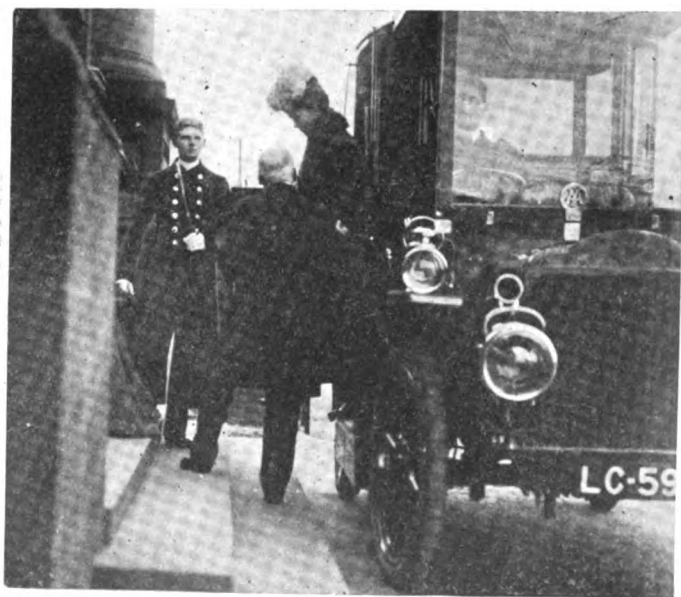
The Curtiss Company is also making a motor for Capt. William Mattery, of the Chicago Airship Company, to be eight cylinder and of 32 horsepower. Another 8-cylinder 32-horsepower motor is being built for Mr. Williams, inventor of the Williams typewriter, for a "heavier-than-air" airship. The firm also sold the United States Government four airship motors recently.

INTEREST HIGH IN COMING ATLANTIC CITY MEET.

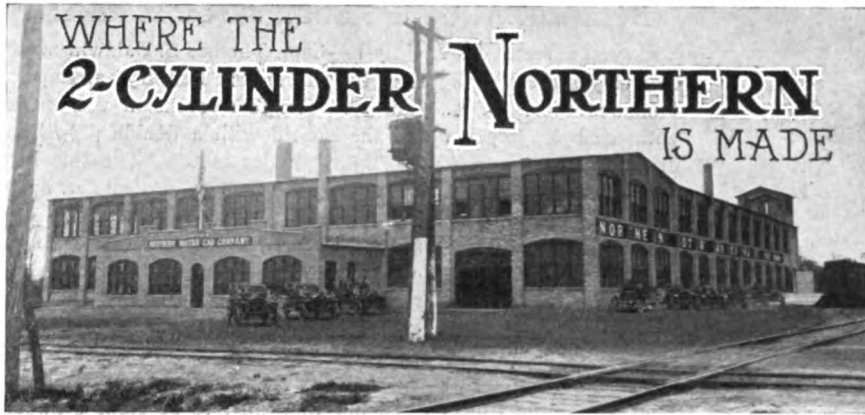
Sixteen events, two of the championship order, have been arranged for the coming Atlantic City meet which will be held on two days in August, the 5th and 6th, and considerable interest is already being shown in the holding of the meet.

The Atlantic City Automobile Club has already announced the details of the week's program, which is to consist of two days racing on Ventnor Beach, Monday and Tuesday, August 5 and 6, followed by a grand floral parade on Wednesday, the route lying along the seven miles of asphalt on Pacific avenue with the grandstand and judges' box at the City Park. This parade is to be one of the chief features of the carnival, and preparations are being made for it on an elaborate scale, handsome prizes for the winners in each class having been donated by the carnival association and local business houses. The week will end with a three days' automobile show.

The racing will be held under the auspices of the local club, which has invited the following well-known autoists to act as the officials of the meet: Honorary referee, Jefferson De Mont Thompson, chairman of the A. A. A. racing board; referee, A. R. Pardington; judges, Raymond Healey, A. G. Batchelder and Alfred Reeves; starter and clerk of the course, F. J. Wagner; assistant starter, David J. Barrett.



THE PRINCESS OF WALES ALIGHTING FROM LORD BLYTHEWOOD'S WHITE STEAMER IN LONDON.



EXTERIOR VIEW OF THE NORTHERN PLANT AT PORT HURON, MICH.

TO anyone not intimately connected with the automobile industry in this country it is extremely difficult if not altogether impossible to form any adequate idea of its extent, and as for looking into the future, even such a short period as half a decade, with a view to gauging its probable expansion in that time, this is something that is beyond even the most expert. Statistics are impressive, to be sure, and appalling rows and columns of figures with their endless ciphers look just as imposing as the most ardent advocate of home industry could possibly wish, but after all they are a meaningless array of numerals that convey little if any definite idea to the casual reader, who generally passes them by with hardly more than a glance.

Pictures speak a far more telling language than do either figures or description, and in this connection the photographs of one of the Northern Motor Car Company's plants, located at Port Huron, Mich., are interesting. This particular plant represents a recent expansive move on the part of the builders of the Northern, whose main works are located at Detroit. In consequence, the new addition is devoted solely to the production of the Northern light cars—the two-cylinder type which have been specialized by this firm for several years. The plant, which is remarkably complete and furnished with the most modern equipment throughout, is in charge of W. H. Hutton, Jr., and during the manufacturing season just past has averaged a weekly production of fourteen cars, which is still being maintained. The photographs show the exterior of the main building, together with a number of the cars in the process of being tried out, also a view down one of the lines of lathes in the machine shop and a corner of the chassis assembling room.

The devotion of an entire plant to the production of but one model, turned out by a firm of builders, is a typical instance of the extent to which specialization is being carried in this field by the American automobile manufacturer, the Northern Motor Car

Company using its original plant at Detroit entirely for the building of the four-cylinder cars made under this name. Such an arrangement facilitates production by confining the attention of the working force in each plant to the requirements of but one type of car, so that all confusion is avoided and it is easier to closely maintain a prearranged system of manufacture throughout every department.

COL. SPRAGUE TO CELEBRATE.

NORWALK, O., July 1.—Everyone knows Colonel Sprague, the man who makes automobile tops, and by this time everyone in the trade knows that he is going to celebrate the glorious Fourth next Thursday afternoon, for the invitations to come and make

merry have been spread broadcast. No details are given, but a good time is promised to everyone who can come, the program calling for a change of performance every ten minutes, and as the invitation, which is in the shape of a flag ornamented cannon-cracker, reads, "there will not be a minute but that you can be in it," so that it is safe to say that anyone who happens to be in Norwalk on the Fourth will have occasion to remember it.

A. L. A. M. PRODUCES A TECHNICAL DIGEST.

Running on the familiar lines of certain literary journals, the "Digest of Current Technical Literature," the first number of which has just come forth under the seal of the Association of Licensed Automobile Manufacturers, presents a résumé of the contents of a number of the technical journals of America and England. According to the introduction of the weekly, of which Coker F. Clarkson has undertaken the editorship, "the Digest is primarily for the use of A.L.A.M. engineers, being intended to furnish in brief form a résumé of what is new or worthy in automobile design and construction." Clippings from journals published in foreign languages are promised in future numbers.

FRENZIED FINANCIER BUYS WHITE STEAMER.

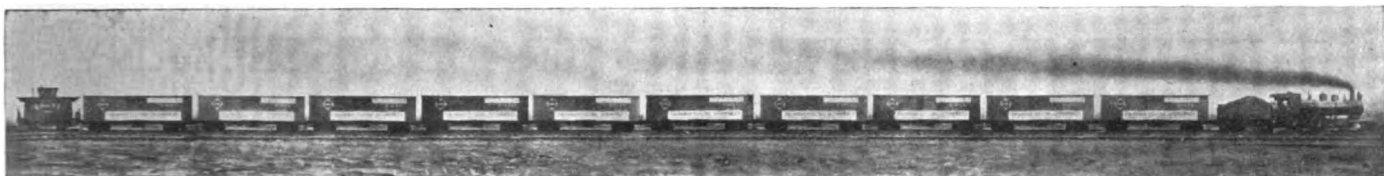
BOSTON, July 2.—Thomas W. Lawson, of frenzied finance fame, who has long been known for his devotion to the horse, has at last succumbed to the charms of the automobile. During his last trip abroad, from which he has just returned, Mr. Lawson did considerable touring in a Mercedes through Italy, and made the run from Nice to Paris in a Mors, whence the order for the White, which is the first car he has owned. In contrast with its name, it is painted a dead black, and is said to be the only car of its color in this city. The car will be used principally for carrying its owner between Dreamwold and his Boston office.



LONG LINES OF LATHES IN THE MACHINE DEPARTMENT.



CHASSIS-ASSEMBLING ROOM AT THE NORTHERN PLANT.



RECORD-BREAKING SHIPMENT OF ELECTRICS SENT FROM THE COLUMBUS BUGGY COMPANY TO A. V. HART, ROCHESTER, NEW YORK.

"BUGGYMOBILE" SCORES A BIG SUCCESS.

When a concern of the size of the Columbus Buggy Company, Columbus, Ohio, takes up the investigation of a thing some interesting and hitherto unrealized facts are likely to be brought to light. C. D. Firestone, the president of the company, sees a large future for the popular-priced automobile—the horseless carriage of the farmer—and the production of the latter is to be undertaken on the same generous scale that has characterized the making of horse-drawn vehicles by this firm for a number of years past. The designer of the new "Buggymobile," as it has been christened, is C. C. Bramwell, who, with his assistant, gave one of the cars a five-day try-out last week. The home stretch of the run, from Indianapolis to Columbus, a distance of 200 miles, was made in the excellent running time of 14 hours 17 minutes, on a consumption of but eight gallons of gasoline and three pints of lubricating oil, despite the fact that the car was kept travelling through thunderstorms that almost amounted to cloudbursts, and the roads were in very bad condition as the result.

The power plant of the new buggymobile consists of a ten-horsepower two-cylinder horizontal-opposed engine of the air-cooled type, which weighs a trifle less than 220 pounds with all its accessories, while the car in complete running order only tips the scales at 700 pounds, so that the proportion of power to weight is very high and easily accounts for its ability to make thirty miles an hour over poor roads. Final drive is by side ropes, controlled by a hand lever, and the cars are equipped with either phaeton or Stanhope bodies, to sell at \$750. That the builders have every confidence in the ability of their production is shown by the fact that they have entered a Buggymobile in the A. A. A. tour, where it will have to compete with some of the highest-priced cars built, and its performance will be watched with considerable interest.

POPE-TOLEDO WINS DISPLACEMENT HANDICAP.

CLEVELAND, O., July 1.—On the occasion of the recent Stucky hill climb, held under the auspices of the Cleveland Automobile Club, it was prematurely announced by the daily papers that Campbell, driving the Darracq, was the special event winner, while a later report of the committee's figuring showed the Stoddard-Dayton to have gained the honor. The event was known as a piston displacement handicap, and it evidently took a great deal longer to figure the relative standing of the cars than it did to run the race, as it is now formally announced that there was an error in the former computation, and that the Pope-Toledo, driven by J. P. Grady, was the winner by a safe margin.

CROSS COUNTRY RUN OF THE BLUE-STREAK.

For the double purpose of proving the reliability and efficiency of the 20-24-horsepower air-cooled motor forming the power plant of the Logan Blue-Streak, as well as to demonstrate the strength and running qualities of the car under high pressure, so to speak, B. A. Gramm, vice-president and general manager of the Logan Construction Company, Chillicothe, O., accompanied by a mechanic, left Toledo on Monday morning, June 24, at 5 A. M., bound for Plymouth, O., the route thus constituting a run across the State of Ohio from Lake Erie on the north to the Ohio River on the south. The car used for the run was taken directly from stock without any special preparation in the way of tuning up and had been sent to Toledo, O., over the roads two days previous, the driver then reporting the latter to be in very poor condition, which was made far worse by continued rains during the day previous to the start.

No attempt was made to spare the car in any way, and despite the extremely bad state of the roads excellent time was made, the first stretch of 32 miles to Bowling Green being covered in 50 minutes, while the total elapsed time for the distance of 252 miles was made in less than 14 hours, stops having been made at eight different towns. A remarkable feature of the run, considering the nature of the going, was the small gasoline consumption, which only totaled eleven gallons. Immediately upon its arrival at Plymouth it was again sent over the road back to Chillicothe, an additional 50 miles, all of which was covered without the necessity for touching a bolt or nut or making the most minor adjustments. The amount of mud encountered throughout the run was so great that the car was literally buried under two or three inches of it and could scarcely be recognized, even by those most familiar with its appearance.

OLDSMOBILE PERFORMS STRENUOUS TEST.

BOSTON, July 2.—In addition to setting up a new track record for 100 miles at Readville on Memorial Day, the Oldsmobile which then carried off the honors was put through a far more strenuous test last week. Driven by A. E. Morrison, the local agent, and with Arthur Adams and Fred Allen in the car, a start was made from here on Wednesday afternoon. New York was reached Thursday morning, and after a stop of but a few minutes the return trip was undertaken, reaching Boston late the same night. The engine ran constantly for thirty-one hours, covering a distance of 500 miles during the entire running of which both the high gear and the bonnet were sealed.



POPE-TOLEDO TESTING CREWS STARTING FROM THE FACTORY FOR THEIR DAY'S WORK.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

A new factory, 80x400 feet, is being erected by the Simplex Motor Car Company, of Mishawaka, Ind. It is expected to be ready in two months.

A 50-horsepower Matheson touring car has been shipped to Raton, New Mexico, for H. A. Ensign, of New York, by J. M. Quinby & Co., of Newark, N. J.

Particulars from abroad show that the first four cars to finish in the German Emperor's cup race were equipped with Truffault-Hartford shock absorbers. They included the winning Fiat, the Pipe and the two Opels.

Orders for one or more cars have been received by the Brush Runabout Company, Detroit, Mich., from every continent, including Europe, Asia, Africa, Oceania, North and South America. The first shipment was made this week.

An increase in the capital stock of the General Accumulator and Battery Company, of Milwaukee, Wis., is being contemplated, and negotiations are pending with a view to contracting for the sale of the entire output for the balance of year.

Two reasons are advanced by the general selling agents for the Genesee tires (the Thomas D. Buick Company, of Flint, Mich.) for the exceptional favor with which the tires have been received by automobilists. One reason given is the plan of selling the tire direct from the factory to the owner, eliminating the middleman's profits, and the other the 5,000-mile guarantee.

New York State registrations for the month of June show that the past thirty days have constituted another record-breaking month, the figures received by the American Motor Car Manufacturers' Association showing that 2,039 cars were enrolled. Of these the Ford again leads with a total of 243, the Cadillac being next with 147 and the Maxwell third with 132.

Departing from its policy of confining the sales of its cars to the neighboring territory, though as a matter of fact many Gaeth cars have been sold outside of Cleveland, the Gaeth Automobile Company has recently placed an agency with the Chicago Garage Company. R. E. Hawkins, a Gaeth owner, has also been appointed sales agent in Cleveland for the car.

Since the amalgamation of the Ajax Tire Makers with the Grieb Rubber Company, and the announcement of Horace DeLisser, president of the company, that a new location was decided upon, numerous efforts have been made by other cities to secure the plant. The company owns its own plant in Trenton, and has a piece of property 350x450 feet alongside the railroad tracks. Announcement of the new location may be expected within a couple of weeks.

In view of the uncertainty of the 1907 Vanderbilt cup race, the Locomobile Company of America is not building a new racing car. This, however, does not mean that the Locomobile will not be a contender in any big road race held this year, because the two racing cars which Joe Tracy had at the Vanderbilt cup course last fall are available. One was the winner of the Elimination and the other, driven by Tracy, made the fastest lap in the race.

The Mora Motor Company, of Newark, New York, has just awarded the contract for the erection of the main building of their new factory to the Voshall-Percy Construction Company, of Rochester. The structure will measure 60x400 feet, a portion of it being two stories high and the remainder three stories. It will cost about \$60,000, and is the first of a series of buildings which the Mora Company will erect at Newark for turning out its cars.

Under the title of the F. N. Motor Club of America, a unique organization has just come into being in New York City, with headquarters at 2208 Broadway. The officers are: President, David Dessau; vice president, Hiram Powers; treasurer, F. V. Littlefield, and secretary, Erik J. Peil. As its name indicates, the membership of the new club is confined entirely to riders of the F. N. four-cylinder motorcycle, weekly runs being held from the club's headquarters every Sunday.

George C. Tyler, Booth Tarkington, and Henry Leon Wilson, now touring Europe on a 45-horsepower Renault, landed the first automobile ever seen in Christiania. Three thousand dollars duty was at first demanded, but finally the machine was allowed to go free, preceded by three policemen to prevent any faster speed than a walk. Telegraph messages had to be sent ahead to arrange a supply of gasoline on the route, and, there being no trains in Central Norway, most of it had to be sent up by boat. It took a week to cover 500 miles. Frequently Norwegian peasants dropped on their knees on catching sight of the automobile.

"The sale of automobiles by letter or catalogue is productive of no results in the Netherlands," says information received from Holland by the American Motor Car Manufacturers' Association. The dispatch states that American cars are little known in Holland, and importers are overflowed with catalogues sent from America. A prominent Amsterdam physician who was attending a recent automobile exhibition in that city asked if motor cars were made in the United States. The A. M. C. M. A. has strongly urged its members to open agencies in this European territory. Ten years ago this was an excellent territory for the American bicycle.

RECENT BUSINESS CHANGES.

The Breeze Carbureter Company, of Newark, N. J., has recently been organized to take over the business of the Breeze Motor Manufacturing Company, and will remove from 28 Main street to 276 Halsey street.

Sports, Limited, has just moved from its old quarters, at Fifty-seventh street and Broadway, to a larger establishment at 2049 Broadway, near Seventy-first street, in the heart of automobile row. This concern, of which John Bogan is the manager, handles the new Royal motorcycle, also the R.-S. motorcycle, in addition to a large line of automobile and motorcycle supplies and sporting goods generally.

NEW AGENCIES ESTABLISHED.

A contract has been made by George K. Wheeler, sales manager of the Columbus Buggy Company, for the exclusive sale of

their Columbus electrics in Porto Rico to Robert Graham, of Ponce.

The Thomas D. Buick Company, of Flint, Mich., general sales agents for the Genesee tires, has opened a branch house in Chicago, at 87-89 Ashland boulevard, near Madison street. L. F. Burges has been appointed branch manager.

An agency for the Mitchell automobile has been opened in Milwaukee, Wis., by Brown & Friend, of Chicago, Ill. The McDuffie garage, on Wisconsin street, has been rented, but will be removed to 148 Eighth street as soon as the new building under construction is ready.

PERSONAL TRADE MENTION.

E. W. Swanbrough, for several years in the automobile business in Denver, has become general manager of the Pacific Coast Automobile Company, Seattle, succeeding C. Z. Salling, who retires because of ill health.

Gaston Rheims, of the C. G. V. Import Company, sailed for France on Thursday in order to arrange for a complete exhibit of this make to be shown at the Importers' Salon, in Madison Square Garden, at the end of next December.

E. E. Allyne, of the Allyne Brass Foundry Company, of Cleveland, Buffalo and Detroit, has gone to Germany, France and England to investigate foreign foundry practices and a new process of melting aluminum. He expects to return in August.

Chester Clark Boynton resigned as secretary and general manager of the Franco-American Auto Supply Company, 1404-1406 Michigan avenue, Chicago, June 1, to take charge of the entire automobile accessory business of the Excelsior Supply Company, 233-237 Randolph street, Chicago. Mr. Boynton assumed his new duties July 1.

NEW TRADE PUBLICATIONS.

Blomstrom "30" automobiles are presented to the public in an illustrated catalogue just issued. Illustrations of the runabout and touring car models, as well as of the engine and transmission, are given. The catalogue can be obtained from the Blomstrom Manufacturing Company, Detroit.

"Automobile Comfort" forms the title of a 16-page booklet sent out from the Ventilated Cushion & Spring Company's headquarters, at Chicago, descriptive of their rough-rider springs. Artistically the book is worthy of attention, and the question of springs is of considerable interest.

"Decidedly Useful" is the verdict which must be passed on the vulcanizer instruction booklet issued by the Auto Improvement Company, of 2128 Broadway, New York City. The explicit instructions and wealth of illustrations should enable any intelligent person to carry out tire repairs with the vulcanizer and tools supplied by this firm.

Something about the dust problem is related in a dainty brochure issued by the Barrett Manufacturing Company, of New York, being in large part an extract from an address by J. W. Howard before the American Road-makers' Association. The booklet sets forth the advantages of Tarvia, the dust layer, and gives particulars of tests made in various parts of Europe and America.

INFORMATION FOR AUTO USERS.

Diamond M Cement and Solution.— Sending a shoe or an inner tube to the repair shop every time it suffers the slightest puncture is not alone highly inconvenient, but very expensive—more so than the average autoist likes it to be when he comes to figure up the total expenditure on this account alone at the end of a season's running.



DIAMOND M TIRE REPAIR OUTFIT.

To avoid the necessity of this Charles E. Miller, 97-99-101 Reade street, New York—the man who handles everything under the sun for the autoist except the complete automobile—has put a special repair kit on the market. It is known as Diamond M Vulcanizing Substitute, and is a cold process, only requiring a cement and curing acid, the complete kit consisting of 1/4 pint of each, with a cement and an acid brush, in a neat containing case. The repair is simply made and produces the same effect as vulcanizing, the acid curing the cement to the rubber, thus making the patch integral and permanent. The Diamond M cement and acid cure solution is also put up in various sizes, ranging from half a pint to a gallon, and may be had from the Miller headquarters in New York or any of the branch stores, located in Cleveland, Detroit, Buffalo, Boston and Philadelphia.

New Winchester Speedometer.— In order to meet the demand for an accurate speed and distance recording instrument at a lower price, the Winchester Speedometer Company, Motor Mart, New York City, have recently introduced a new model of their well-known instrument, to

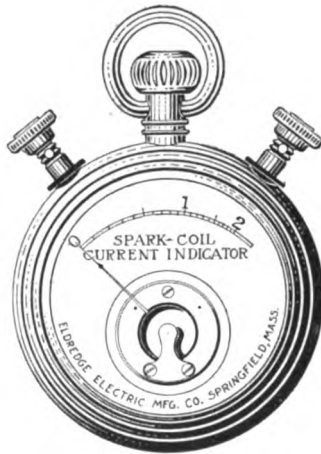


NEW MODEL WINCHESTER SPEEDOMETER.

sell at \$50 complete. Neither the mechanism, material nor workmanship has been changed, and the new instrument incorporates every feature distinguishing the highest priced ones. The sole change consists in the substitution of a smaller odometer—about a third less in size—with a corre-

sponding reduction in the price. The high-speed record hand, showing the maximum speed attained, has also been incorporated in the new model. This auxiliary hand, which is a bright red to distinguish it, is carried by the regular indicating hand to the point representing the highest speed attained, and remains there until released by the touch of a button, when it flies back to the speed that the car is then making, or to zero if the latter be stopped. The new Winchester registers speeds up to 60 miles an hour, maximum speed attained and trip and season mileages.

Advance Coil Current Indicators.— There is nothing that gets so much abuse at the hands of the average autoist as the battery, and next to it comes the coil. In fact, the former is abused on account of the shortcomings of the latter, and the reason lying at the foundation of it all, in the great majority of instances, is the fact that most coils are adjusted by guess-work, or by the sound of the trembler, which is the same thing. To avoid this the Eldredge Electric Manufacturing Company, Spring-

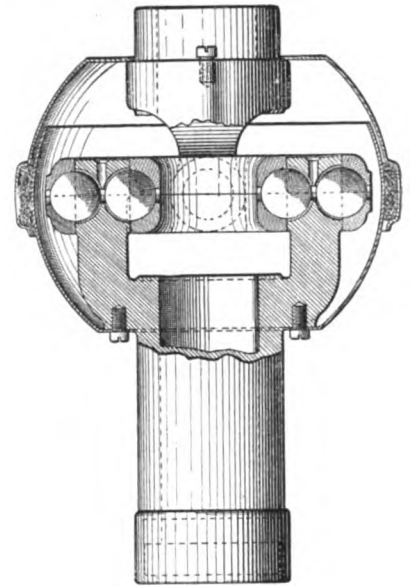


ADVANCE SPARK COIL CURRENT METER.

field, Mass., have brought out the Advance Spark Coil Indicator, for measuring the amount of current consumed by the coil—a service which the ordinary ammeter does not perform satisfactorily. As no coil should ever consume more than two amperes, no matter how poorly it is working, this is the maximum marked on the scale, the calibration being by tenths of an ampere. For convenience in using, the instrument may be connected to the usual switch by means of the double connecting cord furnished, or it may be connected at any point in series with the battery and primary of the coil to be tested. Most coils work best on less than an ampere of current, and a properly adjusted coil means long-lived batteries and troubleless contact points, so that the initial cost of the instrument will be saved several times over in the course of a single season.

K-B Universal Joints.—One of the chief essentials of the transmission of the power on a shaft-driven car consists of a good universal joint, and nothing has served to bring about improvement in this relatively small part of the make-up of the automobile so much as the general adoption of the propeller-shaft drive. The Kinsler-Bennett Company, Inc., Hartford, Conn., who are specialists in this field, have recently brought out a new form of ball-

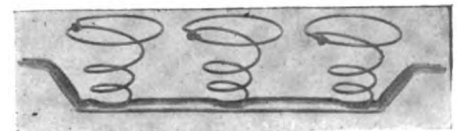
bearing universal joint, which is claimed to have so many points of superiority over most existing forms as to be entirely in a class by itself. As will be plain from the illustrations, this new joint consists of two



SEMI-SECTION VIEW K-B JOINT

plates and two forks, each of the latter having recessed ball seats, with corresponding seats in the plates for receiving the balls between them. All parts are made from drop forgings, and the balls are of the highest grade. Four bolts for holding the parts together and a dust-proof shield, which also serves to retain the necessary lubricant, complete the joint, which may be easily dismantled and reassembled in a few minutes. Each bearing is well provided with oil grooves and vents, so that a single filling of the cover is good for 12,000 miles, or more than the ordinary season's running. Several months were occupied in preparing tools, fixtures and gauges for the manufacture of these universal joints, so that all parts are guaranteed to be interchangeable.

Cardinal Spring Construction.—Absolute perfection is hard to attain, and the makers of this patented form of spring construction for automobile upholstery—the Barber Manufacturing Company, Anderson, Ind., do not claim that they have achieved it, but that their springs give absolute satisfaction, which, in the end, is the same thing. As will be apparent from the illustrations, showing the manner in which the



CARDINAL METHOD OF SPRING ASSEMBLY.

spirals are assembled and held is radically different from the usual type, but also permits of assembling the springs of a cushion in a fraction of the time ordinarily necessary, the base of the spiral is so constructed as to render it impossible for the ring to come in contact with the bar, thus making it noiseless and adding to the capacity of the spring, while the fact that the bars are tempered steel arches and all spirals are made from a high-grade of spiral wire, re-tempered, insures long life under the most severe service.

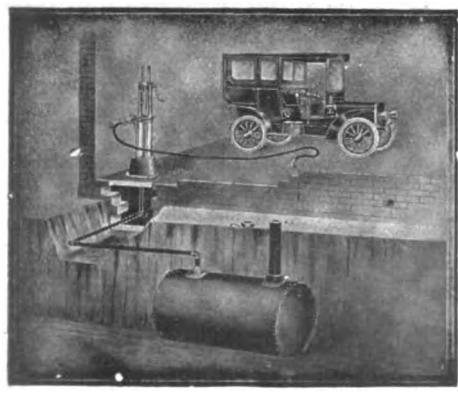
**INDEX
TO ADVERTISERS**

Acetylene Gas Illuminating Co. 47
 Acme Motor Car Co. 121
 Adams Co. 50
 Add-Wear Tire Sleeve Co. 46
 Aero & Marine Motor Co. 70
 Aerocar Co. 100
 Ajax-Grieb Rubber Co. 79
 Allyn Brass Foundry Co. 80
 American Ball Bearing Co. 62
 Amer. Locomotive Auto Co. 122
 American Motor Car Co. 119
 American Motor Truck Co. 115
 American Vanadium Co. 68
 Anderson Forge & Machine Co. 52
 Arc Toledo Spark Plug Co. 47
 Ashtabula Carriage Bow Co. 49
 Ashton Valve Co. 49
 Aster Co., L. 53
 Atlas Mfg. Co. 46
 Atlas Motor Car Co. 114
 Auburn Automobile Co. 50
 Austin Automobile Co. 113
 Auto and Power Appliance Co. 46
 Auto Goods Co. 48
 Auto Improvement Co. 105
 Auto Pump Co. 47
 Autocar Co. 115
 Autocar Equipment Co. 112
 Automobile Supply Co. 105
 Autohine Co. 62
 Avery Portable Lighting Co. 69
 Badger Brass Mfg. Co. 99
 Baird-Banks Mfg. Co. 60
 Baker Motor Vehicle Co. 59
 Baldwin Chain Mfg. Co. 52
 Barnes Mfg. Co. 113
 Barnett Drop Forging Co. 67
 Barrett Mfg. Co. 135
 Bay State Auto Co. 50
 Bay State Goggle Co. 46
 Beaver Mfg. Co. 66
 Beeler & Robb. 66
 Bellfuss Motor Co. 63
 Bemus, T. Alton. 70
 Benford, E. M. 57
 Berkshire Motor Car Co. 50
 Bethlehem Steel Co. 73
 Billings & Spencer. 45
 Blasler Mfg. Co., M. E. 49
 Blomstrom Mfg. Co. 111
 Blomstrom Motor Co., C. H. 50
 Blue Book. 65
 Boker & Co., H. 52
 Bosch, Robert. 59
 Boston Auto Gage Co. 57
 Bowser & Co., S. F. 86
 Boyle & Co., John. 120
 Bridgeport Vehicle Co. 49
 Briscoe Mfg. Co. 52
 Brown, H. W. 55
 Brown & Co., S. N. 49
 Brownell-Trebert Co. 57
 Buckeye Jack Mfg. Co. 66
 Buckeye Mfg. Co. 124
 Buffalo Carburetor Co. 69
 Bullard, J. H. 74
 Bullard, J. H. 83
 Buob & Scheu. 49
 Byrne-Kingston Co. 76
 Cadillac Motor Car Co. 118
 Carr, F. S. 49
 Central Body Co. 49
 Chadwick Engineering Works. 104
 Champlon Co., A. 51
 Chandlee & Chandlee. 60
 Charter & Co. 93
 Clark, E. S. 46
 Cleanola Co. 60
 Cleveland-Canton Spring Co. 63
 Coates Clipper Mfg. Co. 58
 Colgan Co., J. W. 62
 Colt Runabout Co. 114
 Columbia Lubricant Co. 69

Conn. Tel. & Elec. Co. 94
 Conover Motor Car Co. 114
 Continental Auto. Mfg. Co. 115
 Continental Caoutchouc Co. 53
 Continental Motor Mfg. Co. 56
 Corbin Motor Vehicle Corp. 124
 Cornish-Friedburg Motor Car. 125
 Covert Mfg. Co. 48
 Cowles & Co., C. 56
 Craig-Toledo Co. 50
 Crawford Automobile Co. 50
 Crescent Parts Co. 78
 Cullman Wheel Co. 47
 Daimler Mfg. Co. 50
 Darracq Motor Car Co. 123
 Dayton Electrical Mfg. Co. 60
 Dayton Motor Car Co. 1
 Detroit Auto Vehicle Co. 50
 Det. & Buffalo Steamboat Co. 58
 Diamond Chain & Mfg. Co. 116
 Diamond Rubber Co. 91
 Dietz Co., R. E. 88
 Dixon Crucible Co., Joseph. 48
 Dolson Automobile Co. 50
 Dorriss Motor Car Co. 112
 Dover Co., Geo. W. 45
 Dow Portable Electric Co. 70
 Dragon Automobile Co. 101
 Duff Mfg. Co. 62
 Duplex Coil Co. 72
 Edmunds & Jones Mfg. Co. 53
 Elastro Mfg. Co. 80
 Eldredge Electric Mfg. Co. 63
 Electric Vehicle Co. 110
 Elmore Mfg. Co. 125
 Empire Automobile Tire Co. 71
 Ericka Mfg. Co. 46
 Excelsior Supply Co. 46
 Fedders Mfg. Co. 70
 Federal Automobile Co. 111
 Firestone Tire & Rub'r Co. Cover
 Fisk Rubber Co. 84
 Fitchburg Machine Works. 85
 Ford Motor Co. 92
 Forest City Motor Car Co. 113
 Franco-American Auto and Supply Co. 46
 Franklin Mfg. Co., H. H. 50
 G & J Tire Co. 78
 Gabriel Horn Mfg. Co. 80
 Garford Co. 114
 Gearless Transmission Co. 127
 Geometric Tool Co. 85
 General Accumulator & Battery Co. 106
 Gleszler Bros. 75
 Gibney & Bros., Jas. L. 47
 Gilbert Mfg. Co. 49
 Goodyrich Co., B. F. 86
 Goodyear Tire & Rubber Co. 48
 Graves & Congdon Co. 49
 Grout Bros. Auto Co. 50
 Gumelastie Tire Co. 71
 Ham Mfg. Co. 55
 Harburg Tire Co. 47
 Hardy Co., The R. E. 58
 Harrington Lubricant Co. 46
 Harris Oil Co., A. W. 69
 Hartford Auto Parts Co. 62
 Hartford Rubber Works Co. 91
 Hartford Suspension Co. 74
 Hatcher Auto Parts Co. 70
 Havoline Oil Co. 47
 Haynes Automobile Co. 128
 Heald Machine Co. 85
 Healy Leather Tire Co. 47
 Heath Dry Gas Co. 47
 Heinze Electric Co. 77
 Hercules Electric Mfg. Co. 47
 Herschell-Spillman Co. 46
 Herz & Co. 51
 Hess-Bright Co. 52
 Hicks Speed Indicator Co. 110
 Hine-Watt Mfg. Co. 51
 Hoffecker Co. 55
 Hoffman, Geo. W. 47
 Holley Bros. Co. 98

Holsman Automobile Co. 58
 Hol-Tan Co. 54
 Hopewell Bros. 62
 Hotchkiss Mfg. Co. 61
 Hotel Cumberland. 64
 Hotel Garde. 64
 Hotel Greenbrier. 64
 Hotel Niagara. 64
 Hume Carriage Co. Cover
 Huntington Automobile Co. 53
 Hyatt Roller Bearing Co. 66
 Idium Metal Co. 66
 Jackson Automobile Co. 50
 Jeffery & Co., Thos. B. 134
 Jersey Brake Co. 61
 Johnson Sporting Goods Co., I. 53
 Jones, Wm. S. 92
 Kalamazoo Spring & Axle Co. 52
 Kansas City Motor Car Co. 50
 Kellom Co., Chas. F. 61
 Kimball Tire Case Co. 61
 Kinsey Mfg. Co. 52
 Kinsler-Bennett Co. Cover
 Kirkham Motor Mfg. Co. 47
 Konigslow, Otto. 53
 Knox Automobile Co. 118
 K. W. Ignition Co. 94
 Lavalette & Co. 72
 Lear Automobile Co., Oscar. 50
 Leather Tire Goods Co. 97
 Limousine-Carriage Mfg. Co. 49
 Lindsay, Jr., A. M. 48
 Lipman Mfg. Co. 64
 Lobe Pump Co. 47
 Locke & Co. 80
 Locomobile Co. of America. 110
 Logan Construction Co. 4
 London Auto Supply Co. 49
 Long Mfg. Co. 60
 Long & Mann Co. 47
 Loring, E. J. 53
 Lozier Motor Works. 67
 McClellan, Chas. P. 49
 McCord Mfg. Co. 57
 Malone, F. E. 64
 Manhattan Electrical Sup. Co. 66
 Manhattan Lamp Works. 51
 Manhattan Storage Co. 57
 Maple City Mfg. Co. 60
 Martin Import Co. 66
 Marvel Motor Co. 113
 Mason Motor Car Co. 111
 Matheson Motor Car Co. 119
 Maxwell-Briscoe Motor Co. 130
 Mayo Radiator Co. 52
 Merkel Motor Co. 51
 Merritt Co. 46
 Mezger, C. A. 74
 Michigan Top Co. 49
 Midgley Mfg. Co. 52
 Miller Bros. 56
 Miller, Chas. E. 87
 Mitchell Motor Car Co. 50
 Modern Tool Co. 115
 Moline Automobile Co. 50
 Moon Apex Brake Co. 72
 Moon Motor Car Co. 81
 Mora Motor Car Co. Cover
 Morgan & Wright. 83
 Mosler & Co., A. R. 53
 Moss Photo Engraving Co. 82
 Motor Car Equipment Co. 73
 Motorcar Co. 114
 Motz Clincher Tire & Rubber Co. 63
 Muller, Albert. 70
 Murphy Co., G. W. J. 62
 Muttly Co., L. J. 49
 Myers Auto Top Co. 49
 National Brake & Clutch Co. 87
 National Carbon Co. 87
 National Construction Co. 48
 National Motor Vehicle Co. 89
 National Oil Pump & Tank Co. 42
 New England Motor Co. 81
 New York Gear Works. 56
 Niagara Falls Brass Works. 75

No-Match Electric Mfg. Co. 53
 Nordyke & Marmon Co. 50
 Northwestern Storage Battery Co. 63
 Nuttal Co., R. D. 52
 Nutting Machine Co. 62
 Ofeldt & Sons. 47
 O. K. Connector Co. 46
 Old Colony Light Co. 47
 Olds Motor Works. 50
 Oliver Instrument Co. 46
 Ovington Motor Co. 46
 Owen & Co., R. M. 123
 Packard Electric Co. 46
 Packard Motor Car Co. 129
 Pacific Tucking & Mfg. Co. 46
 Page-Storm Drop Forge Co. 66
 Parish & Bingham Co. 52
 Parker, Stearns & Co. 66
 Pedersen Mfg. Co. 47
 Penna. Auto Motor Co. 63
 Perfection Spring Co. 52
 Pfanstiel Elec. Laboratory. 66
 Phila. Steel & Wire Co. 49
 Picrome Hide Co. 47
 Pierce Engine Co. 50
 Pierelli & Co. 50
 Pioneer Brass Works. 52
 Pope Mfg. Co. 117
 Post & Lester Co. 71-47-56
 Potter & Johnston Mach. Co. 85
 Precision Appliance Co. 72
 Prest-O-Lite Co. 108
 Premier Motor Mfg. Co. 133
 Progressive Mfg. Co. 75
 Prosser & Sons, Thos. 61
 Quad Mfg. Co. 69
 Quinby Co., J. M. 49
 Quincy, Manchester, Sergeant Co. 56
 Raimes & Co. 47
 Rainier Co., The. 51
 Rajah Auto Supply Co. 53
 Randall-Falchney Co. 102
 Ranger Motor Works. 110
 Reeves Pulley Co. 71
 Reliance Motor Car Co. 56
 Remy Electric Co. 46
 Renault Freres. 117
 Rex Imperial Leather Co. 49
 Rice Vulcanizing Co., L. E. 70
 Richardson Engr. Co. 51
 Robert Instrument Co. 46
 Roberts Motor Co. 53
 Robinson & Sons Co., Wm. C. 63
 Ross Gear & Tool Co. 52
 Royal Battery Co. 93-96
 Royal Equipment Co. 47
 Royal Motor Car Co. 110
 Rubay, Leon. Cover
 Rushmore Dynamo Wks. 88-89
 Sager Co., J. H. 58
 St. Louis Car Company. 126
 St. Louis Motor Car Co. 112
 Salisbury Wheel Co. 47
 Samson Leather Tire Co. 60
 Schraeder Sons, A. 75
 Shaler Co., C. A. 63
 Shawver Co. 61
 Smith Auto Co. 126
 Smith Co., A. O. 76
 Smith, Cray & Davidge. 112
 Smith Mfg. Co., R. H. 105
 Smith & Sons, S. 120
 Speed Changing Pulley Co. 53
 Split Universal Joint Mfg. Co. 47
 Splittdorf, C. F. 78
 Sprague Umbrella Co. 69
 Springfield Metal Body Co. 49
 Stackpole Battery Co. 76
 Standard Co. 71
 Standard Roller Bearing Co. 47
 Stearns Co., F. B. 51
 Stevens-Duryea Co. 122
 Stewart & Clark Mfg. Co. 103-66
 Streit Machine Co. 53
 Success Auto Buggy Co. 51
 Supplementary Spiral Spring. 55



The Safest Way to Store Gasoline

is the NATIONAL way, is the only economical, safe and convenient way, because there is no danger, no evaporation or waste, the gasoline is in the tank or in the car.

The NATIONAL is the only pump that discharges gasoline at every movement of the crank, it saves one half the labor and one half the time to pump gasoline, there is no evaporation or leakage, the tank is buried underground, the pump may be put in the building in a convenient place. It is the safest way because it meets all of the requirements of The National Board of Fire Underwriters.

The NATIONAL is also adapted to private motorist, also for lubricating oil storage.

Ask for catalogue, it will explain all about the National System.

The National Oil Pump and Tank Co., Dayton, O.

Swinehart Clincher Tire Co... 71	Tucker, C. F..... 46	Waltham Mfg. Co.....132	White Co. The.....131
Syracuse Alum. & Bronze Co. 76	Turner Brass Works..... 71	Warner Instrument Co.....121	Whitlock Coil Pipe Co..... 48
Teel Mfg. Co..... 55	Uncas Specialty Co..... 73	Warner Pole & Top Co..... 49	Whitney Mfg. Co..... 62
Thomas Motor Co., E. R.....116	U. S. Graphite Co..... 81	Wayne Automobile Co.....111	Willitt Eng. & Carburer Co. 68
Thompson, J. P., Sons Co..... 49	Vacuum Oil Co..... 74	Weber Co., O. F..... 46	Winton Motor Carriage Co.....136
Tichnor Motor Car Co.....Cover	Veeder Mfg. Co.....107	Weeber Mfg. Works, C. F..... 51	Witherbee Igniter Co..... 93
Timken Roller Bearing Axle.. 90	Vehicle Specialty Co..... 61	Weed Chain Tire Grip..... 95	Wray Pump & Register Co... 69
Tindel-Morris Co..... 87	Walker Carriage Co..... 62	Welch Motor Car Co..... 51	Wyckoff Lumber & Mfg. Co..106
Trade Directory..... 48	Walker Co., E. C..... 63	Western Malleable Steel Co... 52	Wyman & Gordon Co..... 45
Trebert Gas Engine Co..... 51		Western Tool Works.....111	
Trident Tire Co..... 47		Weston Elec. Instrument Co... 55	York Motor Car Co..... 50
		Wheeler & Schebler.....109	

SPECIAL NOTICES

Advertisements inserted under this heading at 20 cents per line; about 7 words make a line. Remittance should accompany copy. Replies forwarded if postage is furnished.

Cars For Sale

AUTOMOBILE FOR SALE—New, \$2,500 water-cooled, 5-passenger car; 32-h.p., Beaver engine, good reason for selling; guaranteed by manufacturer; no reasonable offer rejected. For particulars address Beaver, care The Automobile, New York.

BUICK TOURING CAR—Fine condition; might take runabout or car of less power in trade. 426 Union Ave., Bridgeport, Conn.

CADILLAC—Light, side entrance touring car, with extra runabout body; overhauled and repainted. Address Opportunity, care The Automobile.

CHADWICK 1907 cars are all sold. We want to clean up for 1908 business, and offer the following at prices which should sell them at once: 1906 Chadwick, 50-h.p., brand new; 1906 Chadwick, 50-h.p., refinished like new; both cars guaranteed one year; one Panhard 30-passenger wagonette; one 24-h.p. Locomobile. Chadwick Engineering Works, Spring Garden and 32d Sts., Philadelphia, Pa.

GET WISE—We have anything you want in second-hand cars—Packard, Winton, Locomobiles, White steamers, Franklins, Buicks, Oldsmobiles—and bargains at that! Get our list for March. The Sid Black Automobile Co., 630 Walnut St., Cincinnati, Ohio.

GREATEST BARGAINS in used automobiles ever offered in this country; 100 different styles. Tell us about what you want and we will send you descriptive matter. C. A. Coey & Co., 1424 Michigan Ave., Chicago, Ill.

HAYNES—40-h.p., Model K, 1906; I have two; \$1,350. Charles E. Pelton, Lowville, New York.

MARMON MODEL D—1906; air-cooled; 30-h.p.; Rushmore lights, Sprague top, speedometer, 3 extra tires; machine just overhauled under owner's supervision; is in excellent condition; price asked, \$2,000; cost \$3,300. E. H. Bancker, 92 Third St., Brooklyn, N. Y.

OLDSMOBILE—In fine shape; top and all accessories; \$225. Geo. S. Dales, Akron, Ohio.

PACKARDS, Reos, Cadillacs, Fords, Tolledos, Maxwells, Locomobiles, Olds, Knox, Wayne, Franklin, Autocar, Pope, Hartfords, Yale, Peerless, Thomas, Buicks, Winton, Pierce, National and many others; every one a bargain and you get a square deal. The Starlin Company, 1094-1100 Main St., at St. Paul St., Buffalo, N. Y.

PIERCE STANHOPE—6½-h.p., with leather top; entire car, including tires, in perfect condition; price \$200. Meech & Stoddard, Inc., Middletown, Conn.

POPE-TOLEDO—35-h.p. touring car; good condition; side entrance; used two seasons; cost, new, \$4,000; price reasonable. N. N. Hill, East Hampton, Conn.

POPE-TOLEDO—1905, 35-h.p., for sale; has folding top, with storm curtains, French glass wind shield, Hartford suspensions, Gabriel horn and 8-day clock; tires in excellent shape; demonstration on request. Mr. Covell, Central Park West and 110th St., New York.

RAMBLER—16-h.p. touring car, good as new; '04 model, full equipped; \$450. F. W. Jackson, Holland, Mich.

RAMBLER TOURING CAR—Five-passenger; splendid condition; canopy top, glass front, and side baskets; \$500 cash. Speed Changing Pulley Co., Indianapolis, Ind.

ROYAL TOURIST—1906; gas and side lamps, speedometer, recently repainted; in first-class order. 724 E. & B. Bldg., Rochester, N. Y.

RUNABOUT—1907, high powered, for sale; cost \$3,750, sell for \$2,750; perfect condition; run only 3,000 miles. McCaffery, Mors Garage, Broadway and 54th St., New York City.

STEVENS-DURYEA—Model R, 1906 touring car; new Aug. 1; owner has bought 6-cylinder, same make. Box 1483, Springfield, Mass.

STEVENS-DURYEA—Three second-hand, 2-cylinder runabouts, \$650 to \$900; three second-hand 4-cylinder Stevens-Duryea touring cars, \$1,500 to \$2,000; all these cars thoroughly overhauled by factory experts and are in first-class condition; they were taken in trade for new models. R. R. Kimball, 2026 Farnam St., Omaha, Neb.

TRUCK—One 6-cylinder for sale; 35-h.p., 2½-ton truck, body to suit, price \$2,000, fine new job; also one 11-passenger pleasure car, 4 individual seats, 7 in tonneau, 25-h.p. opposed engine, everything new and first-class, price \$2,000, top and curtains. Watrous Auto Works, Elmira, N. Y.

WINTON, MODEL K—1906 Model, 30-h.p., like new; fully equipped; top; guaranteed perfect; to close quickly, price \$1,100. H. O. Koller, 26 S. Fifth St., Reading, Pa.

WINTON, MODEL M—1907, new 40-h.p., with top, lamps, etc., cost \$3,725; will sacrifice for \$3,000 cash; can inspect at Winton Garage, 70th and Broadway, or inquire C. Thorne, 30 Pine St., New York.

WHITE STEAMER—Brand new 1907 model, for sale at a bargain. Address E. S. Youse, Reading, Pa.

WHITE STEAMER—1905 model, with 1906 burner, 1907 pumps, new thermostat; driven 4,000 miles; now being assembled after a thorough overhauling by the owner; if in the market for a White car, it will pay you to investigate further. H. W. Beach, Montrose, Pa.

WHITE TOURING CAR for sale; 1907 Model H; color, maroon; has black pantasote cape top, acetylene lamps, extra shoe, two tubes, tire holders, Warner speedometer and full equipment of tools; car in excellent condition; run about 1,500 miles. Demonstrations by applying to Peerless Motor Car Co. of New England, 178 Columbus Ave., Boston.

WHY auto prices vary at different places—The small dealer has to make expenses and profits off a few sales; he is compelled to ask high prices; those who buy to sell again naturally rush up the selling figures; with us selling on 5 per cent. commission, with no charge for storage, necessitates the sale of a car almost as soon as it is consigned to us; to sell quick, prices must be low, and this is why our selling figures are from \$200 to \$800 less than others ask. Tonneaus and touring cars: Panhard, 4-cylinder, semi-limousine, \$1,250; Packard detachable tonneau, \$1,000; Fiat, 4-cylinder, \$2,000; Corbin, 4-cylinder, \$1,000; Aerocar, 4-cylinder, \$1,500; Buick, \$650; Reo, \$575; Yale, \$550; Thomas, 50-h.p., \$1,250; Locomobile, 4-cylinder, \$1,250; Wayne, 50-h.p., \$1,600; Pope-Toledo, 4-cylinder, \$1,800; White steamer, \$700. Most of the above cars have tops, horns and full lamp equipments. Runabouts and electric: Decauville, 4-cylinder, practically new, \$950; Decauville, 2-cylinder, \$350; Duryea, \$300; Knox, \$300; Pierce-Arrow, \$300; Crestmobile, \$275; Buckmobile, \$350; in electric we have very handsome brougham, \$950; stylish Cabriolet, \$750; Baker runabout, \$350; Ajax, \$250. Other tonneaus \$250 up, and runabouts \$150 up. To secure extra low prices make bid on the car you like; if the owner is especially hard pressed for cash, he is likely to accept your offer. Manhattan Storage Co., Largest Auto Dealers in the

World, 334-340 W. 44th St., two blocks from 42d St. station 9th Ave. "L"; three blocks from Broadway, New York City.

YALE TOURING CAR for sale; big bargain; in first-class shape, newly painted, good tires, thoroughly overhauled, top, with storm shield of glass, 2 gas lamps and generator, 2 oil side lamps, large tail lamp, clock, mechanical driven oiler, all tools; is a very desirable car of 18 to 20-h.p.; have another car, no use for two; \$600 will buy. E. E. Ritter, Milton, Pa.

Cars Wanted

RUNABOUT, 4-cylinder, wanted; of first-class make, with rumble seat. I have a first-class 2-cylinder, 14-h.p. delivery wagon, as good as new, which I wish to make a trade; this delivery wagon cost \$1,400. Address F. J. H., care The Automobile.

TOURING CAR, 4-cylinder, wanted, or runabout; also an air-cooled motor and 2-cylinder motorcycle. "Motorcycle," care The Automobile.

WHITE STEAMER, Model H wanted; state condition and quote lowest price for spot cash. Metal Stamping Co., Jackson, Mich.

Parts and Accessories (FOR SALE)

ASTER MOTOR—24-30; suitable for automobile or launch; complete with transmission gear and clutch, La Coste coil, Lukenheimer oiler, Langmere carbureter, low-tension magnet, spark plugs, etc.; brand new, never run; cost, duty paid, \$2,300; will sell for \$1,300. Glasgow, 565 Washington St., Buffalo, N. Y.

AUTO TOPS from \$25 up; also recovering and repairing; prompt and satisfactory service and lowest prices guaranteed; a specialty of automobile upholstery. Paris Auto Top Co., 312 West 52d St., New York City. Phone, 6444 Columbus.

BODY for late Locomobile for sale, with close front seat, suitable for Locomobile steamer or Stanley; price \$10. One 18-inch Stanley burner, second-hand, perfect condition \$15. One set of emergency hub brakes for Stanley runabout. Portland Garage Co., Portland, Me.

GOGGLES FOR SALE—A short time ago we purchased a large lot of this season's new four-way leather goggles lined with green silk and elastic adjustable band; the regular price of these goggles is \$2.50 per pair; upon receipt of \$1.00 we shall be pleased to mail a pair to any address; an additional eight cents insures registered delivery. Parkway Garage Company, Central Park, West, and 110th St., N. Y. City.

HISEY cylinder grinder; electric; same as new; \$35. Box 68, Cambridge, Md.

SEARCHLIGHT—Cost \$30; made by American Lamp Co.; complete with swivel bracket, ready for immediate attachment; size, 9-inch glass, copper finish; lamp never used, as owner has no way for attaching same on his car, his reason for selling; first certified check received for \$20 insures delivery of lamp; can be returned if unsatisfactory. Mr. Fenker, Central Park, West, and 110th St., New York City.

TIRES—Two Le Marquis studded tires, 3 1-2 by 34, brand new, \$40 each, or \$75 for the pair. D. W. Romaine, 225-227 Mercer St., Jersey City, N. J.

TIRES HALF PRICE—Diamond, 34x4; also 34x4 1-2. H. Russell, P. O. Box 146, Portland, Me.

TIRES—New and second-hand always in stock at liberal discounts; shoes recovered; blowouts repaired. Bailey treads applied, etc. Call 5384 Columbus, or write Broadway Rubber Tire Works, 1902 Broadway, New York.

TIRES—We sell any tire on the market; new casings at the following prices: 28x2 1-2, \$9 each; 28x3, \$17 each; 30x3 1-2, \$20 each; 32x4, \$26 each; 34x4, \$27 each; other sizes and tubes in proportion. Chicago Vulcanizing Co., 1463 Michigan Ave., Chicago, Ill.

TIRES—Don't buy without getting our prices. We are closing out a stock of 2,000 standard clincher tires at half price. Guaranteed to be absolutely new and in perfect condition. Special discount to dealers. T. J. Peterson Co., General Offices, Security Building, Chicago, Ill.

TIRES—Second-hand tires and tubes always on hand; vulcanizing in all its branches; recovering a specialty; leather non-skid tires recovered and warranted to run 2,000 miles; write for price list of repair work. N. Y. Steam Rubber Tire Repair Works, 306 West 52d St., New York. Phone, 3018 Columbus.

Situations Wanted

BRANCH MANAGER wants position as branch manager, salesman or factory representative; have had seven years' practical experience in one of the largest automobile factories, and recently manager of a large agency; my personal sales exceeded \$400,000 last season; open for a proposition for '08 contract. Address "Sales Manager," care The Automobile.

MANAGER, SALESMAN and publicist by man of 20 years' experience in every department of the Metropolitan carriage business; at present well connected, but as high as place will permit; can make good. Fidebus, care The Automobile.

Help Wanted

FACTORY MANAGER—For a large, high-class automobile factory; must have a good mechanical and business education. Address Manager, care The Automobile.

SALESMEN WANTED, calling on the automobile trade, who are looking for a good side line, to write The Kent-Spark Plug Co., 621 Broadway, New York City.

Insurance

INSURANCE for motor cars against every risk, including fire, explosion, self-ignition, theft, collision, accident, transporta-

tion, perils and other damage; cars insured anywhere in the world by the kind of "Policies that Protect," at the lowest rates of premiums; automobile ball bonds to cover all States. Dixie Hines, Times Building, New York City.

INSURANCE for automobiles—Broad, safe, policies at lowest prices; insurance against fire, self-ignited explosions, transportation hazards, theft, etc.; best service guaranteed, no matter where insurer is located. For particulars address H. W. Beals, 76 Williams St., New York City. Phone, 3052 John.

Miscellaneous

COMPLETE electric charging machine for sale; charges 42 machines at once. Apply Johnson, 55 Hudson St., Jersey City, N. J.

CONSULT the Bryant Garage if you want to buy, sell or rent an automobile. The garage service is unexcelled. 50 to 56 W. 43d St., Telephone, 2900 Bryant, Manhattan, New York.

DRAFTSMAN—Thorough and complete course of instruction in automobile design and construction prepared and conducted by E. Favery. Fundamental elements of design; formulae; applications; latest practice of American and European builders. Information impossible to obtain elsewhere; of greatest benefit to designers, draftsmen, engineers, salesmen and others desiring thorough knowledge of automobile design and construction. Instruction in class room or by mail. Prospectus on request. New York School of Automobile Engineers, 146 West 56th St., New York.

GARAGE and automobile for sale; city of 700,000; good business; good reason for selling. Dumas, Jeweler, Manchester, N. H.

GARAGE FOR SALE—Whole or part interest in best located and finest equipped garage and repair station in Buffalo. Address Garage, Gen. Delivery, Buffalo, N. Y.

GARAGE FOR SALE—Or partner wanted; garage without doubt the finest in all Indiana; four agencies and thirty regular boarders; \$4,000 required. C. A. C., care The Automobile.

MOTORCYCLES FOR SALE—One Orient, \$45; one '05 Marsh, \$85; one '06 Marsh, \$95; one '06 Marsh, with Bosch magneto, \$135; one Thomas auto-bl, nearly new, \$100; one new Curtiss double-cylinder, 5-h.p., ball-bearing motor and two coils, \$85; several other bargains. Cornwall Garage, Cornwall, N. Y.

TIRES REPAIRED—Automobile owners, do you want your tires repaired or recovered by people who know how? Give us a

trial, and be convinced. Inner tubes vulcanized at short notice. Jungking & Vogler, 158 Chambers St., New York City. Telephone, 3386 Cortlandt.

SEND your auto tires to Franklin Vulcanizing Works, 1055-57 Grand Ave., Chicago; complete equipped shop; retreading a specialty.

TO EXCHANGE—Pope-Hartford, perfect condition, at a fair valuation for new car of same make or Oldsmobile, Franklin, Stoddard-Dayton or other car in same class. Address Box 224, Richfield Springs, N. Y.

Official Automobile Blue Book

Now on Sale

For full
particulars
see page
65

FOR WANT ADVERTISEMENTS—USE THIS BLANK

[DETACH HERE AND ENCLOSE WITH REMITTANCE]

THE AUTOMOBILE

FLATIRON BUILDING
NEW YORK

190

Gentlemen: Enclosed find copy for our Advertisement for insertion in the SPECIAL NOTICE Columns of THE AUTOMOBILE.

Please run this advertisement for _____ insertions.
20 cents per line for ONE insertion [7 words to the line].

[WRITE ADVERTISEMENT HERE]

Name _____

[Give Address in full] _____

Address may be given care of The Automobile and replies will be forwarded.

PROMINENT AUTOMOBILE AGENCIES

NEW YORK CITY

BAKER ELECTRICS *G.E.R.
C. B. RICE
Phone, 2830 Col. 1790 BROADWAY

ELMORE *G.R.
A. ELLIOTT RANNEY & CO.
Telephone Connection. 1851 BROADWAY

POPE AUTOMOBILES *G.E.R.
A. G. SOUTHWORTH
342 Flatbush Ave., 10 Clinton St., 811 Union St.
BROOKLYN N. Y.

GARAGE CARDS
Cost Nominal. Service Unquestioned.
Address THE AUTOMOBILE,
FLATIRON BUILDING NEW YORK

OFFICIAL AUTOMOBILE BLUE BOOK
Now on Sale—See Page 65.

BOSTON

ACME *G.R.
BOSTON MOTOR CO.
Phone, Tremont 2. 44 COLUMBUS AVE.

APPERSON *G.R.
GEORGE M. BROWN
Phone, 192 Tremont. 43 COLUMBUS AVE.

DEERE
BOND BROS. COMPANY
Tel., Ox 3286. 10 COLUMBUS AVE

JACKSON
E. P. BLAKE CO.
Phone, 767 Hay. 15-23 Hawkins St. and Motor Mart

*NOTE.—Letters in upper right-hand corner of each card indicate as follows: G—Garage or storage facilities, E—Equipped to charge electric vehicles, R—Repair shop.

NEW JERSEY

JACKSON
ESSEX AUTOMOBILE CO.
Phone. 9-11-13 LOMBARD ST., NEWARK

CHICAGO

JACKSON *G.R.
RALPH TEMPLE AUTO CO.
Phone, Harrison 2933. 309 MICHIGAN AVE.

NEW ENGLAND

JACKSON
E. P. BLAKE CO.
15-23 Hawkins St. and Motor Mart
Phone, 767 Hay. BOSTON, MASS.

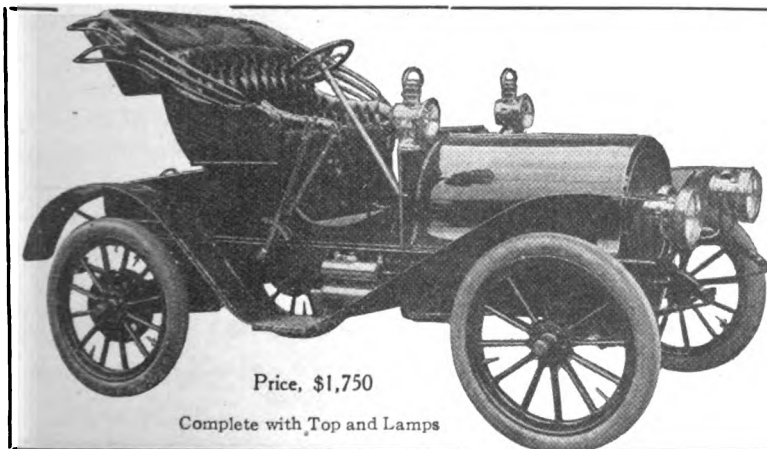
The Practical Gas Engineer

WHAT TO DO AND HOW TO DO IT. A book of pages neatly bound in cloth. Sent postpaid for \$1.00. Address The Automobile, Flatiron Building, New York.

HIT HARD
you can't break it.
WE KNOW HOW TO MAKE THEM
TOUGH.
DROP FORGINGS
The Wyman & Gordon Co.
WORCESTER, MASS. CLEVELAND, OHIO.

*Don't fail to see the improved
B & S Steering Connections
new Catalog ready
The Billings & Spencer Co.
Hartford, Conn.*

Turned and Screw Work
of every description for Auto Use, from 1-in. dia. down
QUICK DELIVERIES
GEO. W. DOVER CO.
80 Clifford St. (Automatic Dept.) PROVIDENCE, R. I.



Price, \$1,750

Complete with Top and Lamps

Crown Prince of the Honk-Honk Kingdom!

THAT'S THE

Logan "Blue-Streak"!

A-1 FROM CRANK TO TAIL LAMP.

20-24 H.P. AND IT'S ALWAYS THERE
NOISELESS, SIMPLE IN CONSTRUCTION, EASY TO OPERATE.
THE NONPAREIL OF RUNABOUTS.

IT'S MADE BY

The Logan Construction Company
AT CHILLICOTHE, OHIO

Write for Catalogue.

OUTFITS AND SUPPLIES

The REAL THING for TOURING

FOLDING LUNCH BOX PATD

TRADE MARK REG. IN U.S. PAT. OFFICE

NOT A LUXURY A NECESSITY

WRITE FOR PRICES

ATLAS MFG. CO. HAMPTON, N.H.

ROBERT POCKET METERS
For general battery testing

Dead-Beat Accuracy, Durable, Guaranteed Discount to trade. Send for catalog

Volt-Ammeters

0-8 Volts, 0-30 amperes	\$6.00 Insl. leather case
0-6 Volts, 0-30 amperes	" " " " " "
0-12 Volts, 0-30 amperes	" " " " " "

Ammeters

0-30 amperes	\$4.00 Insl. leather
--------------	----------------------

Volt-Meters

0-8 Volts	\$4.00 Insl. leather
0-6 Volts	4.00 " " " "
0-12 Volts	4.00 " " " "

ROBERT INSTRUMENT CO.
66 Shelby St., Detroit Mich.

O. K. BATTERY CONNECTOR



Spring tension gives positive contact and with sharp end of wire holds nut from loosening. Solid wire with coils allows free flow of current with no loss. No solder needed. Samples by mail, 10c., or \$1.00 per dozen.

O. K. CONNECTOR CO.

51 Waldo Street Worcester, Mass.

EXPANDED METAL

LOCKERS

Sheet Steel Material Closets

MERRITT & CO.

1045 Ridge Ave., PHILADELPHIA, PA.

The "Auto-Power" DISTRIBUTER intensifies spark, operates multiple cylinder engines with single induction coil, and is simple, compact and durable. Will send on 30 days approval to responsible parties.

THE AUTO AND POWER APPLIANCE CO.
Cleveland, Ohio

CLARK Specialties for Steam Cars

Hill Climbing Pump for 03-04 White Steamers

Sent complete, easy to attach

Satisfaction guaranteed

Edward S. Clark, Dorchester, Mass.
272 FREEPORT STREET

EVERYTHING IN AUTOMOBILE SUPPLIES

EXCELSIOR SUPPLY COMPANY

COMMERCIAL TIRES, SPARE TIRES, PNEUMATIC TIRES, SPRING COILS, KINGSTON HOLLER and SCHUBERT CARBURETORS

Solar, Gray & Davis, F. J., and Excelsior Lamps, Weed Tire Chain Grips, Auto Clothing, Hairs, Goggles, etc., etc.

Excelsior Soot-Proof, Sta-Rite, etc. Pipes, Cables, switches and terminals.

Get our New Catalogue, No. 52, just out - showing many new and standard accessories for automobiles.

CHICAGO ILL.




Soap News

Interesting dirt problems do not seem difficult when "Ericka" Hand Soap is used. Genuine bears green label and is registered.

SPRINGFIELD MASS.

At all Auto Stations



SEE MORE AMBER GOGGLES

Softens dazzling light, gives restful effect and perfect fit. Recommended by Oculists. \$1 prepaid, including case and stick of anti-steam. 50c. reduction if you mention The Automobile.

BAY STATE GOGGLE CO., 115 Walnut St., MALDEN, MASS.

Are You a Prospective Buyer?

If so, perhaps you want to commence auto-billing by buying a good second-hand car. We have at all times a variety of good used cars on hand, ranging in price from \$250 to \$2,500. We have options on every make of machine. Write us what you want and how much you are willing to invest. With every car we sell we give "Weber Service," which means a square deal.

ORLANDO F. WEBER CO., 1320 Mich. Ave., Ch'go

Add-Wear

Attached and Detached Treads
Add-Wear Tire Sleeves

ADD-WEAR AUTO TIRE SLEEVE CO.
N. ATTLEBORO, MASS.

Packard Cable

and Dependable Automobiles "are birds of a feather"



THE PACKARD ELEC. CO., WARREN, O.

WHEN WRITING TO ADVERTISERS PLEASE MENTION THE AUTOMOBILE.

F. N. MOTORCYCLE

4-CYLINDER

Flexible Bevel Gear Transmission.

SIMMS-BOSCH High Tension Magneto, Shock-absorbing Front Fork. Write for prices.

OVINGTON MOTOR COMPANY

Sole Am. Agents Fabrique Nationale Co. of Belgium

2382 Broadway, New York City

VIBRATION

Has no Effect on This Line of OIL HOLE COVERS

Dust Proof, Oil Tight, All AlBe


MADE LIKE A VALVE

Send Specifications for 1908 Cars

C. F. TUCKER
HARTFORD, CONN.

Agent Pacific Coast: C. Ducommun, Los Angeles, Cal.

Foreign Agents: Fenwick Freres, Paris; Burton, Griffiths, London.




"Remy Magneto"

Means absolute reliability of the ignition system.

Investigate for your 1908 car.

REMY ELECTRIC CO., Anderson, Ind.



Expert Tire Repairing

In largest tire factory in New York City.

Tires called for and delivered.

HEALY LEATHER TIRE CO.,
1906 Broadway, 90 Gold St., New York

SUBSCRIBE FOR THE AUTOMOBILE WEEKLY—\$2.00 PER YEAR

HARRINGTON OILS

and GREASE for Automobiles and Motor Boats.

Do not smoke. Do not smell. Do not Carbonize in the Cylinder. Reduces friction to a minimum.

HARRINGTON LUBRICANT CO.
Tel. 3878 Col. 1691 B'way, N. Y.



Herschell-Spillman Company

MANUFACTURERS OF AUTOMOBILE AND MARINE GASOLINE MOTORS

NORTH TONAWANDA, N.Y., U.S.A.

FRANCO-AMERICAN AUTO & SUPPLY CO.

SOLE AGENTS

LOOK BATTERIES

AND

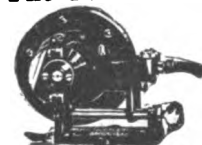
BELL PUMPS

1404 Michigan Ave. Chicago

The P. T. C. Power Tire Pump

No labor—no trouble—start the pump, watch the gauge and stop when proper pressure is attained. Write for full particulars

THE PACIFIC TUCKING & MFG. CO.,
471-473, 18th Street, Brooklyn, N. Y.






SEE The Rollers
 1. Rolls inside Rim.
 2. Rolls on top of Rim.
 3 & 4 Rolls on Tire Bed
 The Minute Adjuster for Clincher tires
LONG & MANN CO.
 521 Central Bldg
 ROCHESTER, N. Y.
 Pat. Apr. 4, 1905. Other Patents Pending.

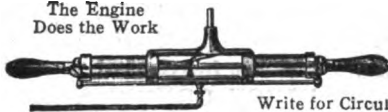


METAL POLISH
 Highest Award Chicago World's Fair, 1893.
 Louisiana Purchase Exposition, St. Louis, Mo., 1904.
 3-oz. Box for 10 cents. Sold by Agents and Dealers all over the world. Ask or write for FREE samples.
 5-lb. Pails, \$1.00.
GEO. W. HOFFMAN
 Expert Polish Maker
 Indianapolis, Indiana.
 Sold by Dealers.
 New York City Office, 133 Park Row.

The Kirkham Motor Mfg. Company
 Manufacturers of
HIGH GRADE Gasoline Motors, Transmissions, Clutches, Etc.
 Write for Catalogue. Prices right.
THE KIRKHAM MOTOR MFG. CO.
 BATH, N. Y., U. S. A.




F. W. OPELDT & SONS
 Nyack-on-the-Hudson, N. Y.
 MANUFACTURERS OF
 Blue Flame Kerosene Burner
 Safety Water Tube Boiler
 Automatic Water Regulator
 Automatic Fuel Regulator
 Feed Water Heater
 Compound Steam Engines
 Our Kerosene Burner work to perfection on White Steamers.

THE SPENCER GIANT AIR PUMP
 The Engine Does the Work

 Write for Circular
THE AUTO PUMP COMPANY
 14 Main St., SPRINGVILLE, N. Y.

Don't trust the ordinary repairman with high-grade tires. Send them to us for efficient workmanship.
 Imported stock of every variety.
Harburg Tire Company
 232 WEST 58th STREET, NEW YORK



You Have Perfect Control if your car is equipped with the **RAYMOND BRAKE**
 It will stop anything on wheels, and does it quickly too.
Royal Equipment Co.
 155 Housatonic Ave., Bridgeport, Conn.

CULLMAN SPROCKETS

 and Differentials in stock and to order also. Baldwin, Diamond and Whitney Chain
 Send for new Catalog.
Cullman Wheel Co.
 1027 Dunning St., Chicago

ANNOUNCEMENT
 "Standard Alloy Steel Balls" made of alloy steel will be ready for delivery by or before June 1st.
 Double Crushing Strength Ordinary Balls. 3-4 inch crucible steel balls, crushing strength 50,000 to 56,000 lb. 3-4 inch "Standard Alloy" steel balls, 95,000 to 100,000 lbs. Guaranteed true to .0001 inch in diameter and sphericity.
 PRICES QUOTED ON REQUEST
STANDARD ROLLER BEARING COMPANY
 Cor. 50th St. and Lancaster Ave., Philadelphia

PEDERSEN OILERS
 Have proved their superiority.
 Ask your dealer or write
Pedersen Manufacturing Co.,
 1st Ave. and 37th St., New York

IMMUNITY HIGH DUTY OIL GASOLINE WATER PROOF IGNITION CABLE

 THIS CABLE IS MADE OF PURE PARA GUM ESPECIALLY FOR MOTOR USE
 USED BY PRINCIPAL MOTOR CAR MAKERS
THE POST & LESTER CO. HARTFORD CONN.

SUPPLIES
 OF EVERY DESCRIPTION FOR AUTOMOBILE AND MOTORIST
 Send for Illustrated Catalog and Price List
JAS. L. GIBNEY & BRO.
 211-213 N. Broad St., PHILADELPHIA, PA.

The Carbureter that Carburets
 For the Why and Wherefore Write
Heath Dry Gas Co.
 1937 Broadway
 NEW YORK CITY


CANDY CARBIDE
 For FRENCH AUTO LAMPS (Impregnation dans le vide)
 Packed only in 10 lb. cans. Price, \$2 each
 Discount to Dealers in case lot of 12 cans
 SOLE MANUFACTURERS
ACETYLENE GAS ILLUMINATING CO.
 105 Walker Street, New York

Spicer Universal Joints
 Dust Proof—Oil Tight
Ryder Spark Generator
 No Batteries, Spark Coils or Moving Wires or Contacts of any sort.
K. F. PETERSON THOS. J. WETZEL
 166 Lake St., Chicago 29 W. 42d St., N. Y.
Spicer Universal Joint Mfg. Co.,
 7 Madison Avenue. Plainfield, N. J.

STAR MAGNETOS
 For Automobile and Marine Engine Ignition
 Our highest aim, efficiency, durability, reliability. Economical in saving 25 per cent. gasoline. The equal of any American or Foreign magneto on the market.
 Sent on trial. Send for catalog.
HERCULES ELECTRIC CO.,
 706 Langdale Ave., Indianapolis, Ind.

YOU CAN ACCOMPLISH WITH
"GLOBE" METAL POLISH
 WHAT YOU CANNOT DO WITH ANY OTHER. TRY IT. YOU'LL USE MORE
Ralmes & Co., 50 Ferry St., New York

TRIDENT TIRES
 Can't Rim-cut, Creep, Slip or Blow-out, and are guaranteed to be all but wear and foolproof.
 Our Booklet No. 16 tells a new tire tale. You'd better write for it.
TRIDENT TIRE CO., 1593 Broadway, New York



Why Do You Wait?
 Are you afraid to invest \$1.50 in an **ARC-TOLEDO?**
 See the points? We have THE PLUG because it gives the results
The Arc-Toledo Spark Plug Co.
 114 Mich. St. TOLEDO, OHIO



Lobe Rotary Pump
 Well adapted for Oldsmobile and other makes, works with any type of radiator. Easily attached. Write for prices.
LOBE PUMPCO.
 120 Terrace, Buffalo, N. Y.
C. E. MILLER, Agent
 79 Beede Street, New York

QURIDE
 (REGISTERED)
FILLED GEARS
 ARE SILENT RUNNING
 Let us tell you more about "QURIDE"
Picrome Hide Co., Syracuse, New York


SALISBURY WHEEL & MFG. CO.
 EXCLUSIVE MANUFACTURERS OF
Automobile Wheels and Axles
JAMESTOWN, N. Y.

Costs LEAST by the MILE

HAVOLINE MOTOR OILS
HAVOLINE OIL CO. New York City
 80 Broad St. Retail Branch, 1906 Broadway

Puritan Gas Tanks
 Ample Facilities for Recharging All Sorts of Tanks Promptly. Retail Price, \$30.00
 More gas for less money. Manufactured by
THE OLD COLONY LIGHT CO.
 MOTOR MART, BOSTON
 We protect sellers and users.


"Under the Glass Dome"
 You'll have no trouble with
The Lindsay Timer and Distributor
 Entire interior of machine including adjustable spark gap and secondary distributor always visible. Connections entirely protected, secondary parts thoroughly insulated. Every machine carefully tested.
 Write for folder containing full information. A. M. LINDSAY, Jr. 187 N. Water St., Rochester N.Y.



Here's the Stuff
 Dixon's Motor Graphite helps compression in cylinders, quiets noise in gears, makes smooth running throughout. Booklet 9-G tells how to use it. Write for free copy.
JOSEPH DIXON CRUCIBLE CO.
 JERSEY CITY, N. J.



AUTO SCREW JACK
 Powerfulatchet, Double Acting Screw Jack, Easy to Operate, Quickly Adjusted
 No. Weight Each, Lifting Capacity, Adjustment.
 501 6 lbs. 10,000 lbs. 11 to 17 in.
 502 8 lbs. 10,000 lbs. 13 to 19 in.
 503 12 lbs. 20,000 lbs. 14 1/2 to 23 1/2 in.
COVERT MFG. CO., TROY, N. Y.



CINCH TIRE REPAIR KIT
 PUNCTURES REPAIR or vulcanize the Cinch will do this or Price, complete seals all in
 PERMANENT-ED without ceasing. We guarantee. Tire Repair Kit refund money. \$5.00, with 12 leather case.
Auto Goods Co., 60 State Street, Boston, Mass.



GOOD YEAR TIRES
 are almost as durable as solid rubber and as resilient as the liveliest.



Induction Coils
 Gives easily understood explanations of the operation of coils. Of great value to the autoist. By H. S. NORRIS. 265 pages. Numerous illustrations. Cloth bound. Price, \$1.00. Address The Automobile, Flatiron Building, New York.

1907 Whitlock COOLERS
 Manufactured by
The WHITLOCK COIL PIPE CO.
 HARTFORD, CONN., U. S. A.
 Will be the standard for high grade cars
 We are now closing contracts for 1908

The Complete Motorist
 No theory, but all about an automobile—its history; its mechanism and how to select and run it. By A. B. FILSON YOUNG. 328 pages, profusely illustrated. Bound in cloth. Price, \$3.50. Address The Automobile, Flatiron Building, New York.

Construction of a Gasoline Motor Vehicle
 By C. C. BRAMWELL. Contains 150 pages, 6 x 9: one hundred illustrations and diagrams. Publisher's price, \$2.00: our price, 50 cents. Address, The Automobile, Flatiron Building, New York.

Reduce the Risk of Fire



NATIONAL Portable Steel Garages are FIREPROOF
 NATIONALS form a class by themselves. No comparison whatever with anything else on the market. Cost no more than a dangerous wooden structure—will last a lifetime—have an excellent appearance—reduce the risk of fire to a minimum—can be erected by any handy man in a few hours. In fact they are the most sensible and practical ever conceived.
 SPECIFICATIONS:—Constructed of pressed steel, exterior walls in imitation of rock faced stone; interior walls of steel in imitation of enamel tile. Built in all sizes and styles.
 Write for Catalog No. 40
National Construction Co.
 604 Morgan Bldg., BUFFALO, N. Y.
 —DEPOTS—
 New York, San Francisco, Toronto

Prices from \$75
 We pay Freight

The Automobile Trade Directory

IS REFERRED TO CONSTANTLY BY THE ACTIVE BUYERS IN THIS FIELD

If your advertisement is not appearing in its columns it will pay you to investigate our proposition. Sure to prove immensely profitable to all who desire to reach the ENTIRE AUTOMOBILE TRADE.


SPECIAL SERVICE

Advertisers are loaned, without additional expense, a complete mailing list of the American retail trade, comprising about 5,000 garages sales-rooms and repair stations, also the leading jobbers in the trade. This list is absolutely necessary to complete your follow-up system.

WRITE US FOR PARTICULARS

The Automobile Trade Directory
 FLATIRON BUILDING, NEW YORK


HIGH-GRADE Pressure Gages
 FOR Gasoline, Air, Water or Steam
 ALSO Pop Valves, Water Gages and Cocks
THE ASHTON VALVE CO., 271 Franklin St., Boston, Mass.



A London Top
 will please you. The **Fit, Style and Quality** is always there. Our Lasco Folding Glass Front is correct in every detail. Send for illustrated catalogue.
London Auto Supply Co., 1221 Michigan Ave., Chicago

Automobile Bows
S. N. BROWN & CO.
 Dayton, O.

Gilbert Supplies
 THE ONLY ONES WORTH HAVING
 Catalog on Request.
GILBERT MFG. CO.
 HAVEN, CONN.



TOPS MADE FROM BEST MATERIAL of Our Own Manufacture Which We Guarantee Perfect.
AUTO TOPS
 All Styles for All Makes. Spray Hoods for Motor Boats.
CHARLES P. McCLELLAN
 Fall River, Mass.

ALUMINUM BODIES
J. M. QUINBY & CO.
 Est. 1834.
 NEWARK, N. J.
 Carriage Builders

ALUMINUM and STEEL BODIES
Springfield Metal Body Co.,
 Springfield, Mass.

HIGH GRADE AUTO TOPS
 Best in the West We show 35 distinct styles of Auto Tops in **Catalog C** which is now ready **Write for it**
Michigan Top Co.
 TOP SPECIALISTS
 14-16 Duffield St., Detroit, M.



Blasier Tops and Fronts
 For the best and most practical. Exclusive Blasier features and quality.
 Write for Catalog and price list.
M. E. Blasier Mfg. Co., 69 Columbia St., Utica, N.Y.



Original Manufacturers of
Auto Top Materials
 We are headquarters for waterproof material of all kinds, and make a specialty of material used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.
 Write for Samples and Price List
L. J. MUTTY COMPANY - Boston, Mass.

The best auto tops are made from **Fast Dyed Kokuk Fabrics**
 Manufactured by **F. S. CARR,** 74 Pearl St., BOSTON, MASS.

THE SCHILDBACK DIVIDED WIND SHIELD
 Properly built to stand the very roughest usage, it will not rattle, jar loose, and fall to pieces. The material—brass, mahogany and plate glass—of the best that money will buy and the workmanship cannot be excelled. *Descriptive booklet for the asking.* **LIMOUSINE CARRIAGE MFG CO.,** 3511 MICHIGAN AVENUE, CHICAGO.

Thompson's Eye Water
 Not only removes the DUST but heals the inflammation
ALL DRUGGISTS

REX IMPERIAL LEATHER CO.
 TRADE MARK
 NEWARK, N.J. U.S.A.
 —HIGH-GRADE—
Auto Leather
 COMPLETE LINE FOR Upholstering, Tops, Fenders, etc.
 Sample Books showing all colors sent manufacturers on request. *Prompt deliveries.*
REX IMPERIAL LEATHER CO.
 12-28 Chapel St., Newark, N. J.



High Grade Auto Tops Our Specialty
 Also Slip Covers, Lamp Covers, Tire Covers, Tool Cases, Dust Hoods and Foot-rests.
 Write for catalogue and prices.
WARNER
 Pole & Top Co.
 1652 Central Ave., CINCINNATI, OHIO



TOPS
AUTOMOBILE
 \$14.00 AND UPWARDS
 Write for Catalogue and Prices
BUOB & SCHEU,
 Court and Spring Streets, Cincinnati, Ohio



Myers Perfect Fitting Tops Tops of Known Quality—Tops with a Reputation Behind Them
 Send for Samples of Materials and New Catalogue
MYERS AUTO TOP CO., Dayton, O.
 Automobile Tops of Every Description
 Get our prices on Tire Covers

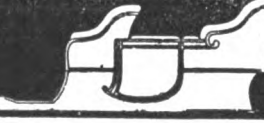
AUTO BODIES
 ALL STYLES TO ORDER—HIGHEST GRADE WORK
 MODERATE PRICES—DELIVERY WHEN PROMISED
BRIDGEPORT VEHICLE CO BRIDGEPORT CONN.



AUTOMOBILE BOW SOCKETS
 Leather Covered and Japanned, from which all weaknesses are eliminated. We are the oldest manufacturers of Bow Sockets in the world.
THE ASHTABULA CARRIAGE BOW CO.
 ASHTABULA, OHIO

AUTOMOBILE BODIES
 Most approved designs. Best workmanship. Moderate prices.
CENTRAL BODY CO., Cennersville, Ind.

BODIES
 BUILT PAINTED TRIMMED
 Landaulet, Limousine and other high-grade work. Write for prices.
GRAVES & CONGDON CO.
 Amesbury - - - - Mass.



TRADE MARK
Powco Steel Belt
 for fan or oil pump
 Won't slip, stretch or break
 \$3 at all auto dealers or by mail. Money back if not satisfactory. Write for Circular C.
Philadelphia Steel & Wire Co.
 525 Commerce Street Philadelphia

ADAMS - FARWELL

\$3250
with top and two extra seats \$3500
The Car With Revolving Air-Cooled Motor

THE ADAMS CO.,
Foot of Third Street, DUBUQUE, IOWA

AMERICAN MERCEDES

Is the highest class car made in America

45 H. P. Touring Car - \$7,500
70 H. P. Touring Car - 10,000

FACTORY: Long Island City, N. Y.
SALESROOM: 1777 Broadway, N. Y.

AUBURN

5-Passenger Touring Car, \$1,250

100-in. wheel base, 32x3 1-2-in. tires, 24 H. P.
Everything Generous in Proportion
It Merits Investigation

AUBURN AUTOMOBILE CO., Auburn, Ind.

This Little Space

is intended to serve as a reminder of
BAKER ELECTRICS

the electric carriage of distinctive merit and remarkable quality. Made in the largest and best equipped electric automobile factory in the world. Write for Catalogue.

THE BAKER MOTOR VEHICLE CO.,
20 80th St., N. W. Cleveland, O.

Built in Boston
Bay State Auto Co.

Bay State Forty
112 Norway St.,
Boston, Mass.

The Berkshire

Its Reliability Means Complete Satisfaction.

WRITE FOR BOOKLET!
BERKSHIRE MOTOR CAR CO.
PITTSFIELD, MASS.

The Craig-Toledo

\$4,000

EMPIRE STATE MOTOR CAR CO.
New York Agency, 2150 Broadway

CRAWFORD

Model E, 35 H. P. - \$2,500
Model F, 50 H. P. - \$3,000

Crawford Automobile Co.
HAGERSTOWN, MD.
Do you want a car that is dependable, and an easy seller?

The Detroit

J. H. WILLYS COMPANY Exclusive Selling Agents
ELMIRA, N. Y.

Manufactured by

Detroit Auto Vehicle Co.
67-69 Catherine St., - DETROIT, MICH.

Dolson The Car of Power

60 H.P. 7 Passengers \$3250

TWO DOLLARS

will insure the regular weekly visits of THE AUTOMOBILE for one year * Subscribe now

FRANKLIN
THE WHOLE LUXURY



FRAYER MILLER

The Car of Endurance

Cooled Through Air Jackets
AN AMERICAN PRODUCT
Imitating No Foreign Car

Oscar Lear Automobile Co.
COLUMBUS, OHIO

Grouit Gasoline Cars
CATALOG READY
GROUT BROS. AUTOMOBILE CO.
ORANGE, MASS.

"NO SAND TOO DEEP— NO HILL TOO STEEP"

Model C and D, 2 cylinders, \$1,250, \$1,500
Model G, 4 cylinders, 2,500

Write for Catalogue.

JACKSON AUTOMOBILE CO., Jackson, Mich.
Members A. M. C. M. A.

A THREE TON TRUCK ONLY

"The Phoenix Truck"

Kansas City Motor Car Company
Sheffield St., Kansas City, Mo.

THE MARMON

"A Mechanical Masterpiece"

The Easiest Riding Car in the World

Built by

NORDYKE & MARMON CO.

Estab. 1851.

Write for Catalog. INDIANAPOLIS, IND.

The Hardy Troubleless \$2000

Mitchell

Will do anything any car will do and do it Better and Quicker. We'll PROVE this on the road any time you say. Call at any Mitchell Branch any time and be "shown."
MITCHELL MOTOR CAR CO.
60 Mitchell Street, RACINE, WIS.
Member American Motor Car Mfrs. Ass'n, N. Y.

MOLINE

Two Styles

Three Sizes of Gasoline Automobiles

Get a copy of our catalogue
MOLINE AUTOMOBILE COMPANY
EAST MOLINE, ILL.
Members Am. Motor Car M'facturers' Assoc.

OLDSMOBILE

You see them wherever you go. They go wherever you see them.

OLDS MOTOR WORKS
Lansing, Mich.
MEMBER A. L. A. M.

The Complete Motorist

No theory, but all about an automobile—its history; its mechanism and how to select and run it. By A. B. FILSON YOUNG. 328 pages, profusely illustrated. Bound in cloth. Price, \$3.50. Address, The Automobile, Flatiron Building, New York

NOW READY—1907

PIERCE-RACINE

4 Cylinder, 40-H.P.

The best that money can buy. Send for full descriptive catalogue.

Pierce Engine Co., Racine, Wis.

Pullman Automobiles


Not only the best for the price, but the best at any price.

YORK MOTOR CAR CO.
Manufacturers YORK, PA.

Queen Cars

The C. H. Blomstrom Motor Co.
DETROIT, MICH.

\$250 FIRST AND ORIGINAL MOTOR BUGGY
(Top \$25 extra)



Over 300 in use. Invented by an Engineer after 10 yrs. labor in auto work. Speed 15 to 25 miles per hour. 60 to 100 miles on one gallon of gasoline. Will climb steep hills and run in mud and sand. Guaranteed for one year. Write for catalogue, testimonial letters, etc. Success Auto Buggy Mfg. Co., (Incorporated) 5-8 De Baliviere Ave., St. Louis, Mo.

COLUMBIA LINE
Lamps and Generators

27 Varieties. :: :: :: Automobile Supplies.
Write for catalog and prices. Mention this paper.

HINE-WATT MFG. CO.,
58 Wabash Ave., CHICAGO

Manufacturer to Consumer

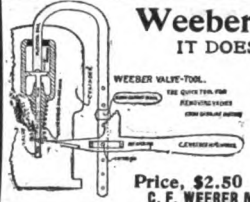
1907 CAR

30 H. P., Price, \$1,850

SEND FOR CATALOGUE

TREBERT GAS ENGINE CO.
190 MAIN STREET ROCHESTER, N. Y.

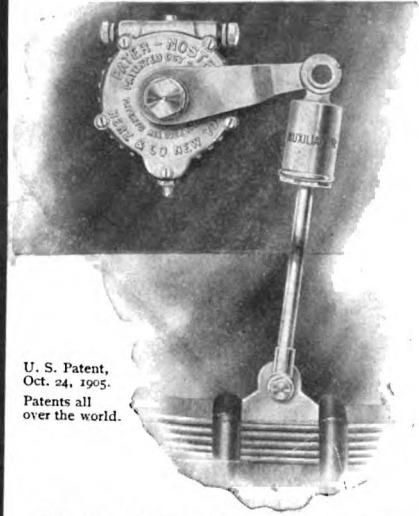
Weeber Valve Tool
IT DOES THE WORK



Quickly and with ease. Also a very handy tool to aid in removing and placing tires and side rings, or compressing things where clamps are needed, thereby making it one of the handiest tools for auto kit or shop use.

Price, \$2.50
C. F. WEEBER MFG. WORKS, Albany, N. Y.

Pater-Noster
THE IDEAL SHOCK ABSORBER
A Perfect Spring Control



U. S. Patent, Oct. 24, 1905. Patents all over the world.

The Pater-Noster absorbs all jars coming from whatsoever direction. The upward and downward movement are separately controlled — each movement is checked separately and individually. The Pater-Noster will keep its adjustment if once set. No readjustment required. All surfaces are hardened. The Pater-Noster is self-lubricating. All mechanism under dust-proof cover. The Pater-Noster is the only adjustable Shock Absorber on the market. It is scientifically and mechanically perfect in its construction.

IT-DOUBLES THE JOY OF MOTORING!
WE ALSO MAKE:

Herz Timer

The World's best and most widely used Circuit-Breaker. 20 different types, to fit any make of motor.

Bougie Mercedes

The standard high-class Spark Plug of Europe and America.

B. B. Pump

To pump up Tires and Blow Whistle or Horn. This pump is a wonder of efficiency.

Herz Distributor — 1907

One coil for any number of cylinders. A unique feature:—It is absolutely sparkless, therefore no burning off of the contact

SWITCHES
DETACHABLE CABLE TERMINALS
WIRE TERMINALS with GROOVE

OSCILLUM
A Spark Gap—A Spark Intensifier

WHAT WE IMPORT:

FRENCH COILS
The Cream of the European Market

The Herz Tire

Will outlast any 3 other tires. The cheapest high-grade Imported Tire

HAGEN STORAGE BATTERIES
Asbestos Copper Gaskets

The Largest Stock in America—over 600 sizes

Ignition Cables and Wires

Write for our new "Gold Book." It's more than a Catalogue, it's a Reference Book.


HERZ & CO., CIVIL ENGINEERS
203 Lafayette St.

NEW YORK

Stearns

The publishers require us to run this space. Please do not judge us by it. Look up our page ad. and send for catalogue.

F. B. STEARNS CO.
2985 Euclid Ave.
Cleveland, O.



30-60 horsepower

MERKEL MOTOR CO'S.
AUTOMOBILE ENGINES
MILWAUKEE, WIS.

Motors and Motoring
By HENRY J. SPOONER, C. E.

This is undoubtedly the best book for the owner or intending purchaser who desires to get a good practical idea of the how and why of automobile construction and operation without having to read a great mass of highly technical literature. It is written in a simple condensed style and the text is well illustrated by diagrams. A work vastly superior to the numerous cheap and inaccurate compilations on the market.

In cloth covers, 103 pages, 5 x 7 ins.
Price one dollar, postpaid


THE CLASS JOURNAL COMPANY
PLATIRON BUILDING, NEW YORK CITY

ALBERT CHAMPION CO.
535-545 TREMONT ST., BOSTON, MASS.
Manufacturers and Importers

IGNITION SUPPLIES

Giandri High Tension Magneto Imported
Nuport Spark Plugs Ignition Wire
Champion Unit Type Coils, Etc.

RICH ALL SIZES SPARK



MICA

\$1.00 BY MAIL \$1.00 BY MAIL

RICHARDSON ENGINEERING CO. HARTFORD, CONN.

SAXON MOTOR LAMPS
Quality, Style and Right Prices
Send for catalogue. Special Prices to Jobbers and Dealers

Manhattan Lamp Works
530 West 28th St., NEW YORK

For Billed Down Information About Automobiles in General and

Welch Cars
in Particular

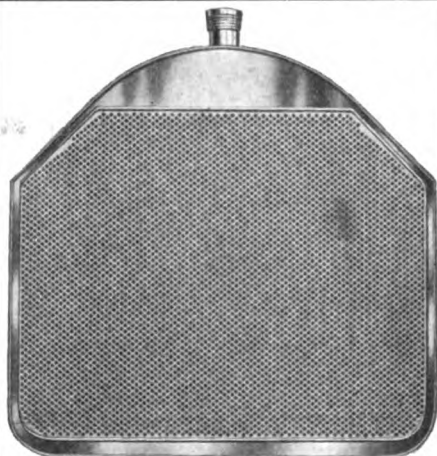
Address
WELCH MOTOR CAR CO.
Detroit, Mich.
FACTORY, PORTIAC, MICH.

Rainier

"The Pullman of Motor Cars"

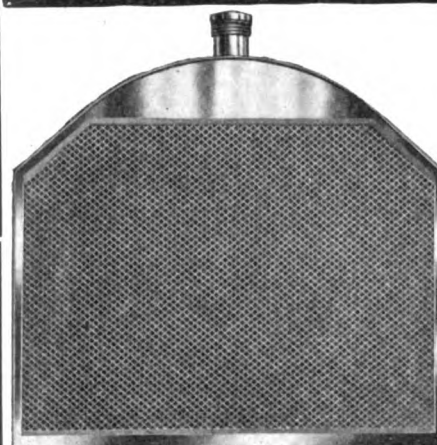
The Rainier Company
Broadway, cor. 50th St., N.Y.

MAYO



S. & M. SIMPLEX

RADIATORS



COLUMBIA

USED BY THE LEADING CARS



PREMIER

MAYO RADIATOR CO.
New Haven, Conn.

ALUMINUM
PHOSPHOR BRONZE and BRASS
CASTINGS
FOR AUTOMOBILE WORK
PIONEER BRASS WKS., INDIANAPOLIS, IND.

"Kinwood Radiators"
Force Feed Oilers, Pressed Steel Dashes, Pressed Steel Frames, Hoods, Mufflers, Fenders, Step Molding.
KINSEY MFG. CO., No. 1126 E. 9d St., DAYTON, OHIO

CASTINGS AND FORGINGS
Cylinders, Pistons of High Grade Iron
MALLEABLE STEEL CASTINGS
FORGINGS—in quantities only—FORGINGS
WESTERN MALLEABLE STEEL COMPANY
1250 River Street, Detroit, Mich.

WRITE FOR NEW CATALOGUE
THE AUTOMOBILE SUPPLY CO.,
1339 MICHIGAN AVENUE,
CHICAGO.
SPECIAL ATTENTION TO MAIL ORDERS

HESS-BRIGHT
BALL BEARINGS DWF
AMERICAN EUROPEAN
19th and Hamilton Sts.
PHILADELPHIA, PA.

METEOR WIRE FOR SPARKING POINTS
Gives a continuous uninterrupted spark. Will not corrode and will not wear off. See that it is in your SPARK PLUG.
HERMANN BOKER & CO. 101-103 Duane Street
NEW YORK CITY, N.Y.

RELIABLE
AUTOMOBILE SPRINGS
GET OUR PRICES
KALAMAZOO SPRING & AXLE CO.
EST. 1870 KALAMAZOO, MICH.

BALDWIN CHAIN & MFG. CO.
—MAKERS OF—
AUTOMOBILE CHAINS
and **SPROCKETS**
WORCESTER, MASS.

The Perfection Spring Co.
AUTOMOBILE SPRING SPECIALISTS

High Grade Springs of Every Type
2413 Superior Ave., N.W., CLEVELAND, OHIO

ROSS GEAR & TOOL CO.
LAFAYETTE, IND.
Manufacturers of
New Tubular Steering Gear
and **Bevel Gears for**
Cambered Rear Axles

COOLERS **B** FENDERS

BRISCOE MFG. CO.
DETROIT, MICH. U.S.A.
HOODS EASTERN FACTORY, NEWARK, N. J. TANKS

Nuttall Cut or Planed Gears
MECHANICALLY PERFECT
R. D. NUTTALL COMPANY
PITTSBURG, PA.

PARISH & BINGHAM
PRESSED STEEL
FRAMES
ARE STANDARD
WRITE FOR ESTIMATES
CLEVELAND, OHIO

MIDGLEY
Steel Automobile Wheels
and
Pressed Steel Products
Write for full information
Midgley Mfg. Co., Columbus, O.

DROP FORGINGS
OF EVERY CHARACTER
ALSO STEAM HAMMER
CRANK SHAFT
FORGINGS
ROUGH SLOTTED, ROUGH TURNED, OR
COMPLETELY FINISHED.
Send us Blue Prints for Estimates
ANDERSON FORGE & MACHINE CO.,
18 St. Aubin Ave., Detroit, Mich.

STOP YOUR SKIDDING

Use Johnson Tire Chains. State size of tire; enclose \$5.00 and we will send you a set, express prepaid.

Iver Johnson Co., BOSTON, MASS.

MODEL D--UNIVERSAL CARBURETER

Operates both two-cycle and four-cycle engines with equal facility at all speeds. Full particulars on request.

Speed Changing Pulley Co., Indianapolis
752 Washington Street

"Keep your eye on Continentals!"

Continental TIRES

The Low Cost Per Mile Tires

43 WARREN ST., NEW YORK

BE INSURED

S.I.T. WIRE



against short circuiting by using only the best French Ignition Cable. Manufactured by Societe Industrielle des Telephones, Paris, France.

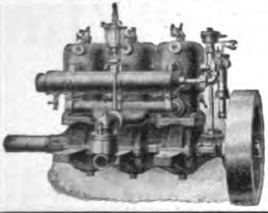
AMERICAN BRANCH, 1610 B'way, N. Y. Samples and prices on request. Agents wanted

"E. & J." Lamps

Gas and Oil Side-lights.

Our 1907 Catalogue mailed on request.

The Edmunds & Jones Mfg. Co.
Detroit, Mich.



TWO-CYCLE AUTOMOBILE MOTORS

of Strictly High Grade Construction Designed and built by E. W. Roberts, M.E., in quantities to manufacturers.

ROBERTS MOTOR CO.
Box 115, Clyde, O.

P. D. Q. No Cement Needed

Punctures repaired quickly and permanently. A quick relief for tire troubles.

FOR SALE BY
Automobile Supply Houses, Garages and Dealers or sent postpaid to any point in the world on receipt of price.

Price, \$1.00 per box

Containing four 1 1/4 inch P. D. Q. Plugs.
Four 1 1/2 inch P. D. Q. Plugs.

MANUFACTURED BY THE
Huntington Automobile Co.,
HUNTINGTON, N. Y.

National Sales Corporation, 296 B'way, N. Y.,
Factory Sales Managers.

"RAJAH" SPARK PLUGS

IGNITION ABSOLUTELY SURE

RAJAH AUTO SUPPLY COMPANY 140 WASHINGTON RESTE
NEW YORK, U. S. A.

THE MOSLER

Spit Fire Spark Plugs

Are the Best

A. R. MOSLER & CO.
163 West 29th Street - New York City



Save Fifty Per Cent of Your Gas.

Light Your Lamps From Seat

"No-Match" Electro Burner

For sale by all dealers

OR
"No-Match" Electric Mfg. Co.
141 Milk St., Boston, Mass.

\$1.25 each

AUTOMOBILE PARTS

TO ORDER ONLY

ACCURATE MACHINING OF CASTINGS AND FORGINGS
SHEET METAL STAMPING OF EVERY DESCRIPTION
EXHAUST HEADERS, INTAKE PIPES AND SPECIAL FITTINGS
CORRESPONDENCE SOLICITED

OTTO KONIGSLOW MFG CO
CLEVELAND

WANTED, AGENTS

To handle the best Buggy Runabout ever offered the trade. Don't fail to investigate

THE A. STREIT MACHINE CO.

1108-1110 HARRISON AVE., CINCINNATI, O.



THE *Spring* SPEED-GAUGE

The only mechanical speed indicator in which the entire mechanism is always in perfect balance against effects of gravity or shock. Hand consequently steady under all conditions. Easiest to read; neatest in size and appearance. Trip odometer and safety pinion release.

Price, complete, \$45.

COMPACT JAR PROOF

91 MARSHALL ST. SOMERVILLE, MASS.

FIAT

Wins Grand Prix

For the third time within the past three months FIAT wins a GREAT INTERNATIONAL VICTORY, — proving beyond all question that for speed, endurance and consistent performance it is PREEMINENTLY THE LEADER.

Grand Prix Race in France, July 2d

477 mile contest, 38 competitors, FIAT 1st.

Kaiser Cup Race in Germany, June 15th

300 miles, 91 competitors, FIAT 1st, 5th and 6th.

Targa Floria Stock Car Race in Italy, April 21st

300 miles over mountains and bad roads, FIAT 1st, 2d and 4th out of 48 competitors.

These contests have been more severe than any ordinary hill climbs or endurance contests, and to win three in succession, against the BEST CARS AND DRIVERS OF THE WORLD, is a record that has NEVER BEFORE BEEN EQUALED.

Immediate Delivery

THE HOL-TAN CO. Broadway and 56th St.,
NEW YORK



Infringement Notice

Attempts are being made to put on the market a weak imitation of our patented product.

See that our trade-mark is on springs, and also on printed matter bearing our name, as even that is being used by the infringers.

Send for our new Booklet

Supplementary Spiral Spring Co.
 4529 Delmar Ave.
 ST. LOUIS, MO.

NEW YORK BRANCH,
 52 W. 67th St.
 BOSTON,
 1024 Boylston St.




A Tail Lamp That Will Stay Lit

It is very humiliating to have to appear in court for driving without your tail lamp lit, and it's really not your fault, as you are sure you lit it just a few minutes before; but it's the old story—the lamp is not built right, and just as soon as you start your machine it dies down and goes out, and one fine would more than pay for the best tail lamp made.

Ham's is the best. It's built on our genuine "Cold Blast" principle and is guaranteed not to blow or jar out. Beside the red light it gives a powerful white light, and the side handle makes it very convenient to use for inspecting engine or car in case of a breakdown. It is fitted with our new safety handle.

Ham's NEW SAFETY Bracket.

This will be appreciated by all who see it.

With our new Safety Locking Handle and Bracket you do away with the constant annoyance of losing your lamp or having it stolen.



Our Auto Booklet will interest you—write to-day. Address Dept. "B"

C. T. HAM MFG. CO., Rochester, N.Y.

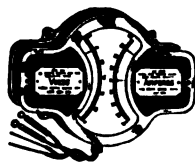


Uniform Compression Means Power!

The Brown Compressometer

handy and compact, detects leaks quickly. Every autoist needs one of these instruments. Send for additional information.


HENRY W. BROWN
 517-521 E. Water Street
 Syracuse, N. Y.



WESTON ELECTRICAL INSTRUMENT CO.
ELECTRICAL MEASURING INSTRUMENTS
 FOR USE IN
 ELECTRICAL CARRIAGES AND IN CHARGING STATIONS.

Send for Catalogue.

Main Office and Works, Waverly Park, Newark, N. J.
 New York Office, 74 Cortlandt Street.



Combination Volt and Ammeter

Switchboard Instrument Model 24.

SUBSCRIBE FOR THE AUTOMOBILE WEEKLY—\$2.00 PER YEAR.



The Best

**TOPS
 TIRE CASES
 TIRE IRONS
 TRUNK RACKS**

TEEL MFG. CO.
 MEDFORD, MASS.

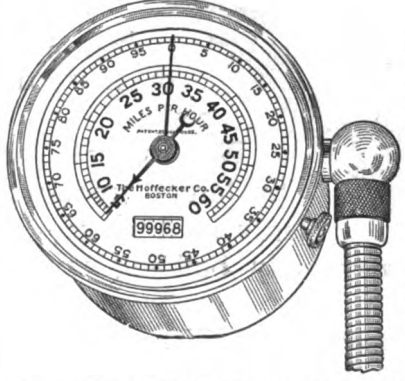
HOFFECKER

SPEEDOMETER

In a Class to Itself. Made Better, is Higher Grade, Different in Construction, Appearance and Operation than any on the market.

Steady to the Fraction of a Mile

THE REMARK—"Wish I had seen the HOFFECKER before I bought," is frequently heard. Don't make the same mistake.



Unrestricted Guarantee

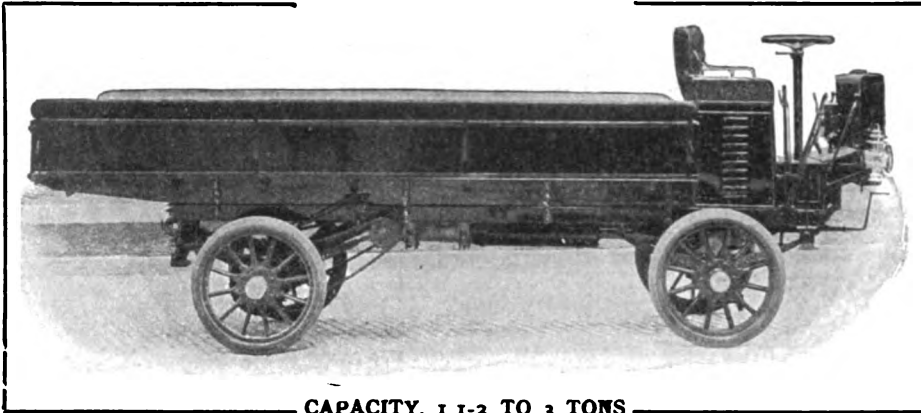
If after a trial of thirty days the purchaser is not satisfied the price will be refunded.

Built in Boston. Inspection Invited

THE HOFFECKER COMPANY, Motor Mart, Park Sq. BOSTON, MASS.

Reliance Motor Trucks

Cut the Cost of Trucking and Delivery in Half

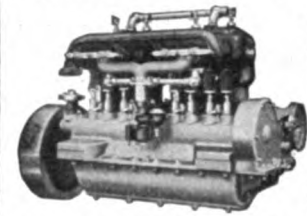


CAPACITY, 1 1/2 TO 3 TONS

We will furnish facts, figures and names of users to prove it
 INVESTIGATE—SEND FOR CATALOG

RELIANCE MOTOR CAR CO., 67 Fort St., East, DETROIT, MICH.

Continental Motors are Standard



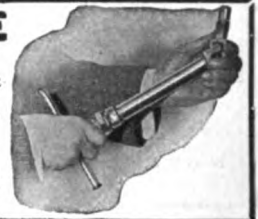
If in the market for a high grade, speedy, powerful and handsome motor, send for our printed matter. Cut shows our 1907 model 40-45 H. P. Fitted with self-contained oiling system and ready for attaching magneto. Our new plant is equipped with modern machinery devoted entirely to the manufacture of motors. Don't buy before getting our catalogue. We are specialists for complete power plant ready for your car.

CONTINENTAL MOTOR MFG. CO., Muskegon, Mich.
 K. FRANKLIN PETERSON, Factory Representative, 166 East Lake Street, CHICAGO, ILL.

AUTOGLE AUTOMOBILE WRENCH

A profitable investment for every man who owns or works with Automobiles.

Send for Circular
 Quincy Manchester Sargent Co., 1180 Old Colony Bldg., Chicago



The Ball Transmission
 FOR
Automobiles & Motor Boats
 NEW YORK GEAR WORKS.
 56 GREENPOINT AVE., BROOKLYN, N. Y.

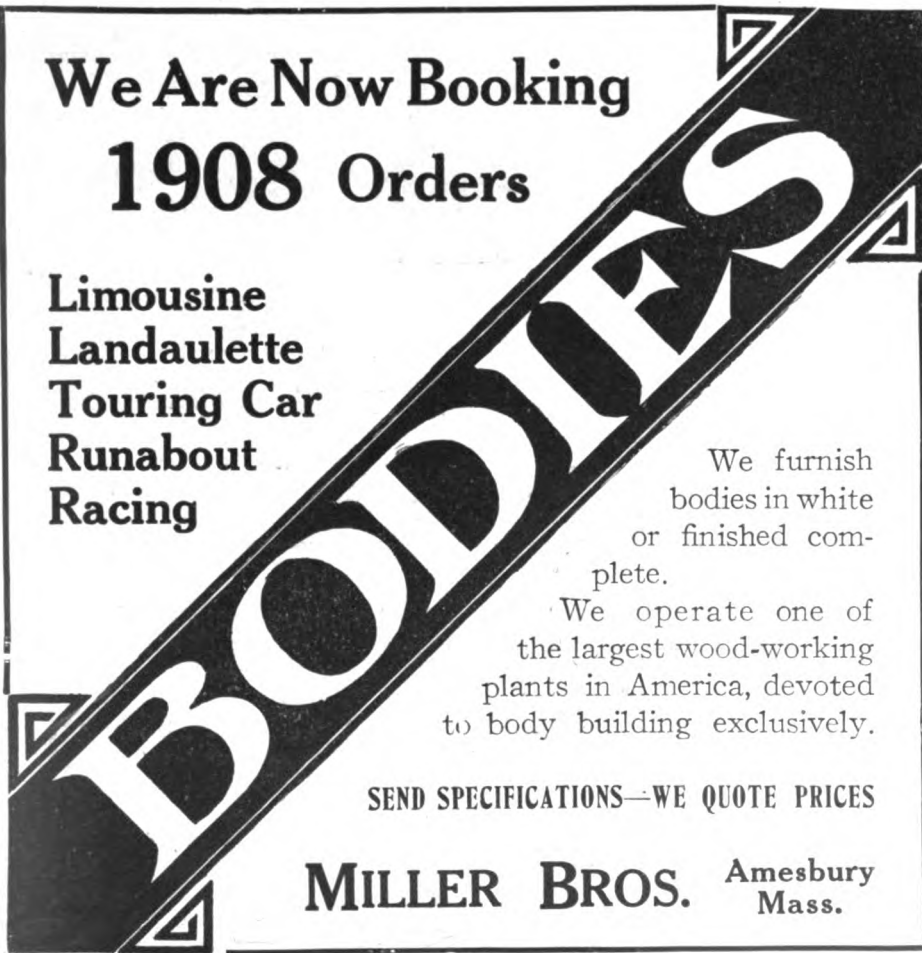
"NOVELTIES FOR LIMOUSINES"

Electric Cigar Lighters, Push Button Switches, Electric Megaphone Speaking Tubes, Dome Lights, Annunciators (both round and oblong), Electric Fitted Lamps, etc.

C. COWLES & CO. NEW HAVEN, CONN.

We Are Now Booking
 1908 Orders

Limousine
 Landalette
 Touring Car
 Runabout
 Racing



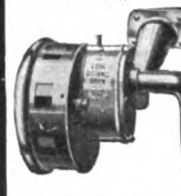
We furnish bodies in white or finished complete.

We operate one of the largest wood-working plants in America, devoted to body building exclusively.

SEND SPECIFICATIONS—WE QUOTE PRICES

MILLER BROS. Amesbury Mass.

IF YOU WANT THE RIGHT-OF-WAY USE THE LONG DISTANCE SIREN



WRITE FOR OUR BOOKLET TELLING YOU
 Why Its Always Heard.
 How Prevents Accidents.
 How It Clears the Road.
 Why Never Out of Order.
 You may have the roar of a lion or the purr of a kitten. You get the road to yourself. Everyone turns out and gives you the right-of-way. Beautifully finished in polished brass and aluminum. An ornament to any car.
 Stewart & Clark Manufacturing Company
 69 Wells Street, Chicago, Illinois.

VOLIER HORNS

MADE BY VOLIER OF PARIS

VOLIER HORNS ARE USED BY THE PRINCIPAL CAR MANUFACTURERS THROUGHOUT THE WORLD



FEATURES
 CHEMICALLY CURED BULBS, NON-CORROSIVE VIBRATORY METAL REEDS, SUPERIOR WORKMANSHIP AND FINISH.

40 STYLES

SEND FOR CATALOGUE
 THE POST & LESTER CO.
 HARTFORD, CT.

SOLE AMERICAN AGENTS

McCord FORCE FEED LUBRICATOR
 "The Mark of a Good Motor Car!"

RADIATORS, CARBURETERS
 McKIM
 COPPER-ASBESTOS GASKETS

McCord & Company
 1404-1408 Old Colony Bldg., Chicago
 New York Office: 24 Broad St.

Before You Start



on your next trip be sure that your gasoline tank is fitted with a

"Triumph" Tank Gage

enabling you to tell at a glance if the tank contains enough fuel to carry you to your destination. Get rid of taking off the filling cap and sounding the tank with a stick. The drip from the stick is as bad as powder. See that your new car is equipped with a "Triumph" Gage, thus avoiding bother, save chauffeur's time, and save money in your gasoline bills.

TUBES OF ALL LENGTHS.

Boston Auto Gage Company
 4 Old South Building, BOSTON, MASS.

\$1.00
 FOR
Our Monarch Spark Plug

THE BEST MICA PLUG MADE.

Separable Mica core. Built with our improved insulation.
 Large air chamber; guaranteed for 90 days.
 Manufacturers, write for price.

Genuine Mica Cadillac Core,
 \$1.50 pair.



E. M. Benford
 405 W. Lincoln Ave.
 MT. VERNON, N. Y.



BEST EVER ISSUED NOW READY

Sent free to all garages and auto owners.

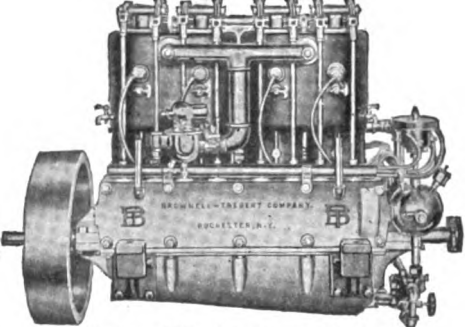
Write for it to-day.

Manhattan Storage Co., 42 Cortlandt Street N. Y. City

1907 CATALOGUE
 ALL AUTO SUPPLIES FOREIGN AND DOMESTIC
 PRICES RIGHT DELIVERIES PROMPT
 Manhattan Storage Co.
 42 Cortlandt St. N. Y. City.
 Uptown Branch 1611 Broadway.

POWERFUL RELIABLE

Motor of Acknowledged Superiority



4-Cyl. 30-34 H.P., B-T Automobile Motor.

A GOOD PROPOSITION

A MOTOR substantially and symmetrically proportioned—thoroughly cooled—automatically lubricated—it's the B-T.
 A MOTOR quiet in operation—of greatest accessibility—high grade workmanship—it's the B-T.
 A MOTOR for lightest to heaviest service designed for Automobile, Marine, Tractor, Suburban Car and other purposes—it's the B-T.

4, 6 and 8 CYLINDERS, 20 to 160 H.P.
 B-T Light and Heavy Transmissions, Reverse Gears, Multiple Disc, Cone and Ring Clutches.

A Postal—A Catalogue

BROWNELL-TREBERT COMPANY
 634-666 LEXINGTON AVENUE ROCHESTER, N. Y.

COATES



Flexible Shafting

Transmitting
1-10 H.P. to 150 H.P.
for
SPEEDMETERS
MECHANICAL OIL PUMPS
MAGNETO DRIVE, ETC.

Everything in the Flexible Shaft Line

WRITE FOR CATALOG

BREAST DRILLS, GRINDERS AND
BUFFERS ELECTRICALLY DRIVEN

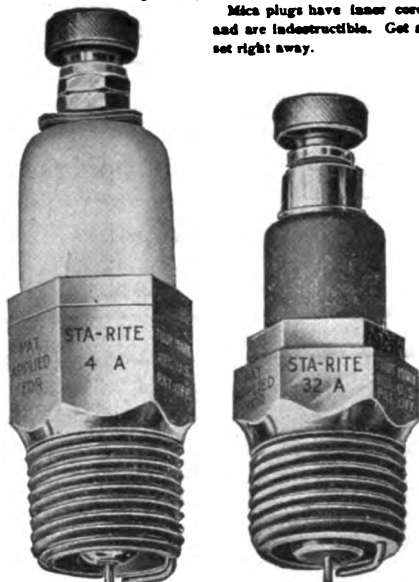
Write us
**COATES CLIPPER
MFG. CO.**
238 Chandler Street
WORCESTER, MASS.



STA-RITE

Ignition plugs **STAY RIGHT LONGEST**, because porcelain plugs have **DOUBLE PORCELAIN** (no protector required) no leaks, no breakage; air space prevents short circuiting.

Mica plugs have inner core and are indestructible. Get a set right away.



Half-inch Separable Shell Porcelain Plug, net price, \$1.25. Mica Plug, net price, \$1.50

On request and name of paper we will send circular of 47 sizes and 5c. six-inch rule free.

THE R. E. HARDY CO.
86 Watts Street, New York City

HOLSMAN

FIVE YEARS OF SUCCESS.

The Holsman automobile has now been on the market five years and has long since passed the experimental stage. It is built high enough to travel the country roads like a carriage and can be run twelve months in the year. It clears the centre of the road by eighteen inches, and therefore has **twice the advantage** of the ordinary machine in muddy, rutty, rough or rocky roads. Has large wheels, solid rubber tires and **rides like a carriage**. The Holsman exclusive patent marks an era in automobile building. It does away with all live axles, friction clutches, differential gears, pumps, etc. Reverses without extra gears. **No water to freeze. No puncture troubles. No odor. New hill climbing power.**



The Holsman Automobile Co.
Room 601. Monadnock Block. CHICAGO

SAGER EQUALIZING SPRINGS

"Using them on my outfit and perfectly satisfied."—
Elmore Wig, Co.
"Your springs have given us very excellent satisfaction."—
Thomas B. Jeffrey & Co.
"We find them irreplaceable."—**Leggs & Stratton Co.**
"This system has proved simple and efficient, and presents advantages not found in other so called shock absorbers."—
Olds Motor Works
"They add greatly to the comfort and reliability of a car."—
Grandford Automobile Co.
Write for Descriptive Booklet.

J. H. SAGER COMPANY, ROCHESTER, N. Y.

THE WATER WAY BETWEEN BUFFALO AND DETROIT



The D. & B. Line Steamers leave Buffalo daily at 5:30 p. m. (eastern time) and Detroit week days at 5:00 p. m., Sundays at 4:00 p. m. (central time) reaching their destination the next morning. Direct connections with early morning trains. Lowest rates and superior service to all ports west.

Rail Tickets Available on Steamers
All classes of tickets sold reading via Michigan Central, Wabash and Grand Trunk Railways between Buffalo and Detroit, in either direction will be accepted for transportation on D. & B. Line Steamers.

Send two cent stamp for illustrated pamphlet. Address: L. G. Lewis, G. P. & T. A. **Detroit & Buffalo Steamboat Co.** DETROIT, MICH.

PHILIP H. McMILLAN, A. A. SCHANTZ,
Vice President, Gen'l Manager.

GREAT VICTORY FOR BOSCH Magnetos

— in —

Grand Prix Race

Of the 38 cars entered in this great international race 28 were equipped with Bosch Magnetos

RESULT

First: Nazzaro, Fiat, Bosch Magneto

Second: Szisz, Renault, Bosch Magneto

Third: Baras, Brasier, Bosch Magneto

Bosch Magnetos won ALL the important events of 1906 and have thus far won ALL the important events of 1907, including:

UNITED STATES—Sealed Bonnet Test; all cars equipped with Bosch Magnetos finished with perfect scores. Wilkes-Barre Hill Climb. New York Motor Club Endurance Run.

GERMANY—Kaiser's Cup. The Herkomer Trophy.

ITALY—Targa Florio

ENGLAND—The Tourist Trophy. The Graphic Trophy.

ORDER 1908 BOSCH MAGNETOS NOW

ROBERT BOSCH, New York, Inc.

160 West 56th St., New York City

Bosch Magnetos are in every point identical with Simms-Bosch Magnetos, under which name the French and English Representatives of Our Mother Firm at Stuttgart, Germany, are selling our Magnetos.

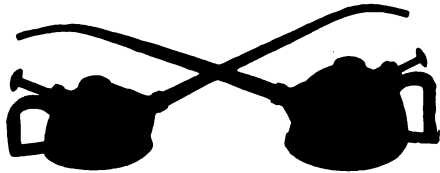
Long Manufacturing Co.
CHICAGO, ILL.



Get our new catalogue for 1907 and 1908 before placing your orders for HOODS, FENDERS, DASHES and RADIA-TORS

LONG DISTANCE

A BRAND NEW AUTO OILER



This Oiler is made entirely of brass, also of copper-lined steel with brass trimmings. Has strainer and double valves. The spout is detachable for packing in small space. A plunger on the handle forces the oil to the bearings—avoids the pleasure (?) of crawling under the car. At all Supply Houses. Brass sample prepaid \$1.75

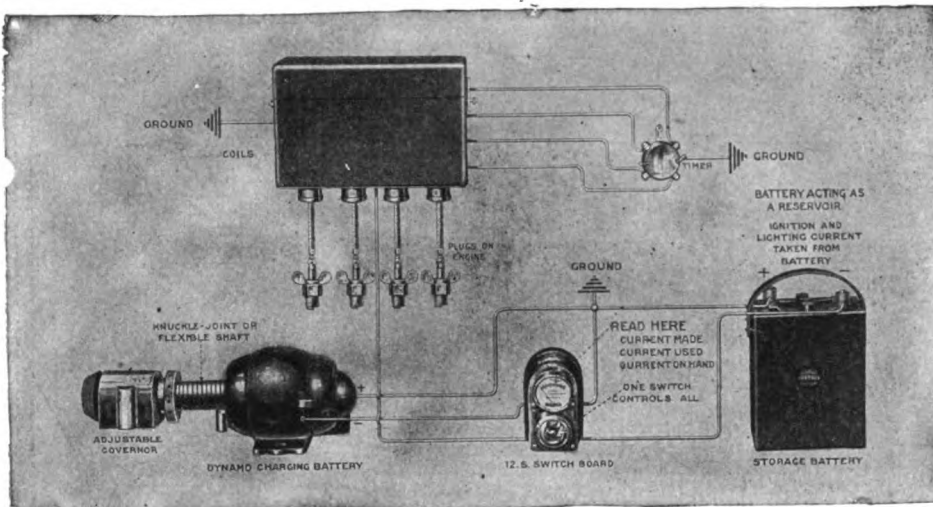
MAPLE CITY MFG. CO.
Monmouth, Ill.

SAMSON TYPE COURSE

**NON-SKIDDING
NON-PUNCTURABLE
STRONGEST ON EARTH**

SAMSON LEATHER TIRE CO.
O. de Pontac, Gen'l Mgr.
1634-42 BROADWAY, Cor. 50th ST.
NEW YORK

"Floating the Battery on the Line."



Anything less than absolutely sure ignition should have no place on your car. Here is an ignition system that generates its own current, and is wholly independent of outside assistance.

Apple Ignition System

"Self-Sustaining"

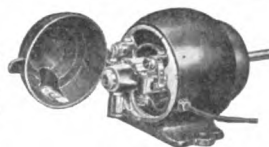
With this outfit, you always have abundant current of highest quality. It's there ready to use, either for starting, running, testing, or reserve, and enough additional for electric lights.

The current is drawn directly from the storage battery, which insures evenness of flow and a quality ideal for ignition purposes. The Storage Battery is kept continually charged by the dynamo which is driven by the engine.

The battery acts as a reservoir, and it is never allowed to deteriorate, either in quantity or quality of current.

There are many points about this interesting system which you would doubtless like to learn more about. Write for our Bulletin C-1. It explains every detail of this complete system.

THE DAYTON ELECTRICAL MFG. CO.,
90. ST. CLAIR STREET, DAYTON, OHIO.



"Built for Ignition Work."

The Apple Ignition Dynamo, the most important feature of the Apple Ignition System, is built as well as any dynamo made, no matter of what size or use intended. It is a permanent investment, and will outlast your engine.

WHEN WRITING TO ADVERTISERS PLEASE MENTION THE AUTOMOBILE.

PROTECT YOUR AUTOMOBILE IMPROVEMENTS WITH SOLID PATENTS.

We can handle your business properly as we are familiar with all types of Autos, are automobile owners and have had twelve years' practice before the Patent Office. Send sketch of your invention for free report as to patentability. Book "How to Obtain a Patent" and "What to Invent" sent Free.



CHANDLEE & CHANDLEE

Patent Attorneys
903 F Street
WASHINGTON, D. C.

**NO MATTER
WHAT PRICE**



you paid for your motor car it is not so fine its appearance cannot be improved by

Cleanola

The Polisher of Polish

It makes worn or old cars shine with the brightness of new ones and adds life to the finish.

Write for free sample.

The Cleanola Co.

Department "B"
53 W. VAN BUREN ST.
Chicago

1101 FULTON BLDG.
Pittsburgh, Pa.

Users of Invader Oil



are responsible for its popularity.

The oil that graphitizes. You name the car. We'll name the grade.

Made only by
CHAS. F. KELLON & CO.
128 Arch St., Philadelphia

REGISTERED

Rest Your Tires

When your car is not in use. Relieve them of the weight of the car and get them off dirty, oily floors. It is all so easily and quickly done with the

SPRINGFIELD LIFT



Can be used under any car. Price, \$10.00 net.
The Shawver Company, Springfield, Ohio

Overhead Vehicle Washer

BEST MADE FOR GARAGES



(Plain or Illuminated)
SEND FOR PRICES

VEHICLE SPECIALTY CO., Hartford, Conn.

Searls Folding Jacks



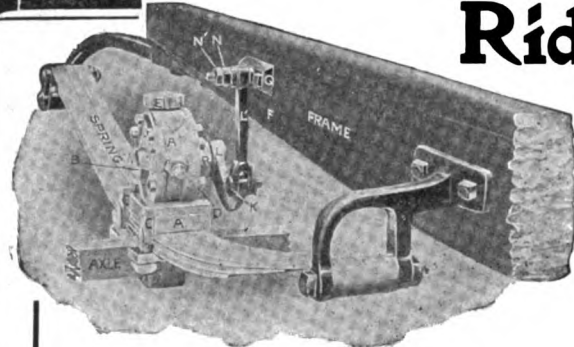
Have lightest weight, guaranteed strength, usable broad base or folded narrow base, latest construction, foot power. Why get down in the dirt? Ask your dealer or we deliver in U. S. or Canada.

Jersey Brake Co., 93 Green St., NEWARK, N. J.

Ride Easier, Safer and Faster

with a

Hotchkín Anti-Jolt Device



YOU can take your car at full speed safely over the hardest bumps and never feel the throw. There isn't any. The **HOTCHKIN ANTI-JOLT DEVICE** eliminates it—cuts it out. This device isn't a "shock absorber" or set of supplementary springs that make your car ride heavy on smooth roads. It's a shock eliminator that does away with all "come-backs." You can use the lightest springs the manufacturer will put on the car without fear of breaking them, and you will ride easier, safer and faster over rough roads as well as on smooth ones.

The **HOTCHKIN ANTI-JOLT DEVICE** eliminates many of the ignition and poor gasoline feed troubles that resulted from hard riding. Every time your car gets a jolt, you rack the engine, jolt the battery contacts and strain your transmission gear.

This **ANTI-JOLT DEVICE** will save wear and tear on every part of your equipment, lessen the cost of maintenance, give better traction, allow greater speed, save tires, and will carry your car as easily over bumps and "thank-you-ma'ams" at full speed as on an asphalt pavement.

Write for descriptive matter or send to-day for the **HOTCHKIN ANTI-JOLT DEVICE** and try it thirty days at our risk.

The HOTCHKIN MFG. CO. 1262 MICHIGAN BOULEVARD **Chicago**

Protect Your New Tires. Repair the Old One



Tires Will Last Forever

Steel Link Bands Hooks to Rim

No More Punctures

You can fix Blowout quick. If tire is completely covered by these clasps you cannot have Blowouts, Punctures, Rim Cuts or wearing off of tire. As flexible as ever. **ANTI-SKID.**

KIMBALL TIRE CASE CO.
171 Broadway, - - Council Bluffs, Iowa
State Agent for Indiana
O. H. ROGERS, 415 Mass. Ave., Indianapolis

KRUPP SPECIAL CHROME NICKEL STEEL

Grade E. F. 60.0

Now in Stock at New York.

Round bars 1-2 inch to 8 inch diameter each about 10 feet long. This steel can be used unhardened, having Min. Elastic Limit 95,000 lbs., Min. Tensile Strength 110,000 lbs., Elongation 16 per cent., and contraction 67 per cent., or can be case hardened or hardened in oil to have more than double the above Elastic Limit and Tensile Strength.

THE BEST FOR MOTOR CARS, BOATS, ETC.

Thomas Prosser & Son
15 Gold St., New York.

BARRETT AUTO JACKS

"The Jack that Duff Builds"
The buyer will never have cause to complain and the seller will gain the buyer's confidence when a Barrett Jack changes hands.
THE DUFF MANUFACTURING COMPANY
Exclusive makers of "Barrett" Jacks
Works: Allegheny, Pa. Pittsburgh, Pa.
26 Cortlandt St., New York
4 Rue Auber, Paris 124 Longacre, London
Antwerp Montreal

J.W. Colgan Co.

MONOGRAMS FOR AUTOMOBILES
AND OTHER PURPOSES
Send for complete catalog and price-list
510 Sudbury Bldg., Boston, Mass.



DON'T RUIN YOUR AUTO

With cheap, sticky furniture polishes.
USE AUTO-SHINE
The Best Varnish Polish on Earth.
Restores original lustre. Won't collect dust. Highly recommended by foremost manufacturers and garages.
4-oz. trial bottle, postpaid, 35c.
The Auto-Shine Co., P.O. Box 94, Buffalo, N.Y.



FASTENER
Patented

MURPHY

Curtain fasteners
best made for
auto use.

The G. W. J. MURPHY CO.



MURPHY

Door handles,
metal moulding
etc.

Merrimac,

Mass.

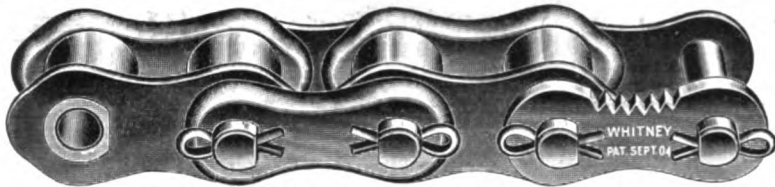


EYELET
Patented

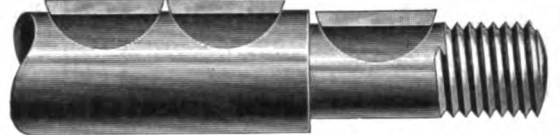
High Grade
Automobile Bodies
All Styles

**LIMOUSINE,
LANDAULETTE
BODIES**

Walker
Carriage Co.
Merrimac, Mass.



THE WHITNEY MFG. CO., Hartford, Conn.



"WHITNEY" } Woodruff Patent
CHAINS } System of Keying

NUZENT CARBURETOR
NEW PRINCIPLES APPLIED RIGHT
See Display Advertisement NEXT WEEK
THE NUTTING MACHINE CO., Dayton, Ohio

WE MANUFACTURE FOR THE AUTOMOBILE TRADE
COMPLETE FRONT and REAR BALL-BEARING AXLES
THAT ARE WELL KNOWN FOR DURABILITY AND EFFICIENCY
Call on or write us regard- THE AMERICAN BALL BEARING CO., CLEVELAND
ing your requirements. OHIO, U. S. A.



DISTINCTIVE
CONSTRUCTIVE FEATURES

MOST EFFICIENT
IN OPERATION

HARTFORD JOINTS

Pronounced by Eminent Engineers to be the most satisfactory universal joint on the market

Write for circulars, they tell you why.

HARTFORD AUTO PARTS CO., 438 Asylum Street
Hartford, Conn.

J. S. BRETZ Co., U. S. Distributors. Times Bldg., N.Y.

HOPEWELL TIRE CASE
NEW NEAT ALL COLORS ALL SIZES
ARTIFICIAL LEATHER 4.00
BLACK ENAMELED DUCK 3.00
WATER STAIN GREASE DUST PROOF
MANUFACTURED ONLY BY
HOPEWELL BROS.
42 OS BODINE ST. CAMBRIDGE, MASS.
IF YOUR DEALER DOES NOT CARRY SEND US P.O. ORDER.

HOPEWELL TIRE CASE
NEW NEAT ALL COLORS ALL SIZES
ARTIFICIAL LEATHER 4.00
BLACK ENAMELED DUCK 3.00
WATER STAIN GREASE DUST PROOF
MANUFACTURED ONLY BY
HOPEWELL BROS.
42 OS BODINE ST. CAMBRIDGE, MASS.
IF YOUR DEALER DOES NOT CARRY SEND US P.O. ORDER.

HOPEWELL TIRE CASE
NEW NEAT ALL COLORS ALL SIZES
ARTIFICIAL LEATHER 4.00
BLACK ENAMELED DUCK 3.00
WATER STAIN GREASE DUST PROOF
MANUFACTURED ONLY BY
HOPEWELL BROS.
42 OS BODINE ST. CAMBRIDGE, MASS.
IF YOUR DEALER DOES NOT CARRY SEND US P.O. ORDER.

The Lightning Kerosene Burner



Demonstrated a success by six years service. More in successful operation than all other makes combined. Ask for Catalog B.

E. C. WALKER CO.
1913 Logan St., Louisville, Ky.

SHALER Electric Vulcanizer



Let us tell you the secrets of our success. You yourself can demonstrate that we are placing in the hands of the novice a machine that has revolutionized the automobile tire problem

(For private owner or garage.)

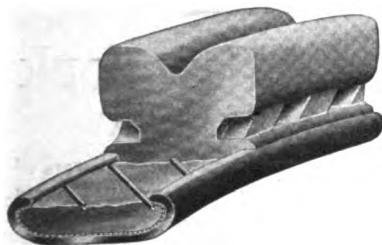
C. A. SHALER CO., Mfrs.,
Box R. Weyauwega, Wis., U. S. A.

POCKET Battery Ammeters



Voltmeters and Volt - Ammeters, Current Indicators for Spark Coil Testing. Small Switchboard Instruments, Etc. Accurate, Durable. Largest Makers in U. S. A. Sold by Jobbers and Dealers.

ELDREDGE ELECTRIC MFG. CO.
33 Post Office Sq., Springfield, Mass., U.S.A.



New Motz Non-Skid Cushioned Tire

IT BENDS, that's why we get the resiliency. The twin tread eliminates the rocking and skidding features, a fault in other forms of tires. Fits any Clincher rim. We furnish tool for applying tires. Write for Circular C.

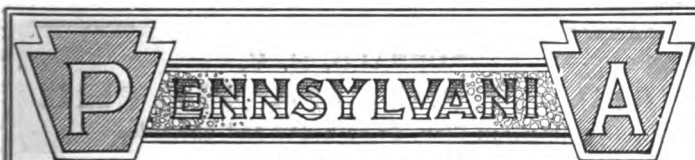
The Motz Clincher Tire & Rubber Co.,
AKRON, OHIO

AUTOMOBILE SPRINGS

Oil Tempered Hand Fitted



The CLEVELAND-CANTON SPRING CO.
CANTON, O.

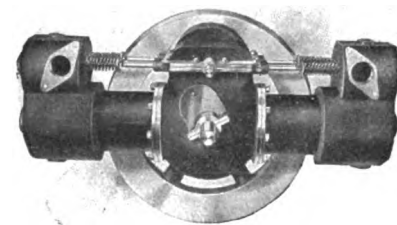


MOTOR CARS

As Good as the Name

AGENTS:

WEST STILLMAN MOTOR CAR CO.,	Broad and Race Sts., PHILA
R. T. PECKHAM,	2234 Broadway, NEW YORK
NORTHERN AUTO AGENCY,	Motor Mart, BOSTON
CHAS. F. BATT,	1378 Bedford Ave., BROOKLYN
BELLEFIELD MOTOR CO.,	4514 Henry St., PITTSBURG
STANDARD INVESTMENT CO.,	PROVIDENCE, R. I.
PHILIP A. LOWE,	PITTSFIELD, MASS.
PARDEE & CANARY,	1218 Michigan Ave., CHICAGO
LUCEY MOTOR CAR CO.,	TROY, N. Y.
PENNSYLVANIA AUTO MOTOR CO.,	BRYN MAWR, PA.



The Beilfuss Auto Engine

18-20 H. P. double opposed cylinder. Bore and stroke 5x5 inches. Weight 300 lbs. Will go in any

car, from a runabout to a 2500 lb. touring car. Perfectly made. Price right. Send for circular and price. Immediate shipment.

THE BEILFUSS MOTOR COMPANY Lansing, Michigan

AUTOLINE

TRADE MARK.

The Perfected Lubricating **OIL** For All Types of Automobiles

"ASK THE GARAGE MAN FOR IT." WILL NOT CARBONIZE OR SOOT

Manufactured by
WM. C. ROBINSON & SON CO.
Main Office, Baltimore, Md.

BRANCHES
Pittsburg, Pa.
Cincinnati, O.

Boston, Mass.
Philadelphia, Pa.

Indianapolis, Ind.
Terre Haute, Ind.



NORTHWESTERN Ignition Batteries

Have been on the market for five years and have proven conclusively that they are the simplest and most reliable means of ignition.

Write for our New Catalogue
Northwestern Storage Battery Company
Milwaukee, Wisconsin

HOTEL CUMBERLAND

NEW YORK

S. W. Corner Broadway at 54th Street



Ideal Location. Near Theatres, Shops, and Central Park. In the Heart of the Automobile District. Headquarters for Automobile men. Caters especially for Automobile trade.

New, Modern, and Absolutely Fireproof.

Close to 6th Ave. "L" and Subway and accessible to all surface car lines. Transient rates \$2.50 with Bath and up. All outside rooms.

SEND FOR BOOKLET

Under the Management of

HARRY P. STIMSON, Formerly with Hotel Imperial, New York.

R. J. BINGHAM, Formerly with Hotel Woodward.

"THE GARDE"

Asylum and High Sts., Hartford, Conn.

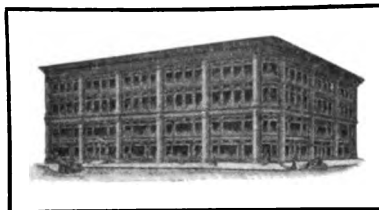
Beautifully located facing Bushnell Park and State Capitol. Connecticut's newest, largest and most modern hotel. "MINERS" large new Garage in rear of Hotel. On direct road from New York to Boston.

The Automobile Handbook

A practical book for owners, operators and mechanics. Includes road troubles, motor difficulties and other contingencies and how to handle them. By L. ELLIOTT BROOKS. 320 pages. Numerous illustrations. Full leather, limp. Price, \$1.50. Address The Automobile, Flatiron Building, New York.

Motor Mart of New York

62d STREET and BROADWAY



Manufacturers of Automobile parts can secure better offices and sales-rooms at the Motor Mart than in any other place in New York.

FOR PARTICULARS ADDRESS

F. E. MALONE, : 1876 Broadway, New York



Most Picturesque and Historic Region in America

Nature's Playground

GREENBRIER

White Sulphur Springs West Virginia

Surrounded by 7,000 acres of picturesque scenery. All tickets sold by the Chesapeake & Ohio Railway have stop-over privileges at this famous resort. Elevation, 2,000 feet. Average temperature during the heated summer, 62°. Capacity, 1,000. Broad piazzas. Orchestra of 20 instruments. Elevators, telephones, cafes. Two New Clay Tennis Courts. The Lawns are unsurpassed as a Playground for Children. An Attractive and Inexpensive Place to Spend the Summer. Nature has contributed the most charming surroundings of scenery to the White Sulphur. Forest, vale and mountain are here in rare and unique combination, presenting at every turn new views of the picturesque, the beautiful and the grand, sufficient for the gratification of every taste. The Grand Old Fountain, shaded by ancient oaks, daily pours from its exhaustless resources more than 40,000 gallons of healing waters. Regular season, June 15.

Send for Booklets and Rates.

GEORGE A. MILLS, Jr.

Greenbrier, White Sulphur Springs, W. Va.



BUFFALO, N. Y.

THE NIAGARA HOTEL

American Plan, \$3.00 a day and upwards.
AWAY FROM THE CITY'S NOISE AND SMOKE

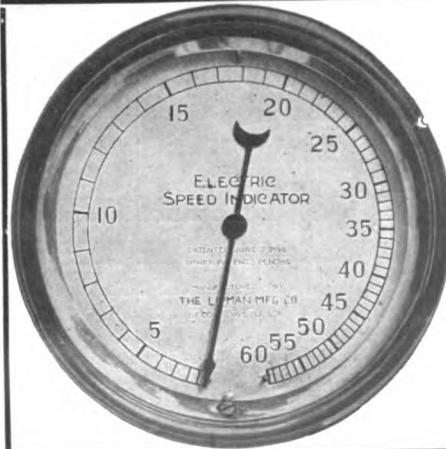


The most comfortable hotel in Buffalo. Beautiful Palm Garden. Large, airy rooms, with Bath. Two blocks from Lake Erie and Niagara River. Niagara Falls electric cars one minute from the door. Wire at our expense, or write for reservations and carriage will meet you and take you to hotel free of charge. Six minutes from down town.

Reduced rates to Tourists, Professional and Traveling Men.

SPAULDING HOTEL CO.

Mrs. C. J. Spaulding } Props.
C. A. Spaulding }
Porter Ave. & 7th St.



THE LIPMAN ELECTRIC SPEED INDICATOR

The only speed instrument in the market that uses NO FLEXIBLE SHAFT. Can be attached to any car—Electric, Steam or Gasoline—Two sizes: up to 40 miles per hour and up to 60 miles per hour—Write for circular.

THE LIPMAN MFG. CO.
210 Pleasant Street
BELOIT, WIS.

NOW READY FOR DELIVERY

The Automobile Official Blue Book for 1907

PUBLISHED IN THREE VOLUMES

<p>Section No. 1</p> <p>New York= Canada and West</p>	<p>Section No. 2</p> <p>New England</p>	<p>Section No. 3</p> <p>New Jersey Pennsylvania South and West</p>
---	---	---

Section No. 1

622 PAGES

Size 5 1-2 x 9 1-2 inches

Covering New York State, Lower Canada, and Trunk Lines through to the Middle West.

Containing 328 Routes, covering 21,820 miles of Roads.

Fully Illustrated and Described by Text, and

254 MAPS

96 Route Maps, 132 City Maps, 26 Full Page Maps, 5 Double Page Maps.

Section No. 2

534 PAGES

Size 5 1-2 x 9 1-2 inches

Covering New England, with Extension Routes into the Provinces.

Containing 285 Routes, Covering 17,469 Miles of Roads.

Fully Illustrated and Described by Text, and

229 MAPS

137 Route Maps, 71 City Maps, 19 Full Page Maps, 2 Double Page Maps.

Section No. 3

478 PAGES

Size 5 1-2 x 9 1-2 inches

Covering New Jersey, Pennsylvania, Delaware, Maryland and Trunk lines through the Middle West.

Containing 248 Routes, covering 16,983 miles of Roads.

Fully Illustrated and Described by Text and

159 MAPS

65 Route Maps, 82 City Maps, 7 Full Page Maps, 5 Double Page Maps.



Actual Size of each Book—
5 1-2 x 9 1-2 inches

The Most Complete

volumes of Touring Information ever published. All the Best and Most Popular Routes, and Best Accommodations in Hotels and Garages.

Indispensable to Tourists.

Bound in Genuine Leather, \$2.50 per Section, Prepaid

For Sale at all Leading Book Stores, Garages and by the Sole Publishers,

The AUTOMOBILE, Blue Book Dept. Flatiron Building, New York

FLEXIBLE ROLLER

HYATT



BEARING

Specify them before you buy
HYATT ROLLER BEARING CO., Harrison, N. J., U. S. A.

You'll have enough other troubles



The Caterpillar Flame



in the PFANSTIEHL COILS is not an ordinary spark but a Hot Flame. Every unit an X-Ray Coil. Noiseless and Rapid Vibrators. Guaranteed not to burn out on any current. Write for full particulars.

PFANSTIEHL ELECTRICAL LABORATORY, NO. CHICAGO, ILL.

BEELER & ROBB

ATTORNEYS AT LAW

U. S. and Foreign Patents and Trade Marks

Patents, Patent Litigation Conducted, Opinions Concerning Infringement and Validity of Patents. Ten years' experience on the Examining Corps, U. S. Patent Office. Hand-book for Inventors and Manufacturers mailed on request. Suite 80, Baltic Bldg., 606 F St., N.W., Washington, D.C.

DROP FORGING



Let Us Get Together
On The Question Of

DROP FORGINGS

We make first-class forgings of every nature, Steel, Iron, Bronze or Copper. Inform us as to your needs. Let us quote estimate. Send for catalog.
PAGE-STORMS DROP FORGE CO., Inc., Springfield, Mass.

For SPARKING POINTS
SUBSTITUTE



for PLATINUM

Increases Efficiency of Flame at Point of Contact.
 Will not oxidize. Costs Less and Outwears platinum. H.P. Efficiency Increased. **IDIDIUM METALS CO., BOSTON, MASS.**

"The Car without a fault"

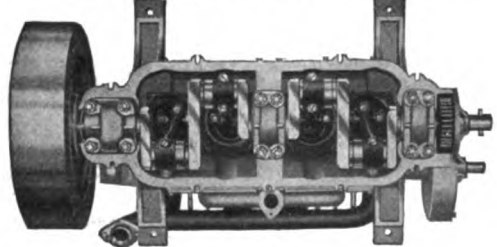
THE MARTINI

Made in Switzerland. Built to climb mountains.
 Reliable, Fast, Noiseless

Send for handsome illustrated 1907 Catalogue FREE
MARTINI IMPORT CO., 239 West 50th St., New York

BEAVER MOTORS

Vertical 4-Cylinder—4½ x 4½.
 Horizontal Opposed—4½ x 4 and 5½ x 4½.



BEAVER MANUFACTURING CO.
 237 Oregon Street Milwaukee, Wis.

BUCKEYE AUTOMOBILE JACKS

STRONG SAFE RELIABLE
 Highest Grade Material and Workmanship.
 The Result of 20 years Experience in Jack Building

Especially suitable for automobile use. Can be operated under any automobile.
 Made only by the **Buckeye Jack Mfg. Co. LOUISVILLE, OHIO**



The only Jacks on the market having High Carbon Crucible Steel Drop-forged Racks and Pawls, insuring against breaking down under load.

Distributing Agents:
 Post & Lester Co., Hartford, Conn.; distributors for New England States.
 M. G. West & Co., San Francisco, Cal., distributing agents for the Western Coast.

HIGH **Alpha** GRADE

PURE SEAMLESS
INNER TUBES

THE STRONGEST TUBE MADE
 IMPORTED OR DOMESTIC

PARKER, STEARNS & COMPANY,
 228 & 229 South Street, New York.

For a hot, fat, snappy spark
 USE THE

RED SEAL Dry Battery

FOR SALE EVERYWHERE

New Catalog J-22. Something Electrical for everybody. Free on request.



Manhattan Electrical Supply Co.
 NEW YORK 17 Park Place CHICAGO 188 Fifth Avenue

LOZIER

THE SUPREME TEST OF ENDURANCE

- ☞ In the 24 HOUR RACE at the Philadelphia Point Breeze Track June 28-29, THE LOZIER MOTOR CAR (a 40 H. P. Touring Model) FINISHED FIRST PLACE against cars of 50 and 60 H. P., with a Total of 717 Miles over a heavy, muddy, slippery course that 14 hours of rain DURING THE RUN had rendered worse than the famous NEW YORK TO ALBANY 208 MILE ENDURANCE RUN of June 6, and in which severe test THE LOZIER TOURING CAR won FIRST PLACE and was awarded the TROPHY.
- ☞ Two LOZIER MOTOR CARS entered in the FOUR-DAY SEALED BONNET CONTEST of June 19-22, finished with perfect scores and without adjustment of any kind, each earning a Trophy.
- ☞ AN AVERAGE OF 30 MILES PER HOUR FOR 24 CONSECUTIVE HOURS on a heavy, muddy track such as that of June 28-29, is unquestionably a great record, and the above tests spell ENDURANCE such as only a car of the general excellence of THE LOZIER can guarantee.
- ☞ This Car (No. 519), the winner in all of the above, went into commission on May 28, and HAS WON THREE TROPHIES for the month of June. It returned from the Point Breeze Run without adjustment, and is now doing demonstrating duty in New York. That it is a regular stock car and not specially constructed for races such as the above, is assured in that it is offered at \$5,000, the regular price, to any one. Every car that we build is just like it.
- ☞ We have talked MERIT and ENDURANCE always—they are big assets of THE LOZIER MOTOR CAR.

40 H. P. TOURING CARS \$5,000
AND RUNABOUTS

60 H. P., \$7,000—40 H. P. Limousines, \$6,000—Marine Motors, 55 H. P.

THE LOZIER MOTOR COMPANY
55th STREET AND BROADWAY, NEW YORK

(Member A. L. A. M.)

THE ALLOY THAT MAKES ANTI-FATIGUE STEEL

Ferro-
VANADIUM

What the automobile manufacturer wants is a steel that will stand up under vibration. There are plenty of steels with great elastic strength—but they won't stand the terrific strains, the unexpected shocks, the constant vibration to which they are subjected in modern, high-speed automobile construction.

We call Vanadium steel the "Anti-Fatigue" steel because it not only excels all other steels in elastic limit, but it has more life or vitality to it than any other steel that was ever produced.



Cold twist of crankshaft steel.
Elastic limit 116,000 lbs. per sq. in.

The illustration shown on this page demonstrates the marvelous combination of **great strength and extreme toughness or ductility.**

Vanadium steel is practically unbreakable under any of the conditions of ordinary or extraordinary use. It takes a tremendous pressure to bend it, but it will bend before it will break. It will not deteriorate under vibration. It will not break under sudden or unexpected stress.

It is the **only** steel to use in any place where the safety of human life depends upon the materials used.

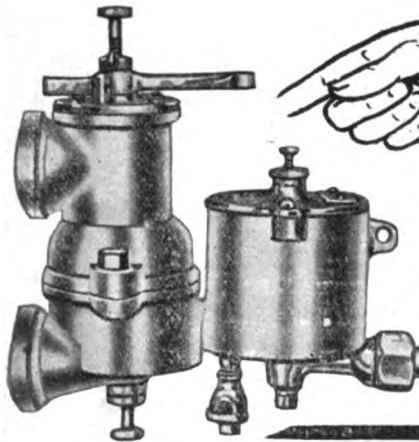
Vanadium Book No. 2 is now ready. Every steel user ought to have it. May we send it to you?

AMERICAN VANADIUM COMPANY

Miners of Vanadium Ores

Manufacturers of Ferro-Vanadium

Frick Building, Pittsburgh, Pa.



The **WILLET CARBURETER** PAR EXCELLENCE

THE CARBURETER
for Low Grade Gasoline
for Two or Four Cycle
Engines

Easiest Starting Carbureter in the world

A Carbureter you can depend upon—that always gives a perfect mixture regardless of conditions imposed

The superiority of the Willet Carbureter is that instead of a single nozzle there are a series of six small tubes which form individual nozzles fed from the inlet at the bottom. Owing to restricted openings, the air must pass close to the points of the individual nozzles and carry a considerable quantity of gasoline even at slow speeds. A conical shaped valve makes the carbureter very sensitive, and the concentration of air over the individual nozzles gives such a good mixture that the engine can be readily started.

Write for full description and prices

WILLET ENGINE AND CARBURETER CO., 764 Ellicott Square, BUFFALO, N. Y.

1908

AXLE

We are now Ready to quote prices. We await your specifications.

WRITE US

BARNETT

CRANK SHAFT

Our plant is especially equipped for Automobile Work

WRITE US

DROP FORGING CO.

FORGINGS

EAST HAMPTON MASS.

HARRIS

TRADE MARK REGISTERED

OILS

Super Gas Engine Cylinder Oil.

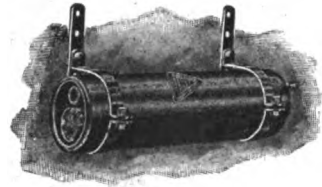
Heavy bodied, for loose fitted pistons. High fire test. Very durable. Specially adapted for splash system of lubrication.

Sold at principal garages.

A. W. HARRIS OIL CO., 330 S. Water St., PROVIDENCE, R. I.

AUTOGAS

Means Perfect Automobile Lighting



Manufactured by

AVERY PORTABLE LIGHTING CO.

18 Martin St., MILWAUKEE, WIS.

Broadway, ALBANY, N. Y.

We Are the Pioneers in This Business

EQUAL PRESSURE IN TIRES SAVES DOLLARS

The National Pressure Register

is the only instrument that will show the actual pressure. EASE OF OPERATION is demanded by those who have to inflate Automobile Tires.

The Kellogg Jr.

is the easiest of them all; nothing on the up stroke, easy on the down.

MANUFACTURED BY

Wray Pump & Register Co.

191-193 Mth Street

Rochester, N. Y.

The same oil for all engines is as ridiculous as the same automobile for all uses. We have a distinct grade of

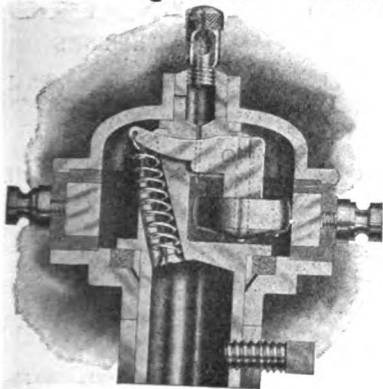
Monogram Oil

for each engine. Send us the name of your car and we'll tell you which grade is

Best for Your Engine

Columbia Lubricants Co., of New York
78 Broad Street, New York City

The "QUAD" TIMER Has no equal



MADE UPON HONOR
SOLD UPON MERIT

Small, neat, compact. Double bearing to eliminate eccentric wear of one journal. Crowned roller giving definite contact. Self oiling. Actually dust-proof, perfectly noiseless, delivers the full current of the battery to the coil, and is guaranteed to show higher efficiency than any other timer on the market.

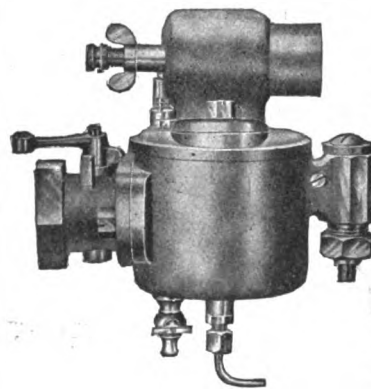
Try one and be convinced.

WRITE TO US.

The QUAD MFG. CO.
Columbus, Ohio

"ACORN" CARBURETER

For Autos and Motor Boats



Positive action; no pockets or depressions to collect gasoline.

Write for Circular "A"

Baird-Banks Mfg. and Supply Co.

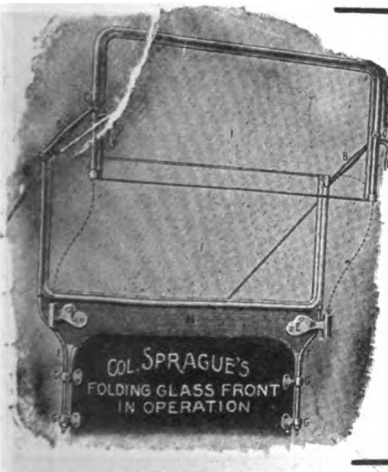
35 Warren Street
New York City, U. S. A.

WRITE US ABOUT IT

Col. Sprague's Auto Tops and Fronts. You know about the tops—the fronts are anti-rattling. No set screws. No thumb nuts.

Ask for our catalogue.

The Sprague Umbrella Co.
NORWALK, OHIO



COL. SPRAGUE'S
FOLDING GLASS FRONT
IN OPERATION

The BUFFALO CARBURETOR



Eliminates Carburetor Troubles

Recognized as the most practical. Used and endorsed by the following makers:
CORBIN, DeLUXE, FORD "Six Cylinder," HARRISON, JACKSON, KNOX-WELCH, WAYNE

There's a reason why!

Produces greater horse power per gallon, gives perfect control of the motor under all conditions, has great flexibility, and produces a perfect mixture at all speeds. It is a Mechanical Carburetor. The Haynes Vanderbilt Cup Racer was equipped with a BUFFALO, and all 1906 Thomas records were obtained with this Carburetor. Our descriptive matter on application

THE BUFFALO CARBURETOR CO.
889 MAIN STREET, BUFFALO, N. Y.

NO, I NEVER HAVE TIRE TROUBLES, I USE THE "Little Wonder" Vulcanizer

The "Little Wonder" Vulcanizer will overcome all your tire troubles. It will quickly vulcanize scratches, blisters, and any trouble with the outside casings and inner tubes.

ANYONE CAN OPERATE IT. It will save its cost many times over in a season's runs. Be sure to mention size of tire when ordering. Price, \$6.00 made of iron; \$7.00 of aluminum.

Write for Catalog and Prices

**Louis E. Rice
Vulcanizing Co.,
CEDAR FALLS, IOWA**



BEMUS
TWIN-BALL
TIMER

Compact, easily accessible, adjustable, best possible contact, easily renewable, absolutely accurate, the most durable, and made of the best material
Send for Catalog!
On sale by all dealers

T. ALTON BEMUS CO. (Inc.) 358 A Atlantic Ave. BOSTON, MASS.

THE IDEAL IGNITION EQUIPMENT

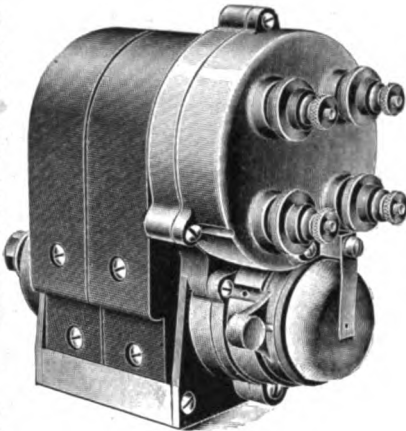


if a coil is used, consists of a Dow Coil, Dow Double Insulated Mica Spark Plugs and a Dow Ball Bearing Timer.

If a magneto is preferred, the Dow "KOMET," in which the distributor and timer are incorporated, will give you more efficient service and less trouble than any other. The "KOMET" is an IGNITION INNOVATION.

Write for particulars.

DOW PORTABLE ELECTRIC COMPANY, BRAINTREE, Mass.



If auto manufacturers only knew what users of their cars think of some of the radiators they get, they would quickly make a change.

We know, because we are replacing radiators every day and some of them new.

Why not use a good radiator when you can get it at about the same price.

Every time we make a sale of this kind, we secure a new friend and a big ad., for the purchaser is so pleased that he is continually urging his friends to get a **FEDDERS RADIATOR** and be free of their radiator troubles.

If we did not have the best radiator proposition you would not see our radiators on such cars as the Pierce, Thomas and Packard.

WRITE US.

FEDDERS MFG. WORKS Buffalo, N. Y.



Public Opinion
Acknowledges the Superiority of the Index

Individual work and care of construction makes this an instrument that will outwear an auto. Write for Booklet.

Oliver Instrument Co.
MINNEAPOLIS, MINN.

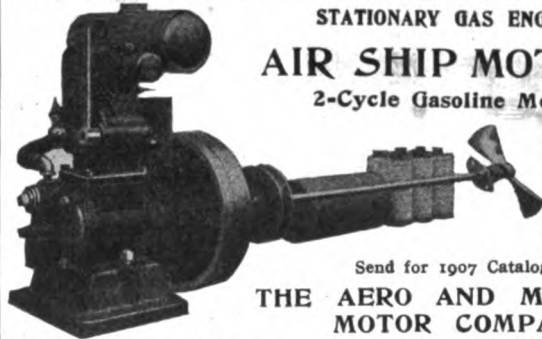


INDEX

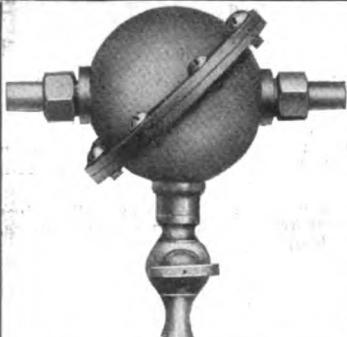
MARINE MOTORS
STATIONARY GAS ENGINES
AIR SHIP MOTORS
2-Cycle Gasoline Motors

GASOLINE PUMPING OUTFITS

Send for 1907 Catalog
THE AERO AND MARINE MOTOR COMPANY
60 Pemberton Square, Boston, Mass.



\$1.40 PREPAID TO ANY ADDRESS IN THE U. S.



GIVE A CARE to your gasoline pipe strainer, as nine times out of ten it is the secret of carburetor troubles. A little water or foreign substance in the gasoline will put your carburetor out of commission. Our strainer is a guarantee against such troubles. It is made from sheet brass, highly polished, and furnished with either 1/4 or 5/16 inch connections. The gasoline enters through the low connection, strains through a chamois placed at an angle across the globe, and passes to the carburetor through the upper connection cleansing the gasoline thoroughly. The foreign substance remains beneath the chamois and may be drained through the petcock. Write to-day for catalog. Special prices to manufacturers and dealers in quantities.

The Hatcher Auto-Parts Co. 185 Vliaduct CLEVELAND, OHIO

"Porox" Ignitor Storage Batteries
FOR IGNITION AT HIGH SPEED AND CLIMBING HILLS NONE BETTER

High Capacity Light Weight


The only American ignition accumulators put up in celluloid jars. They surpass in capacity, lightness and durability the imported French cells. 1,500 miles on a single charge with a 4-cylinder car. We guarantee more mileage than any other make.

Write for circular and price list.

MANUFACTURED BY
ALBERT MULLER
205 West 41st St. New York City



EMPIRE TUBE CASE



You carry an extra air tube. It will pay you to keep it in good condition. The Empire Tube Case is cured in just the right shape to fit the tube. It is made in four sizes.

THE PRICE IS LOW
WRITE US

Empire Automobile Tire Company, Trenton, N. J.
New York, 2230 Broadway, 148 Chambers St.
CHICAGO, 20 La Salle St.
BOSTON, 292 Devonshire St.

NON-PUNCTURABLE TIRES

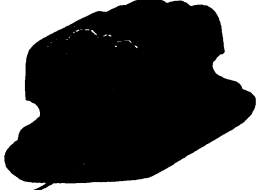


Pneumatic tires made puncture proof by incorporating Gumelastick Rubber Compound Core in old or new tires. Will last as long as the castings will remain intact.

It is solid, not a fluid. It is as resilient as air. It is as tough and as elastic as pure rubber. It does not jar the machinery.

Send for illustrated booklet and price list.

The Gumelastick Tire Company, 920-922 Bolivar Rd. Cleveland, O.
Cor. Erie St.



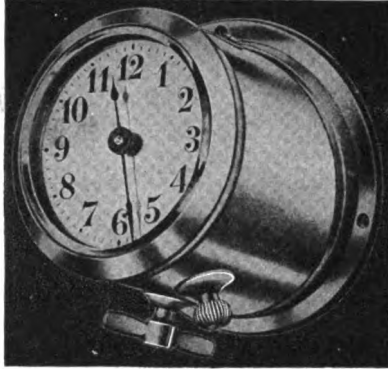
THAT OLD "GAG"

about vibration is not proof in practice. Swineharts are crowding steadily to the front on honest merit.

Cost a little more money but more than five times the mileage of the best pneumatics.

Get our booklet "Story from Users." It shows the excellent reputation among users. *Get also Catalog "C."*

The Swinehart Clincher Tire & Rubber Co.
Akron, O. New York Chicago Boston Buffalo Detroit Minneapolis



VENUS CLOCK

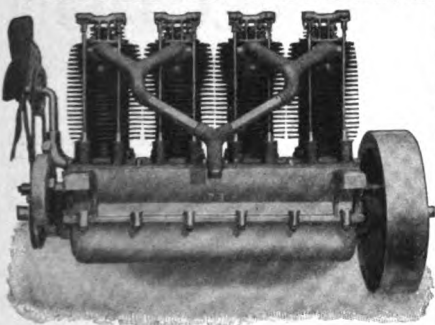
Luminous Face

Can be seen at night
Runs 8 days. Small, Accurate and Reliable. Winds, sets and regulates on outside of case.

Price, \$3.00

THE POST & LESTER CO., Hartford, Conn.

"THE REEVES" AUTO ENGINES AIR AND WATER COOLED



THREE MODELS FOR EARLY DELIVERY

- Model E, 4x4, 4 cylinder, 20 H. P., air cooled.
- Model L, 4x4, 4 cylinder, 22-24 H. P., water cooled.
- Model N, 4x4, 2 cylinder opposed, 10 H. P., air cooled.

"An engine for the 'Ordinary Mortal' as well as the expert."

Write for particulars to
Reeves Pulley Co. COLUMBUS, IND.

Model E
4x4, 20 H.P., Air Cooled

ROGER B. McMULLEN, Sales Agt.
1241 Michigan Ave., Chicago

AN INVALUABLE FEATURE OF "BREECH-BLOCK" PLUGS

IS THE BREECH-BLOCK WHICH ENABLES THE OPERATOR TO OPEN AND CLEAN THE PLUG IN 4 SECONDS

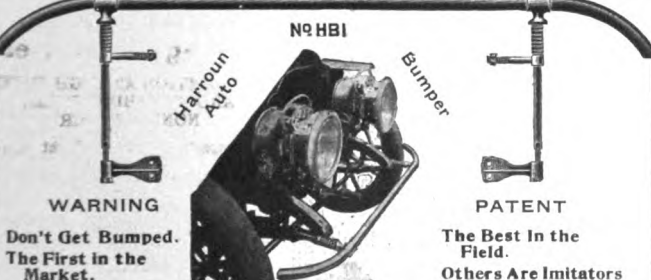


INSTANT REMOVAL AND REPLACEMENT WITHOUT TOOLS.

NO OTHER PLUG IN THE WORLD HAS THESE ADVANTAGES.

Soot-proof to the limit. Unaffected by oil. Chambered end protects porcelain. Keeps porcelain fragments from cylinder. Slightest piston movement cleans points. Makes starting easy; fires first charge. Closely throttled; not a skip. Better value than any other plug made. This plug is enthusiastically recommended by such experts as Barney Oldfield and thousands of users all over the country. We guarantee better results with the Breech-block than any plug made. Write for full particulars and prices.

THE STANDARD CO. TORRINGTON, CONN.



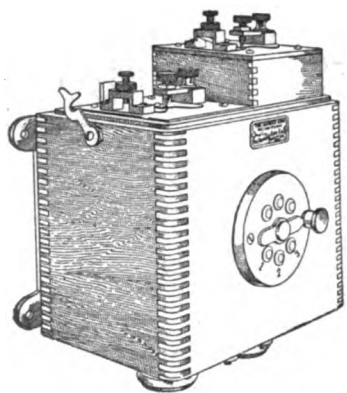
WARNING
Don't Get Bumped. The First in the Market.

PATENT
The Best in the Field. Others Are Imitators

THE HARROUN BUMPER PATENT has been allowed, and as soon as it can be issued we will bring suit against all USERS of Bumpers infringing on and not manufactured under the HARROUN license.

R. W. HARROUN, Patentee.

THE TURNER BRASS WORKS, Sole Licensees
CHICAGO, ILL. U. S. A. SYCAMORE, ILL.



The Why of the Duplex Coil

Two cores instead of one means short primary and secondary windings—no loss of energy in the coils—the full voltage being delivered to the

vibrator. They mean 4-times-greater magnetic force—the use of a strong spring and light armature, a quick, hot spark at that point of compression which produces *full force and power*. "A mile's trial will prove it all." Therefore we make the following offer to you to-day. Don't doubt. Just write.

30 Days' Free Trial

We will send the Duplex Coil, express prepaid, to any manufacturer or responsible automobile owner on its merits. Put this coil on any car in place of any other coil on the market, and if, after a reasonable trial, the Duplex Coil does not show greater efficiency, does not give a hotter spark, does not increase the power of your car, does not use less current for a given mileage and is not more generally satisfactory than any coil on the market, remove it from the car and return it to us at our expense, and the test will have cost you nothing.

If the coil bears out our claims, after a most rigorous trial, then pay us the small sum which we ask.

Write us to-day on your business stationery and a Duplex Coil will be sent you at once.

The Duplex Coil Co.
Station N Fond du Lac, Wisconsin

"EISEMANN- LAVALETTE" MAGNETOS

HIGH TENSION
LOW TENSION

Adopted by the World's
Leading Automobile
Manufacturers

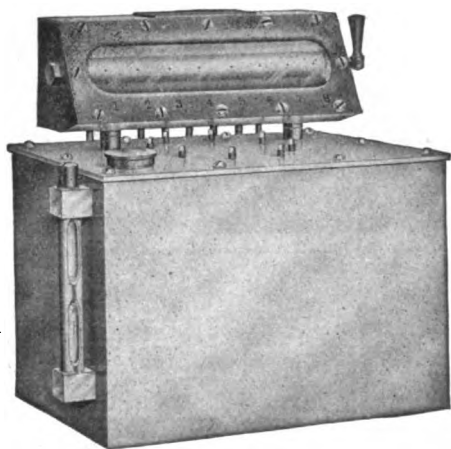


SOLE OWNERS OF UNITED STATES AND CANADIAN PATENTS:

LAVALETTE & CO.

16 East 42d Street

New York, N. Y.



TROUBLE PREVENTERS

That's Another Name for

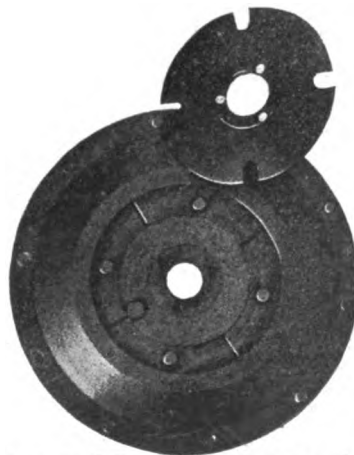
Hill Precision Oilers

We positively GUARANTEE to make deliveries as promised

PRECISION APPLIANCE COMPANY

835 Austin Avenue, Chicago, U. S. A.

BRAKE PERFECTION SECURED



No more worries necessary. No more accidents possible through failure of brakes to hold. Absolute safety to both passengers and car assured. Arrests skidding.

PROMPT
DELIVERIES

The Moon Roller Bearing, Apex Friction Brake is so made as to be practically dust proof. The brake runs in grease, and its action is roller bearing. The friction

is caused by quadruple eccentrics, which force the pressure in four directly opposite motions, forming a complete revolution of friction, instantly.

They are Neat, Strong, Compact and Positive, acting directly on the rear wheels. They will outlive any car ever built.

Write for prices and further particulars.

The Moon Apex Brake Co.
DETROIT, MICH.

BETHLEHEM STEEL CO.

High Grade Steels for Motor Cars
in Bar Stock Drop Forgings and Pressed Steel Frames

Bethlehem Special Motor Steel
Chrome Nickel
Silico Manganese
Mild, Medium and Special Nickel
High, Medium and Mild Carbon Steels

GENERAL SALES OFFICE:

Bethlehem Steel Co., South Bethlehem, Penn.

District Sales Offices: New York, 100 Broadway; Philadelphia, Pa. 15th and Chestnut Streets; Pittsburg, Pa., Keystone Bank Building; Chicago, Ill., Fisher Building; San Francisco, James Flood Bldg.

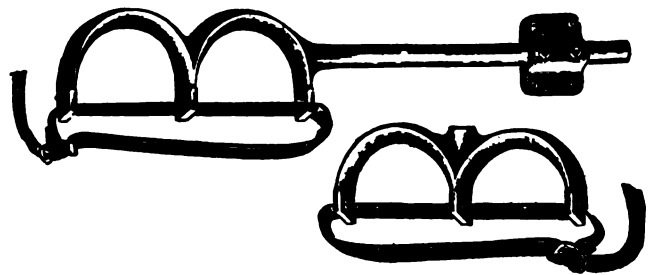


Cold Bending Tests Made Possible by Proper Heat Treatment of Bethlehem Steel.

ADJUSTABLE TIRE HOLDER

*To Fit Any Car
and Any Size Tire*

Made of best quality brass, finely finished, and will hold either one or two tires.
Set consists of two long and one short piece.
List price, \$7.00

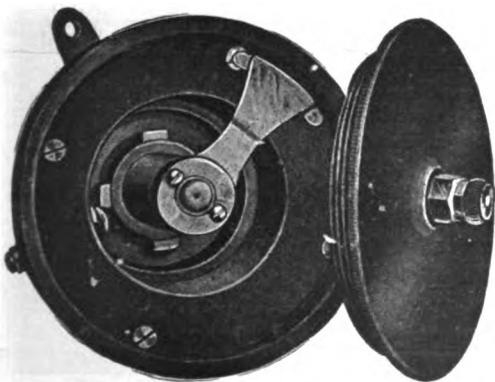


THE MOTOR CAR EQUIPMENT CO.

Manufacturers, Importers and Distributors of
Automobile Accessories

Write for our 128 page Catalogue

Main Offices and Warerooms:
55 Warren St., New York



“Leavitt” 1907 Specialties

The Leavitt Secondary Distributor and Spark Timer has been on the market for the past three years and has more than proved our claims of “Simplicity, Reliability and Efficiency.” It has been tested out in the experimental departments of the leading manufacturers and the proof of its having won out is in its being adopted by a number of the leading manufacturers on their '08 cars in connection with the Magneto System. Hadn't you better investigate?

THE UNCAS SPECIALTY COMPANY, 13 Shipping Street, Norwich, Conn.

NEW YORK BRANCH, 1781 Broadway.

'Phone, 5846 Columbus.

TRUFFAULT-HARTFORD SHOCK ABSORBER

SHIELDS YOU

From the dangers and discomforts of riding on rough roads. They prevent the breaking of springs, save time, tires and trouble. Seventeen prominent manufacturers use them as part of their equipment. Our booklet goes into the subject more fully.



THE PIONEER

THE BEST

HARTFORD SUSPENSION COMPANY

E. V. HARTFORD, Pres.

67 VESTRY STREET, NEW YORK

Applications made at our garage, 212-214 W. 88th St., N. Y.

None as Good—No Matter What Price

"SOOT PROOF"

PLUG \$1.00

C. A. MEZGER, Inc., MFRS.

40 W. 60th St., New York

National Sales Corporation, Factory Sales Mgrs., 296 Broadway
NEW YORK

GENESEE

AUTOMOBILE TIRES

will fit any clincher or quick detachable Universal rim
5000 MILE GUARANTEE

The only Tire sold direct from **Factory to Owner**
Eliminating all Middleman's Profits

Buy your Automobile Tires Direct and Save
\$8.00 to \$25.00 per Tire

We guarantee every Genesee Tire equal to the very best tire on the market to-day.

EVERY ONE 1907 STOCK

HAND WRAPPED CASING

HAND WRAPPED INNER TUBE

IT IS NOT A MOULDED TIRE

NO SECONDS FOR SALE

Note these prices as compared with the List Price of other Tires.

	Casing	Tube	Complete
28 x 2 1/2	\$12.10	\$3.36	\$15.55
28 x 3	10.95	4.06	24.01
30 x 3	21.35	4.34	25.69
30 x 3 1/2	27.71	6.16	33.87
30 x 4	31.90	7.48	39.38
32 x 3 1/2	20.52	6.58	27.10
32 x 4	34.05	7.95	42.00
32 x 4 1/2	42.00	9.35	51.35
34 x 4	36.23	8.40	44.63
34 x 4 1/2	44.61	9.93	54.54
36 x 4	38.37	8.88	47.25
36 x 4 1/2	47.25	10.50	57.75

THOS. D. BUICK CO., Flint, Mich.

CHICAGO BRANCH—87 Ashland Blvd. near Madison



EASY GOING

The lubrication of the automobile engine, is not a thing to be trifled with. Engines of different construction, working at different speeds, temperatures and loads, require oil exactly adapted to each. The *right* oil means "easy going;" oil that is merely "good" may mean disaster.

VACUUM MOBILOIL

is unequalled for the safe and scientific lubrication of every style and type of automobile engine.

Write for booklet listing every automobile made, and indicating grade of Mobiloil exactly adapted to it. Hundreds of valuable auto hints, and track records to date.

Mobiloil in cans with patent pouring spout, is sold *everywhere*. Booklet sent *anywhere*. Ask for it.

Manufactured by
VACUUM OIL CO., Rochester, N. Y.



A Non-Sulphating Storage Battery Igniter



Perfect Ignition

AT GREATLY REDUCED COST

A recharge costing 50 cents at any Electrical Supply Station, will run your car as far as dry batteries costing at least \$12.00. Have full power until the last, and will give the engine

More Power and Speed

These Batteries are guaranteed. They are not affected by water and are especially adapted to Marine use. The plates will not buckle nor will "active material" be dislodged. Our prices are right. Send for illustrated matter giving styles and prices

MANUFACTURED BY

GEISZLER BROS.

316A West 42nd Street, New York City

YOU will be SATISFIED if you use The "Brown Separable" Lock Spark Plug

(Patent Applied for)

See that the name "Brown" is stamped on each Plug

Scientifically Constructed

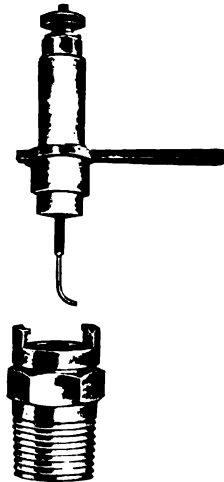
Absolutely Sure Ignition

Carbon prevented from Reaching Insulation

Simple Durable

Efficient

Construction Thoroughly Tested



It has the most perfect lock ever invented, no working loose after it is locked. It is positive and locks to the maximum pressure with the fingers. Absolutely the most perfect spark plug ever invented.

MANUFACTURED BY

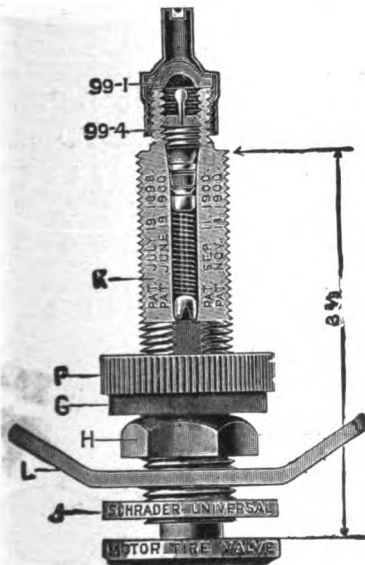
THE PROGRESSIVE MFG. CO.

TORRINGTON, CONN., U. S. A.

Schrader Universal Valve

Trade Mark Registered April 30, 1895

SIMPLE AND ABSOLUTELY AIR TIGHT



Schrader Motor Tire Valves, as shown in cut, are the regular equipment for G & J Motor Tires, Hartford Dunlop Detachable Motor Tires, Fisk Detachable Motor Tires, and New Good-year Detachable Motor Tires. Our No. 777 Motor Tire Valve is the Standard for 2 1/2 in. and 3 in. tires and our No. 725 Motor Tire Valve is the standard for tires larger than 3 inches.

Supplied to the Trade by all Tire Manufacturers

Manufactured by

A. SCHRADER'S SON, Inc.
28-30-32 Rose St., New York

Five Years Experience in turning out

CASTINGS of
ALUMINUM, PHOSPHOR BRONZE, MANGANESE BRONZE

FOR
SEVERAL LEADING AUTOMOBILE MANUFACTURERS

has developed our compositions for Automobile use to a point of perfection which is not excelled. Send us your patterns or blue-prints for sample casting and estimates.

Niagara Falls Brass Works

(Inc.)

Virginia & Seventh Sts.
BUFFALO, N. Y.

QUICK SERVICE GUARANTEED



We Want to Sell You Just Two Things

ALUMINUM
AND
MANGANESE BRONZE
CASTINGS

Our alloys are made from Pure Ingot metals, mixed by ourselves. You get no ready made alloys from us. Every casting made from a mixture especially adapted to the service required. A good place to get good Castings. Write for particulars now.

**SYRACUSE ALUMINUM
& BRONZE CO.**

530 Leavenworth Ave., SYRACUSE, N. Y.
THOMAS J. WETZEL, Eastern Sales Agent, 29 West 42d
Street, New York City

KINGSTON

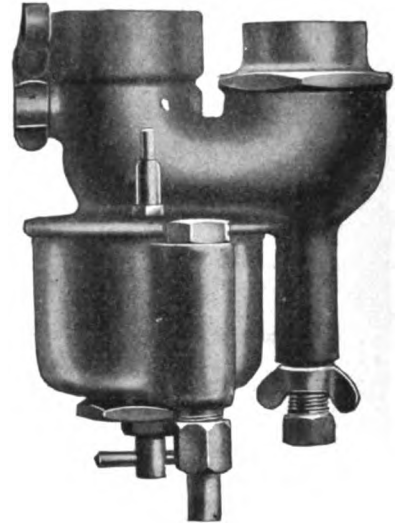
1907 CARBURETORS

VERTICAL OUTLET

Furnished either Vertical
or Horizontal Outlet

Furnished as Regular
1907 Equipment by

Olds Motor Works
Ford Motor Co.
Haynes Auto Co.
Wayne Auto Co.
E. R. Thomas
Detroit Co.
Motorcar Co.
Detroit Auto
Vehicle Co.
Buckeye Mfg. Co.
Rapid Motor
Vehicle Co.
Continental
Motor Mfg. Co.
Austin Auto Co.
and many others



Over 63,000 Kingston Carburetors Now
in Use

For Sale by
All Jobbers

BYRNE, KINGSTON & CO.
Kokomo, Indiana, U. S. A.

A. O. SMITH CO.
Highest
Quality

Pressed Steel
FRAMES

High Carbon, Nickel, or Chrome Nickel

HEAVY STAMPINGS OF ALL KINDS

Factory Capacity Doubled—Contracts Taken for Any
Standard Frames in Any Quantities for

IMMEDIATE DELIVERY

and Contracts for 1908 Accepted

We also make

Rear Axles, Front Axles, Transmission Gears, Clutches,
Pressed Steel Hubs, Etc., Etc.

SEND BLUE PRINT FOR ESTIMATE

A. O. SMITH COMPANY

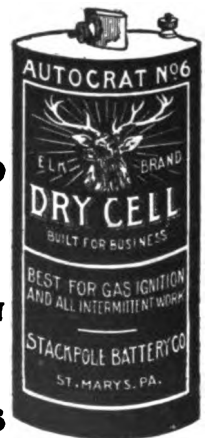
Park, Clinton and Virginia Sts., MILWAUKEE, WIS.

**YOU CANNOT STOP
A SUCCESS**

THE WORLD'S STANDARD
IGNITION CELL: 

OF WHAT VALUE IS YOUR OPINION
If you have not tried

Elk Brand Dry Cells

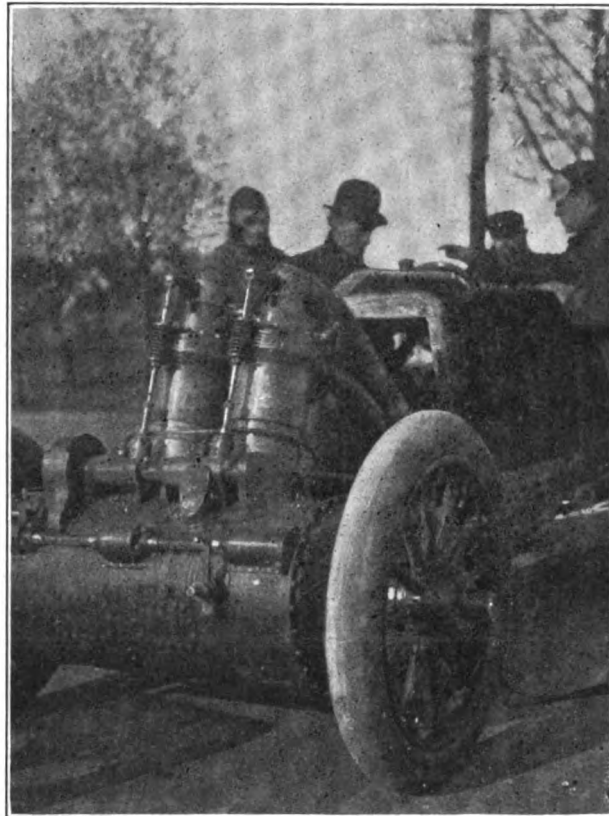


**WON'T
SHAKE
LOOSE**

A perfect contact no matter how hard the
JOLTS or VIBRATION

Stackpole Battery Co.
ST. MARYS, PA.

HEINZE MOTOR CAR COILS



Selected for
AMERICA'S
REPRESENTATIVE
CHRISTIE'S RACER
in the
GRAND PRIX

FRANCE,
JULY 2d, 1907

The MOST
DEPENDABLE
and
THOROUGHLY
SATISFACTORY
COILS
In the world
HIGHEST EFFICIENCY
LONGEST LIFE

THE FIRST POINT FOR SUCCESS

In motoring is reliable ignition. In racers it is not a question of cost but solely a question of QUALITY. The unfailing dependability of "Heinze Coils" makes them absolutely the world's best.

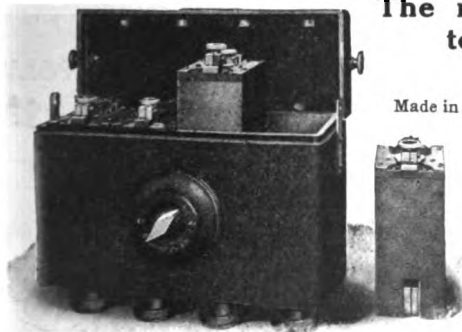
The most reliable under all tests. Always yield splendid results.

Made in Convenient Sizes suitable for any Type of Motor Cars.

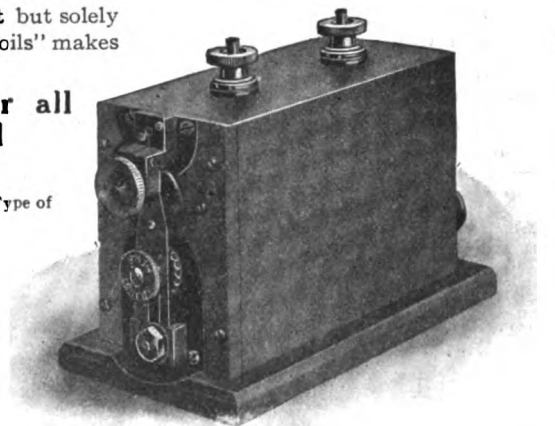
You will make a wise move in specifying Heinze Coils and you will never be disappointed.



Send for Catalogue

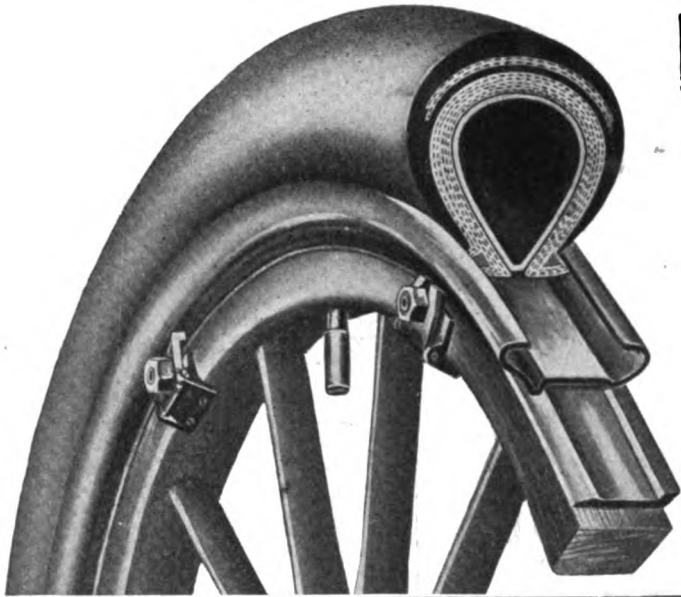


Cut of B-35, 4-cyl. Interchangeable Unit Dash Co



Type B-18, Single Cylinder Vibrating Box Coil

HEINZE ELECTRIC COMPANY, - Lowell, Mass.



Save 27 Minutes

The usual time required to replace a
punctured tire is 30 minutes
With the

CRESCENT

(Formerly Harburg)

Removable Rim

a complete tire change is made
in 3 minutes, by the watch.

The above sectional view shows the permanent beveled band, fitted to the wheel felloe, the adjustable rim holding any regular make of clincher tire, and the hinged clip, six of which are used to hold the rim in place.

Extra tires and rims are always carried—the tire being inflated at home before starting on a trip.

When a puncture is experienced, the damaged tire with its rim is removed and the extra rim and inflated tire is quickly bolted to the wheel, the entire operation consuming but three minutes.

Nothing could be more simple. Irritating delays are absolutely done away with. All parts are galvanized, nicked or bronzed, thereby preventing any possibility of their rusting tight.

Any regular make of clincher fits these rims. Can be used on old or new wheels.

Write to-day for particulars, prices and descriptive circular.

The Crescent Parts Co.

Dept. A. 1743 Broadway
NEW YORK CITY

SPLITDORF IGNITION—NONE BETTER

One of Many Good Judges says :

Ardmore, Pa., May 28, 1907.

Mr. C. F. Splitdorf,
New York.

Dear Sir :

The car with which we won the 24-Hour Track Championship at Pt. Breeze on May 24th and 25th was equipped with a Splitdorf Coil, and I wish to compliment you on your product, as the action of your coil was perfect throughout the entire race.

This was a stock coil which we selected from the regular coils that you are shipping us from day to day.

Yours very truly,

THE AUTO CAR CO.,
John G. Utz, Chief Engineer.

You can also have perfect results by using
SPLITDORF IGNITION

C. F. SPLITDORF

Walton Ave. and 138th St.,

NEW YORK



On Your Machine—Not On Your Mind

After all, the tire question, provided it has been wisely disposed of at the outset, is a mere incidental one. It assumes an undue prominence only when this precaution has been omitted. Many good things might be truthfully said about

G & J TIRES

but they are all summed up in this:—that when your machine is equipped with them you can dismiss the tire question for good. In case of accident quick and permanent repairs insure an immediate return to the *status quo*.

The Midgley Universal Rim can be used interchangeably for the Dunlop or clincher type. It's no trick at all to take the tire off when you want to.

G & J TIRE Co. INDIANAPOLIS, IND.

BRANCHES

BOSTON—243 Columbus Ave.	CHICAGO—1434 Michigan Ave.
CLEVELAND—New No. 1837 Euclid Ave.	NEW YORK—10 W. Sixtieth St.
DETROIT—247 Jefferson Ave.	SAN FRANCISCO—423-433 Golden Gate Ave.
DISTRIBUTING AGENCIES	
G. & J. TIRE AGENCY, Denver, Col., 1528 Court Place	ENTERPRISE RUBBER CO., Boston, Mass., 110 Federal St.
G. & J. TIRE AGENCY, Buffalo, N. Y., 9 W. Huron St.	ALEXANDER-ELYEA Co., Atlanta, Ga., 35 N Pryor St.
G. & J. TIRE AGENCY, Philadelphia, Pa., 711 N. Broad St.	KEATS & Co., Portland, Ore., 64-66 Sixth St.
WESTERN RUBBER AND SUPPLY Co., Los Angeles, Cal., 1010 S Main St.	PLANT BROS., Minneapolis, Minn., 21 S. Second St.
OMAHA RUBBER SHOE Co., Omaha, Neb., Eleventh and Farnum Sts.	CENTRAL RUBBER Co., Chicago, Ill., 84 Lake St.
NORTHWEST AUTO SUPPLY Co., Spokane, Wash., 1419-27 First Ave.	SYRACUSE RUBBER Co., Syracuse, N. Y., 212-214 S. Clinton St.
PITTSBURGH RUBBER Co., Pittsburgh, Pa., 913-915 Liberty Ave.	ROCHESTER RUBBER Co., Rochester, N. Y., 55 Main St., East.
	JEROME P. PARKER Co., Memphis, Tenn., 181-183 Madison St.



AJAX TIRE

GUARANTEED for 5000 MILES RIDING

Think what that means !

Two hundred days, at least, of freedom from tire expense and worry.

Isn't it merely a matter of common sense to believe that the tire that is sold with the strongest guarantee *must* be the best?

Write for copy of guarantee, stating what size tire you are using.

Address Dept. C.

AJAX-GRIEB RUBBER COMPANY

General Office: N. E. Cor. 57th St. and Broadway, New York City

Factories : New York City and Trenton, N. J.

BRANCHES:

CHICAGO: 1303 Michigan Ave.
 LOS ANGELES: 1046 S. Main St.
 ST. LOUIS: 3948 Olive St.
 NEW ORLEANS: 933-935 Perdido St.

NEWARK, N. J.: 81 Orange St.
 BOSTON: 801 Bowdoin St.
 BALTIMORE: 20 St. Paul St.
 SEATTLE: 1419 Broadway.

PHILADELPHIA: 1413 Race St.
 WASHINGTON, D. C.: 602-604 E St., N.W.
 MINNEAPOLIS: Nicollet St.
 PORTO RICO: 32 Marina, San Juan.

LOCKE & COMPANY

AUTOMOBILE BODIES

¶ are now taking orders for early deliveries of Limousines, Landauets, and other forms of closed bodies.

¶ Without parallel in this country or abroad.

¶ Combining extreme elegance, most refined designs and unexcelled durability.

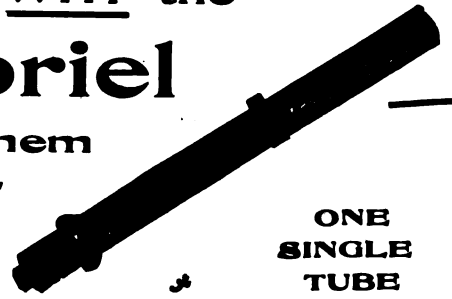
¶ Not low in price, but the highest grade of work and finish that can be produced.

218-220 WEST 84th ST., NEW YORK

Telephone, 3258 Riverside

This is WHY the Gabriel

Leads them
ALL



ONE
SINGLE
TUBE

GABRIEL Leadership is never questioned. It is very generally recognized that the Gabriel Horn is the choice of a large majority of automobilists

Why this leadership? Why is the Gabriel Horn the largest selling horn in the world? It is simply because the Gabriel is the most practical, the most musical, the most useful horn made in the world. Every place you go you hear the Gabriel. Every swell looking auto you pass is equipped with it. Isn't it "up to you" to keep up with the times and get a Gabriel? Three sizes.

Send for the book "A False Alarm," FREE!

GABRIEL HORN MFG. COMPANY

974 Hamilton Avenue, N. E.
CLEVELAND, OHIO

ALLYNE

THREE FOUNDRIES

running exclusively on Automobile Castings making the highest grade of

Aluminum Bronze Brass
and

Parsons Manganese Castings

signifies satisfaction to a very large number of automobile builders.

Are you amongst the number?

If not, write us and learn why we operate foundries at three different points.

CLEVELAND - DETROIT - BUFFALO

We make a specialty of handling heavy and intricate work—and delivering on the date promised.

The Allyne Brass Foundry Co.

QUALITY

F-5 Co.

Attention Automobile Owners

INSURE YOUR CARS AGAINST PUNCTURES AND SOFT TIRES, ALSO YOURSELVES FROM NERVOUS STRAIN AND ANXIETY.

Elastro Resilient Compound Will Do the Trick
(Patents Pending)

Any and all styles and makes of tires can be filled with Elastro—and "must be filled on the wheels."

It is the greatest discovery of the age in automobile equipment, being non-collapsible and entirely eliminating from the mind of the owner, occupant or driver all anxiety, worry and nerve strain from expected punctures or collapse of tires and accidents caused by air-filled tires.

TERRITORIAL RIGHTS

It being the purpose of this company (The Elastro Manufacturing Co.) to sell Territorial Rights for the exclusive use of the said Elastro Compound throughout the United States, by Town, City, County or State Rights on a royalty basis, and supply the necessary equipment or plant for tire or tube filling, for which we are prepared to submit plans, specifications and prices, on application, and name the territory the purchaser desires to obtain. All communications in this line to be addressed to Ernest Cady, Manager of the Agency Department.

MANUFACTURED BY

THE ELASTRO MFG. CO.

26 State St., Hartford, Conn.

OFFICERS:

H. B. Philbrick, Pres. and Treas. Chas. H. Cooley, Vice-President
Edwin S. Young, Secretary Ernest Cady, Manager Agency Dept.

Incorporated 1906

Capitalized at \$50,000

Full Paid



REX IGNITER

The King of All Storage Batteries





Particularly adapted for ignition work. The grid is of such a form as to absolutely lock the active material in place and prevent it dropping out when in service. The plates are assembled in celluloid jars, each jar having a separate cover. By the use of separate covers, entirely insulated from one another, the charge is retained for an indefinite period. The connection which extends from the inside of the cells to the outside is of such a design as to reduce corrosion to a minimum. As far as possible brass and nickel parts have been eliminated. All parts are manufactured by the company, thus making it possible to assure the quality of the product with much more certainty than if the work was undertaken by a number of independent firms.

Longer Life
Efficiency Unsurpassed

We guarantee satisfaction
We make deliveries when promised

We have established charging stations at
 230 Congress St., BOSTON
 453 Broadway, N. Y. CITY

On sale by all dealers, or write to
New England Motor Co.
 Main Offices and Works:
LOWELL, MASS.






The **SQUEAK DEVILS'** finish

Mexican Graphite (U. S. G. Co.'s) Auto-Lubricants

Reduce friction, smooth out kinks and stop the squeaks. Put new life into old machines; give smoother, greater power to new ones.

Prevent wear and save repairs by using only U. S. G. Co.'s
Grafito, No. 205 Lubricating Graphite, Mexican Graphite Auto-Lubricant

Made from pure, soft Graphite powder "not flake" but air-floated and gritless.

One trial convinces auto owners, chauffeur, garage managers and motor-boat owners that they are superior to any "flake" graphite or other lubricant. For 20 cents, to pay postage, we send, once only to any address, one 35-cent pound Auto-Lubricant free. Please name your dealer. Ask for Booklet H 1.

THE UNITED STATES GRAPHITE CO.,
SAGINAW, MICH., U. S. A.

THE MOST UP-TO-DATE CAR IN AMERICA




Model C.
30-35 H.P.
\$3,500

FOUR TYPES

5 Passenger Touring Car Semi-Racer Luxurious Limousine (seats seven) 7 Passenger Touring Car

Write **MOON MOTOR CAR CO., St. Louis, Mo.**

Don't let the Siren Summer

make you forget that "the time to push business is when business needs pushing," and that "times of peace" is the time to prepare for the war of competition next fall and winter.

Study up your advertising matter **NOW**, and don't overlook the importance of **ILLUSTRATIONS.**

The result of your campaign is almost solely dependent upon your cuts. The engravings you use can *add 100 per cent to the appearance and pulling power* of your folders, catalogs, magazine, newspaper and trade-paper ads.

YOU WANT HIGH-CLASS ENGRAVING

MOSS

Operates the most modern equipped plant.
Employs the most skilled workmen.
Uses only the highest grade materials.
Prices are consistent with quality.
Service is prompt.
Cuts are always guaranteed satisfactory.

SEND US YOUR ORDERS

We make engravings which catch the eye, ornament the ad. and that have the *life, snap* and "go" necessary to *sell your product*. As perfect engravings as can be produced for letter-press printing.

TRY US



MOSS

PHOTO-ENGRAVING COMPANY

295-309 Lafayette Street, cor. Houston ("Puck" Building)
NEW YORK



Extract from many motorists'

DECLARATION OF INDEPENDENCE

When, in the course of motoring events it becomes necessary for certain motorists to dissolve the bands which have unwittingly held them to unnecessary and disquieting tire troubles, a decent respect for the interests of other motorists requires them to publicly declare their *ability* to thus dissolve themselves.

We hold these truths to be self-evident: that all motorists are created more or less equal; that they are entitled to certain inalienable rights; that among these are life, touring, and the pursuit of speed; that to secure the full enjoyment of these rights automobiles have been instituted among men, deriving their right to exist from the matchless pleasure which they afford mankind. That whenever any brand of tire-equipment for such automobiles becomes destructive of these ends, it is the indisputable right of motorists to discontinue it and to substitute in its place an equipment of GOOD tires as the surest guarantee of their continued safety and happiness.

We, therefore, as a body of pleasure-seeking motorists, appealing to the sound judgment of other motorists for the rectitude of our intentions, do, in the name and for the promotion of automobiling as an unrivalled sport, declare and publish that, after severe and repeated tests on highways of every possible description, we unhesitatingly advise the use of

**MORGAN & WRIGHT TIRES
ARE GOOD TIRES**

firmly believing that by the general adoption of this tire-equipment motorists everywhere will be enabled to absolve themselves from all allegiance to tire annoyances, be free and unhampered to enjoy themselves as motorists are entitled to, and to give to touring that most essential requisite, namely, an assurance of protection against the petty disaffections which tires of less inherent strength are known to be heir to.

(Signed by 99 3/10 of all Morgan & Wright tire users.)

MORGAN & WRIGHT DETROIT

NEW YORK: 214 W. 47th St., 17 Warren St.
CHICAGO: 81 Michigan Avenue.
BOSTON: Motor Mart.
SYRACUSE: 214 Clinton Street.
BUFFALO: 43-45 Pearl St.
ROCHESTER: 55 Main Street East.

PITTSBURGH: 913 East Liberty Street.
PHILADELPHIA: 830 North Broad Street
CLEVELAND: 1820 Euclid Avenue.
DAYTON: 405-411 East Third Street.
MINNEAPOLIS: 708 Hennepin Avenue.
ATLANTA: 49 South Forsyth Street.

ST. LOUIS: 538 North Vandeventer Avenue
KANSAS CITY: 1030 Holmes Street.
DENVER: 1562 Broadway.
LOS ANGELES: 940 South Main Street.
SAN FRANCISCO: 423-433 Golden Gate Avenue
PORTLAND: 86 Sixth Street.

EXTRACT FROM A LETTER RECEIVED FROM A WELL-KNOWN CHICAGO AUTOIST

Chicago, Dec. 18, 1906.

I note that you would like to have a description of the police incident I mentioned to you in New York. It was as follows:

One evening, while going home from the office, at a speed which I felt confident did not exceed the fifteen-mile limit here, I was stopped by a policeman who insisted that I was running too fast, and that I must go to the station with him. I asked him about the time, and though he seemed to think I was scheming to distract his attention, I insisted that he compare his watch with mine. After he had done this, I started to take the recording paper out of the instrument and put the time on the back of it, so I could show at what speed I was running after we got to the police headquarters. He had already gotten into the car to ride over there with me, but after looking at the record-sheet, he stepped down out of the car, telling me "to get out of there with that damn thing."

This was the last time I was stopped; however, I try to keep from exceeding the speed limit.

W. J.

INCONTROVERTIBLE EVIDENCE!

Equip your car with the "BULLARD" and "LET IT ALONE." Space will permit of facts only. Write for new catalogue giving full information and prices on both the Bullard Speed Recorder (3 in 1) and the Bullard Speedometer.

J. H. BULLARD, Highland Station, Springfield, Mass.

THE WHITE COMPANY, WESTERN BRANCH—240 Michigan Avenue, CHICAGO
BOSTON, MASS.—43 Columbus Ave. SAN FRANCISCO OFFICE—428 Golden Gate Ave.



O: THAT'S A BULLARD. GO AHEAD.
WE CAN'T DISPUTE THAT RECORD.

He is not the only man who has saved a fine and annoyance by having this instrument on his car.

While a reliable Speedometer is a good thing to have, it would not have protected him, and he would have had to go to the station with the officer and the officer's watch would have won.



A STRONG POINT

In Tire Equipment

☞ A point that stands out boldly in "FISK" tire construction—is the absolute impossibility of accident from tire causes.

☞ It is a "FISK" perfection—and one that cannot be dodged when selecting tire equipment—for safety from tire disaster is an important motoring comfort.

☞ No other tire product has proved 'just as good' as "The Fisk Mechanically Fastened Tires." They are locked to the rim and cannot come off from mishap, whether inflated or deflated. They cannot 'creep' or blow off, but may be removed easily and repaired with dispatch. The inner tube cannot be pinched, nor the tires torn from the rim by 'side roll.'

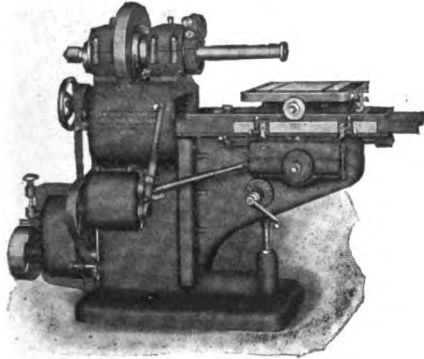
☞ "FISK" tires will endure every mileage service and show the least wear. They ride delightfully over smooth roads, and with gentle comfort over crude ones. At any speed—you travel safe and secure from tire calamity.

THE FISK RUBBER CO.

CHICOPEE FALLS, MASSACHUSETTS

How Many Manufacturers

are able to obtain a round, straight and smooth bore in their Cylinders, as well as get uniformity in size, thereby making them **INTERCHANGEABLE?**



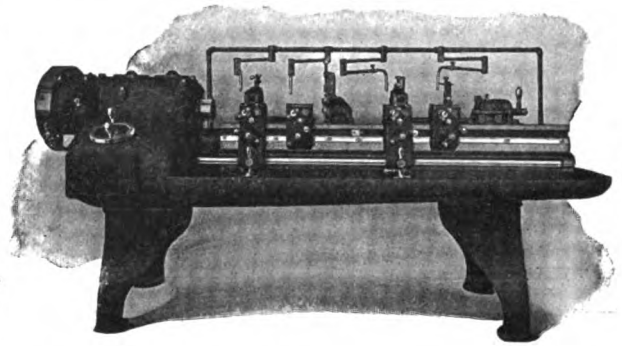
THE ANSWER—Only those who are finishing them by **GRINDING.**

Our booklet on this subject tells of the many reasons why grinding is the only satisfactory method for doing this work. It also describes the **HEALD CYLINDER GRINDER** fully, a machine designed especially for **Internal Grinding.**

A copy of this booklet is yours upon request.

THE HEALD MACHINE COMPANY
148 Bond Street, WORCESTER, MASS.

"LO-SWING" LATHE



Lo-Swing, a Single Purpose Machine, especially adapted to Automobile and Motor Shafts, Cam Shafts and all similar work

Range 3 1-2 in. diameter to 60 in. long.
Four tools cutting at same time

It turns with unequalled accuracy and rapidity all shafts having diameters between 1-2 inch and 3 1-2 inches, with any number of shoulders, and all lengths up to 60 inches.

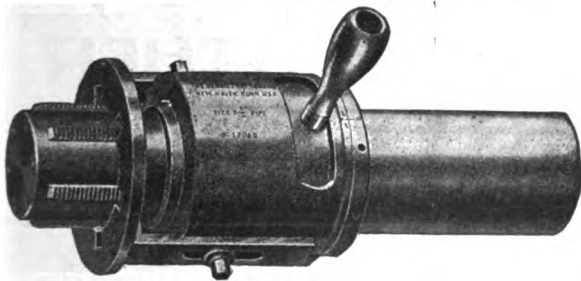
Manufactured and Sold Exclusively by

FITCHBURG MACHINE WORKS
FITCHBURG, MASS., U. S. A.

SPECIAL MACHINE TOOLS FOR AUTOMOBILE MAKERS

The Geometric Collapsing Taps

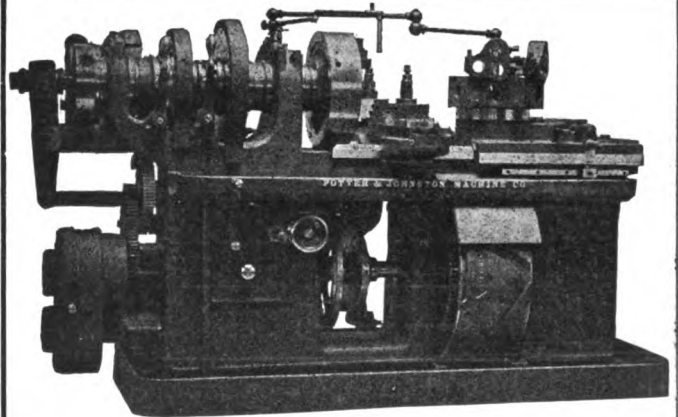
SAVE ALL TIME OF BACKING OUT



After a hole is tapped the desired depth, the Chasers automatically recede, allowing the tap to be withdrawn at once. No time is wasted backing out and neither the Tap nor thread is liable to injury. Considering this, will you keep on using the old Solid Taps? Try them in your shop.

The Geometric Tool Co.
Westville Station
New Haven, Conn., U. S. A.

FOREIGN AGENTS: Chas. Churchill & Co., Ltd., London, Birmingham, Manchester, Glasgow and Newcastle-on-Tyne. Alfred H. Schutt, Cologne, Brussels, Liege, Paris, Milan and Bilbao. Schuchardt & Schutte, Vienna, St. Petersburg, Stockholm and Berlin.



Interested in a Matter of Profit?

Then profit by the experience of the leading manufacturers of both foreign and American cars, and install

POTTER & JOHNSTON

Manufacturing Automatics

For machining the duplicate parts entering into your Automobile Construction, such as gears, pinions, pistons, piston rings, hubs, brake drums, etc.

Entirely automatic, except placing piece in chuck and removing when finished. Operated in groups of four to eight machines by one attendant.

CATALOGUE IS MIGHTY INTERESTING. COPY?

Potter & Johnston Machine Co.
PAWTUCKET, R. I.

Empire Tires

WEAR LONGEST

EMPIRE AUTO. TIRE CO.
TRENTON, N. J.

Chicago—20 La Salle St.; 1615 Wabash Ave.
 Boston—292 Devonshire St.
 New York—148 Chambers St.; 2230 Broadway.

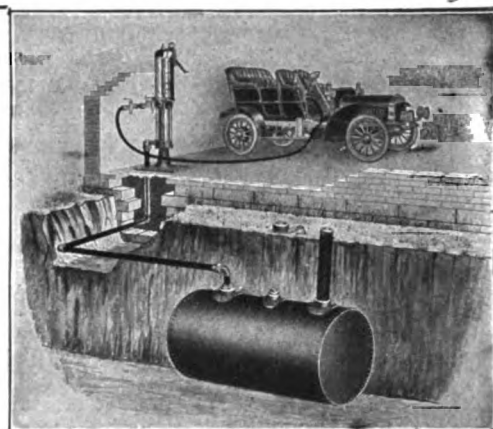
JUST AS NECESSARY AS GASOLENE

is a BOWSER GASOLENE TANK

BECAUSE—It's absolutely safe.
 It's leak and evaporation proof.
 It keeps the gasolene pure.
 It saves on the cost of gasolene.
 It insures against shortage.

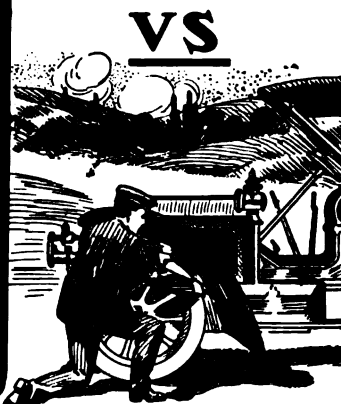
The "how of it" is given in catalog J. Send for it and ask for prices.

S. F. BOWSER & CO., Inc.,
FORT WAYNE, INDIANA
 255 Atlantic Ave., BOSTON, MASS. 299 Broadway, NEW YORK CITY
 209-210 Fisher Bldg., CHICAGO, ILL. 66-68 Frazer Ave., TORONTO, ONTARIO



Cut 41. Long Distance Outfit
 The Standard Garage Equipment for Gasolene Storage.

3 MINUTES
to repair a
GOODRICH
Quick Detachable
TIRE



VS

9 MINUTES
to repair
OTHER
MAKES

CENTRAL PENNSYLVANIA AUTOMOBILE COMPANY
 GENERAL AGENTS FOR CENTRAL PENNSYLVANIA
 HIGH GRADE CARS, ELECTRIC, GASOLINE AND STEAM

HARRISBURG, PA., MAY 17, 1907.

Gentlemen:—In our recent Endurance Run, pulled off under the most trying circumstances, the roads being notoriously bad, and the weather worse if possible, we had on the White Steamer, Car No. 6, a valuable demonstration of the advantages of the Q. R. Rims. The time required in repairing our first puncture was not measured accurately, but we repaired the second one, and were again in the race, after four minutes. We next found a ten-penny wire nail driven in clear to the head. In this case, we took the tire off, put in a new tube, inflated it with the air pump of the car, in three minutes by the observer's watch, which we believe was "going some" in this line of work. *Our less fortunate competitors were, in many cases, three times that long in doing the same work.* Some cars in this run suffered as many as eight punctures and blow-outs, which accounts for the many bad scores shown on the Official record, and we considered ourselves fortunate in having Goodrich Q. D. tires.

Yours respectfully,

CENTRAL PA. AUTOMOBILING CO.
 I. W. DILL.

I. W. D.—M. M. T.

THE B. F. GOODRICH COMPANY,

Akron, Ohio, U. S. A.

HAVE YOU TRIED OUR NEW CELL?



NATIONAL CARBON COMPANY
CLEVELAND, OHIO.

Finishing Motor Crank Shafts

By the TINDEL SYSTEM of LATHE and GRINDING MACHINE



THE TINDEL-MORRIS COMPANY
EDDYSTONE, PENN., U. S. A.

BEYOND all comparison the cheapest way to finish motor crank shafts in quantity from the rough forgings is by the use of the Tindel-Albrecht Lathe for rapidly cutting down the rough forgings to grinding size and finishing in the Tindel-Albrecht Special Crank Shaft Grinding Machine.

Cost of installation of plant is less than any other.

No accessory fixtures are required.

The output is much the largest.

The wear of grinding wheels is trifling.

The accuracy of the work is unequalled.


Write us for particulars.


Vulcanizing Substitute Cement and Acid Cure Solution

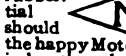



MOTORISTS, as a class, are apt to fall into expensive habits. One of the habits is having his tire or inner tube sent to a repair shop every time he has a blow out or a puncture, which means quite an expense account at the end of the season.

If every motorist would use Cement and Acid Cure Solution, he could reduce his repair bills 75%. For instance an ordinary puncture repaired at the garage or repair shop would cost from \$1.50 to \$2.50 while with Cement and Acid Cure Solution the cost of these repairs would not be one-tenth this amount which is a big saving.

 repairs instantly; no waiting; no patch coming off after running 5 or 10 miles, for the repair will be permanent as it produces the same effect as vulcanizing.

 will splice your inner tubes, repair curb cuts on solid tires, attach leather to rubber, retread your tires or unite any grade of rubber.

 Cement and acid is the most essential part of your repair tools, and should always be carried in your Auto, for the happy Motorist is the man that can repair his puncture in less time than it takes to change the tire or inner tube.

 Cement and Acid Cure Solution, 1 pint, \$1.50; 1 quart, \$2.75; 1 gallon, \$8.00.

CHARLES E. MILLER, Manufacturer, Jobber, Exporter and Importer
Home Office, 97-99-101 Reade Street, New York

Branches: 624 Eighth Ave., New York City; 318 & 320 No. Broad St., Philadelphia, Pa.; 202 & 204 Columbus Ave., Boston, Mass.; 406 Erie St., Cleveland, O.; 227 1/2 & 229 Jefferson Ave., Detroit, Mich.; 824 Main St., Buffalo, N. Y.

A CORK INSERT CLUTCH

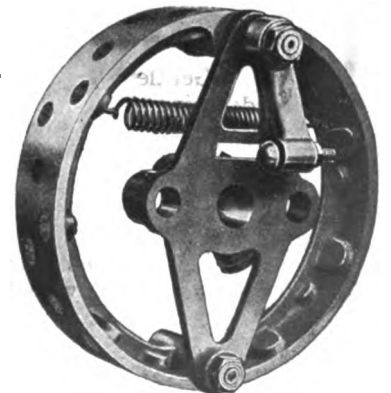
FOR COMMERCIAL CARS

The constant starting and stopping of heavily loaded commercial cars on their way through crowded city streets call for high efficiency in both clutch and brakes. This need is fully met by the use of Cork Inserts. They lessen the liability of collision, and eliminate the cutting or wearing of opposite surfaces, thus doing away with the necessity for repairs. Cork Inserts are used in clutches and brakes by 31 leading manufacturers.

Write for full particulars.

National Brake & Clutch Co., Owner and Patentee, 16 State St., Boston

Standard Brake Co., Representative, 101 West 66th St., New York



Coppock Motor Car Co.'s Clutch.

"THE OLD RELIABLE"



OIL and GAS

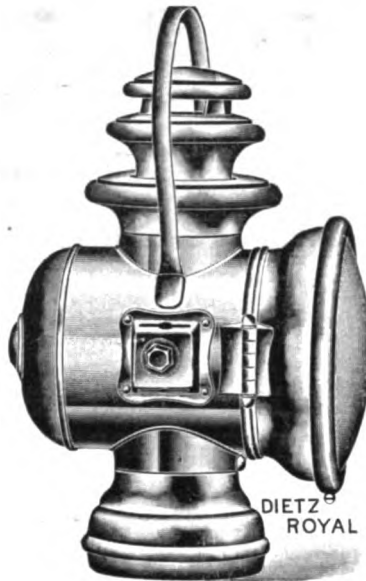
Dietz "Royal" Lamps are all that the name indicates. They are graceful in appearance and are especially designed for touring cars. They reflect a light of 65 candle power.

Dietz "Sterling" Square Lamps are not only unmatched for their graceful lines and dignified appearance, but excel any square lamp on the market in burning qualities. They are distinctly modish.

SEND FOR CATALOGUE AND DISCOUNTS

DIETZ HEAVY CAR LAMPS

[COLD BLAST PRINCIPLE]



DIETZ ROYAL
\$15.00 LIST EACH.



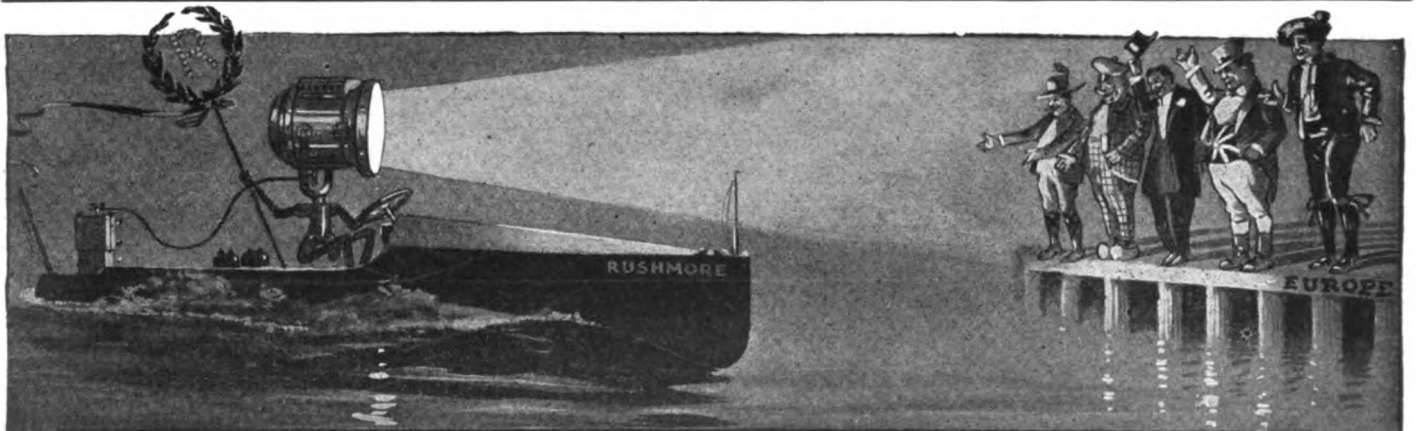
DIETZ STERLING
\$15.00 LIST EACH.

R. E. DIETZ COMPANY
LARGEST MANUFACTURERS OF LANTERNS IN THE WORLD

60 Laight Street

ESTABLISHED 1840

NEW YORK, U. S. A.



THE RUSHMORE IS WELCOMED

with acclaim in every country where the automobile is known.

A year ago we thought our export business was worth talking about (and it was), but it has increased fourfold since then. In France, where, if anywhere, an American article must sell purely on its merits, we have outgrown our late quarters at 95 Ave. des Champs Elysees, and have taken the entire ground floor of the new fireproof building at 116 Boulevard Péreire, in the new automobile "row" of Paris.

And this in spite of the fact that cheap copies of the Rushmore are almost as numerous in France as at home.

RUSHMORE DYNAMO WORKS
LONDON PLAINFIELD N. J. CHICAGO
PARIS

The National

STILL HOLDS THE WORLD'S RECORD of 1,094³/₁₆ miles in 24 hours, made Nov., 1905, by A SINGLE NATIONAL STOCK CAR

Demonstrating NATIONAL Reliability and Endurance

Many unsuccessful attempts have since been made to break this record. In some of the most recent trials, *two or more* cars of one make have been driven alternately, but the total mileage obtained barely exceeded the mileage of

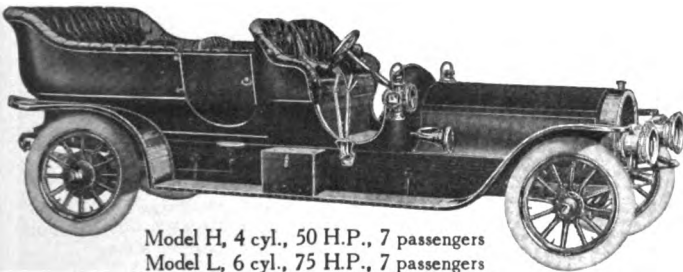
One NATIONAL Car

Write for Catalogue and Booklet
"What Owners Say About Their Nationals."

National Motor Vehicle Co.

1000 E. 22d Street, INDIANAPOLIS, IND.

Member American Motor Car Manufacturers' Association, N. Y.



Model H, 4 cyl., 50 H.P., 7 passengers
Model L, 6 cyl., 75 H.P., 7 passengers

WHAT THEY SAY OF THE

RUSHMORE SHAKING GRATE GENERATOR

(AND THE RUSHMORE SEARCHLIGHT.)

THE RUSHMORE DYNAMO WORKS,
Plainfield, N. J.

GARDNER, MASS.

No. 7

Gentlemen: I have made several trials of the new 9-inch searchlight and am highly pleased with the results. The light is diffused perfectly. Am ple soft light close ahead, and the intense beam from the mirror reaches as far as is ever required.

The operation of the GENERATOR is complete, and to one used to digging the packed lime out of the carbide trays of other makes, this point will be thoroughly appreciated. I consider this outfit a perfect headlight equipment for automobile use, and trust that it will meet with the sale it deserves.

Yours very truly,

B. H. BANCROFT.

RUSHMORE DYNAMO WORKS,
Plainfield, N. J.

ERIE, PA.

No. 8

Gentlemen: I enclose with my compliments two photographs of my White car with your 9-inch swinging searchlight mounted on the condenser, and your GENERATOR on the dashboard. I am sending you these pictures because I am delighted with my lamp, being able to travel twenty to twenty-five miles an hour over country roads in the darkest night. I am delighted with the lamp and the GENERATOR. With best regards,

Yours very truly,

ERNST R. BEHREND.

RUSHMORE DYNAMO WORKS,
Plainfield, N. J.

W. E. TILLOTSON MANUFACTURING CO.

PITTSFIELD, MASS.

No. 9

Gentlemen: I enclose check for your invoice of June 2d for handle.

I want to add that the lamp and the GENERATOR are giving me the very best of satisfaction, and seem to be everything you have claimed for them.

Yours truly,

C. H. FOSTER.

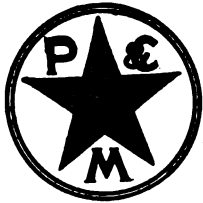
The Rushmore Generator is not a cheap makeshift, but a fully developed automatic device. When handled according to instructions, it gives a perfectly uniform gas supply with none of the annoyances common to the ordinary types of generator. Our catalog describes it in detail.

Rushmore Dynamo Works, Plainfield, N. J.
LONDON PARIS CHICAGO

PIRELLI

MADE BY MACHINERY

Every tire uniform in construction. All the guess work of unskilled hand labor eliminated. Try one PIRELLI TIRE alongside the old style manufacture and note the difference in wear. The guarantee of one of the oldest and largest rubber manufacturers in the world is behind these tires. Send for price list.



PIRELLI & COMPANY

296 Broadway

New York, N. Y.

Philadelphia Distributors
THE AUTOLIGHT & MOTOR SUPPLY CO., Inc.
506-508 N. Broad Street, Philadelphia, Pa.

New England Distributors
PETTINGELL-ANDREWS CO.
160 Pearl Street, Boston, Mass.

Responsible Concerns Are Requested to Communicate With Us Regarding Open Territory.



The Selection of Materials for Timken Roller Bearings

is not limited to any grade of stock steel, either by price or convenience. Every bar of steel is made to the TIMKEN analysis chemically—and tested to the TIMKEN test physically—which test means a rejection of forty-five per cent of every ingot before metal of suitable density and soundness for

TIMKEN ROLLER BEARINGS

is obtained. This stock is made for and controlled by us and has proven by practice that, though the chemist and metallurgist may do their work with test tube and crucible, there is only one sure test of anti-friction bearing quality and that is actual work under the most severe conditions.

The makers of over 60% of High Grade American Automobiles recognize

The TIMKEN Principle Correct and TIMKEN Quality Supreme

You may not be using them yet—you will when you know the facts in detail. Write us

EASTERN BRANCH: 10 E. 31st St.,
New York.
WESTERN BRANCH: 429 Wabash
Ave., Chicago.

The Timken Roller Bearing Axle Co.
CANTON, OHIO





Safeguard Your Car and Passengers

Hartford MIDGLEY Tires

CLINCHER or DUNLOP

Absolutely Non-skid, Non-slip

SAFE, SUCCESSFUL, SOUND, SANE AND SIGHTLY

THE HARTFORD RUBBER WORKS CO.

Hartford, Conn., U. S. A.

NEW YORK, 88 Chambers St. and 1760 Broadway; CHICAGO, 83 Michigan Ave.; BOSTON, 494 Atlantic Ave. and 1020 Boylston St.; PHILADELPHIA, 138 North 10th St.; BUFFALO, 725 Main St.; CLEVELAND, 1837 Euclid Ave.; DETROIT, 256 Jefferson Ave.; DENVER, 1564 Broadway; LOS ANGELES, 1505 South Main St.; SAN FRANCISCO, 423-433 Golden Gate Ave.; ATLANTA, GA., 55 Auburn Ave.

AGENCIES—Geo. W. Perry Co., 9th and Lucas Ave., St. Louis, Mo.; Pittsburg Rubber Co., 913-915 Liberty Ave., Pittsburg, Pa.; Gugler Electric Mfg. Co., 223-225 5th St. S., Minneapolis, Minn.; Mercantile Lumber and Supply Co., 906-908 Baltimore Ave., Kansas City; F. P. Keenan Co., 208 Third St., Portland, Ore.; Salt Lake Hardware Co., Salt Lake City, Utah; Chas. L. Seeger (Compania Mexicana de Vehiculos Electricos), Primera Humboldt 12, Mexico, D. F., Mexico.

SPECIAL AGENTS FOR HARTFORD SOLID MOTOR TIRES IN THE PACIFIC NORTHWEST Mitchell, Lewis & Staver Co., Portland and Salem, Ore., Seattle and Spokane, Wash., and Boise, Idaho.



THE EXACT RECORD OF THE SEALED BONNET CONTEST

AS TO

Diamond WRAPPED TREAD TIRES

was four punctures and one regular clincher tire (previously run 4100 miles) pulled partially from a rim by locking wheels at speed.

But the Important Thing Is

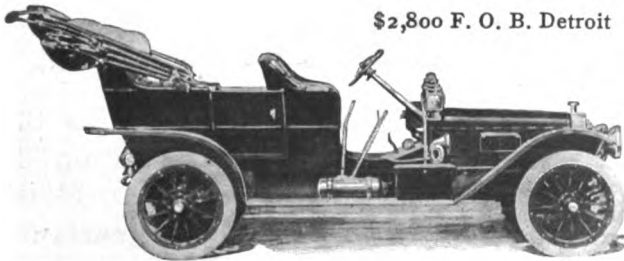
That in the grand total of tire delays for all causes during the contest, 25 SETS of Diamond tires caused 20 PER CENT., and 22 SETS of other tires (representing 6 different makes) CAUSED 80 PER CENT. Not one Diamond tire was rim cut, blew out, or developed a single defect. The Marsh Rim's record was absolutely perfect.

THE DIAMOND RUBBER CO., AKRON, OHIO.

FORD

Undoubtedly the most sensational performance ever accomplished by a motor car was that of the Ford "Six" in the speed-endurance contest at Detroit June 21 and 22—1135 miles in 24 hours, 55 miles in one hour, 412 miles in eight consecutive hours—are all world records.

Two Ford Runabouts also made perfect scores in this severest of all tests—798 miles. Only 25 miles less than former world's record.



\$2,800 F. O. B. Detroit

MODEL K—6-CYL., 40 H.P.

Write for Catalog and Address of your nearest Ford Agent or Branch.

FORD MOTOR CO., 269 Piquette Ave., Detroit, Mich.



Price Re-adjustment

has been Expected, Demanded and
Accomplished by

The Lea Speed Meter

It is **NOT** an experiment marketed by inexperienced builders simply for **CHEAPNESS**.

It **IS** the result of **THREE** seasons' intelligent preparation to meet an inevitable **DEMAND**.

It is a thoroughly **RELIABLE, ACCURATE** and **DEPENDABLE SPEED METER** of the **HIGHEST GRADE**.

Complete Plant Equipment—Perfectly Developed Instrument—Rational advertising expense—Nominal credits—these are the basic conditions making this splendid instrument possible at the Price.

GUARANTEE—"A Perfect Instrument or your Money Back."

Immediate shipments from **Tested Stock**.

50 Mile Combination,	\$35.00
60 " "	40.00
100 " "	60.00

NEW TRADE DISCOUNTS—Previous quotations withdrawn. Ask for "Speed" Book.

WILLIAM S. JONES

Sole Selling Agent

111 N. Broad Street,

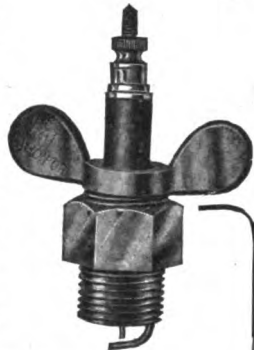
PHILADELPHIA

Try this Spark Plug

**THIRTY DAYS
AT OUR RISK**

Two for the price of one

Let it prove itself on your own car. If you want a plug that is positively interchangeable—no gaskets, no packing, every core ready to drop into position without adjustment, one that centers every time—needs no wrench nor tools, use a



CHARTER PLUG

"No tools but your fingers."

The core is double insulated mica. The joints are beveled, ground like a valve and fit into the base, firm and rigid. No matter how often you remove your core the spark gap will always be the same. Core can be released, to clean or replace, by simply loosening the thumb nut with your fingers. Charter Plugs are made 1/4-inch standard metric and auto car threads. Every part is interchangeable. Price \$2.00 each. Try one 30 days—if it's not what we claim, send it back and your money will be refunded instantly.

Special Free Offer.—To demonstrate the ease and economy of renewing plugs, we will give you free for a limited time, one extra core for each plug ordered. This offer is limited to four plugs.

Send your orders now to get the extra cores free.

CHARTER & CO., 311 Dearborn St., Chicago, Ill.

As to Reliability

"There may be a lot of batteries on the market, but there is only one

'WITHERBEE' "

JOHN T. CUTTING
CHAS. H. LARSON

EXCLUSIVE REPAIR SHOP FOR OLDSMOBILES

TELEPHONE 2227 COLUMBUS

OLDSMOBILE CO. OF N. Y.

RUNABOUTS, TOURING CARS AND COMMERCIAL VEHICLES

1653 BROADWAY

NEW YORK, JUNE 25, 1907.

Witherbee Igniter Company,
541 West 43rd Street,
New York City.

Gentlemen:--

It might be interesting for you to know that we used a Witherbee No. 66 Storage Battery on our Sealed Bonnet Contest car and had nothing else to fall back on as we felt sure there would be no difficulty with same.

During the four days, our car was driven something over 600 miles. Since then it has been driven about 400 miles and there is absolutely no sign of the battery giving out.

There may be a lot of batteries on the market, but there is only one "Witherbee."

You can figure on our using them as long as they continue to make them as good as they are now.

Very truly yours,

OLDSMOBILE CO. OF N. Y.

Disc. by

The Royal "Multiplex" Lamp and Attachment

SOME FACTS

Nine times out of ten an owner has a storage battery, a Dynamo or a Magneto.

Now, then, why should he carry around with him a cumbersome gas tank, or an explosive generator if he can light his lamps with our

"Multiplex" Lamp

on his Battery, Dynamo or Magneto.

The "Multiplex" Lamp gives 30 to 32 candle-powers with reflector on 6 volts.

It will burn from 300 to 400 hours and will give a blinding, dazzling light.

No storm can blow it out.

No matches needed.

No leaky hoses to cause trouble.

Light your lamp from the seat.

Tools needed to install: a screw-driver—that's all.

We have now 4, 6, 8, 10 and 12 volt lamps in stock for immediate shipment.

Renewed bulbs, any voltage up to 12, \$1.25.

Complete outfit—1 Bulb, Attachment, 10 foot cable, Snap Switch and directions, \$2.50 (by mail \$2.60).

Double outfits for 2 searchlights or 2 headlights, \$5.00 (by mail, \$5.20).

Ask any Automobile Supply Store or Garage to get it for you, or we will send it by mail.



The Royal Battery Co., Makers
108-110 Duane Street
NEW YORK CITY

National Sales Corporation
Factory Sales Agents
296 Broadway, NEW YORK CITY

68% of the Storage Batteries used in the

Sealed Bonnet Contest were Witherbees

More than four times as many as any other maker. Think it over.

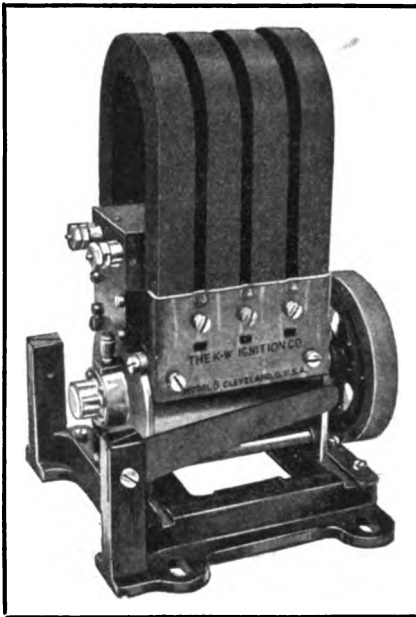
Booklet No. 16 is of interest to every motorist. Free for the asking.

Agents everywhere—3 Factories

Witherbee Igniter Co.

NEW YORK
541 W. 43rd Street
DETROIT
220 Jefferson Ave.

CHICAGO
1429 Michigan Ave.
BALTIMORE
510 Continental Bldg.



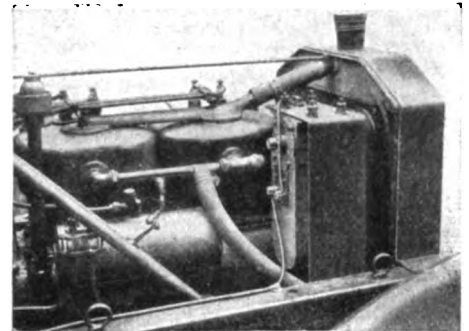
The K-W Magneto

FOR JUMP SPARK ONLY

More Power——Less Fuel

THROW YOUR BATTERIES AWAY.

Will start the engine easily without batteries. Self-regulating—no governor required. Good at all speeds. No moving wires; no brushes; no trouble. Only moving part runs in high duty ball bearings, and will last indefinitely. Belt or friction wheel drive. Absolutely moisture proof.



On a Ford Runabout

Just the thing for your automobile or motor boat.

PRICE: \$35.00 F. O. B. CLEVELAND, OHIO.

WRITE FOR CATALOG.

The K-W Ignition Co., ³⁴Power Ave. Cleveland, Ohio

Also Makers of the VIM Spark Plug

OF ALL THE CARS USING COILS IN THE SEALED BONNET CONTEST, 45 Per Cent. WERE EQUIPPED

WITH



COILS

EVERY CAR SO EQUIPPED FINISHED WITH A PERFECT SCORE. IT WAS ANOTHER CASE WHERE QUALITY WON DESERVED SUCCESS.

SEND FOR CATALOG No. 12B

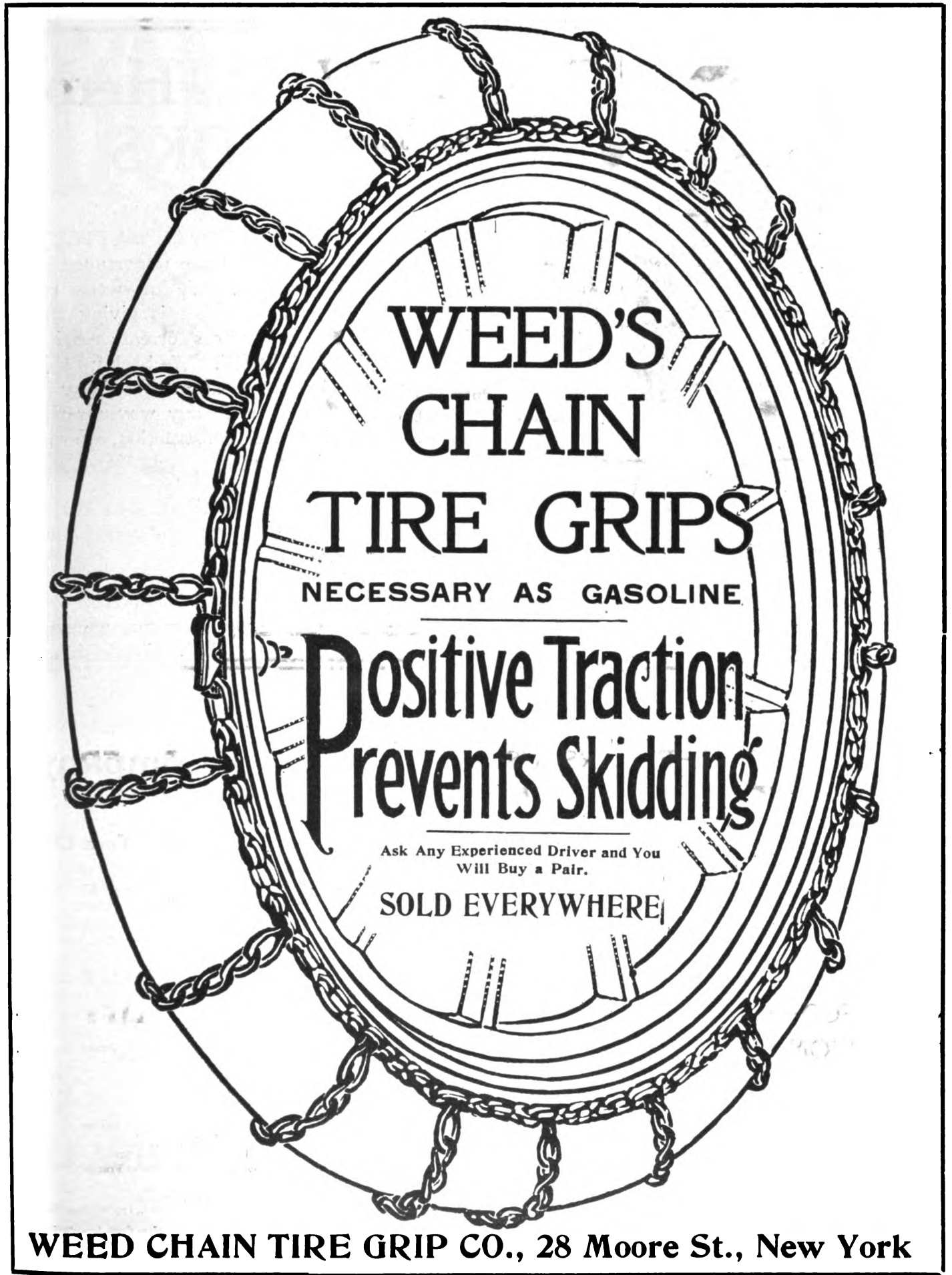
The Connecticut Telephone & Electric Company, Inc., 50 Britannia Street Meriden, Conn.

296 Broadway, New York, N. Y.
722 Main St., Buffalo, N. Y.

1436 Michigan Ave., Chicago, Ill.
721 Golden Gate Ave., San Francisco, Cal.

22 Lincoln St., Boston, Mass.
209 Blvd. Pereire, Paris, France

MAKERS OF THE FAMOUS Conn. Coil Current Indicators, Volt and Ammeters, Switches, etc.



**WEED'S
CHAIN
TIRE GRIPS**

NECESSARY AS GASOLINE

**Positive Traction
Prevents Skidding**

Ask Any Experienced Driver and You
Will Buy a Pair.

SOLD EVERYWHERE

WEED CHAIN TIRE GRIP CO., 28 Moore St., New York



Patented Feb. 5th, 1907. No. 842,950

All Royal Batteries are now encased in unbreakable steel enameled jars.

Non-corrosive terminals and trimmings.

New non-corrosive rubber-covered carrying handles.

BETTER THAN IT LOOKS

While we take a reasonable pride in the general appearance of the **ROYAL BATTERY** we wish to impress on you the importance of looking below the surface. We know that no Storage Battery on the market is giving the same efficient service as regards current capacity as the **ROYAL BATTERY**. We back up this statement by a broad guarantee that if any of our Batteries prove to be in any way unsatisfactory, due to improper construction, we will replace same within one year.

1908 is going to be a **ROYAL** year and in order to be in line for prompt deliveries your orders should be placed **NOW**.

Our new pamphlet is in the hands of the printer and we want your name so that we may send you a copy as soon as it is off the press.

Let us hear from you to-day.

Royal Battery Company

Makers

Office and Factory:

108-110 Duane Street, New York City

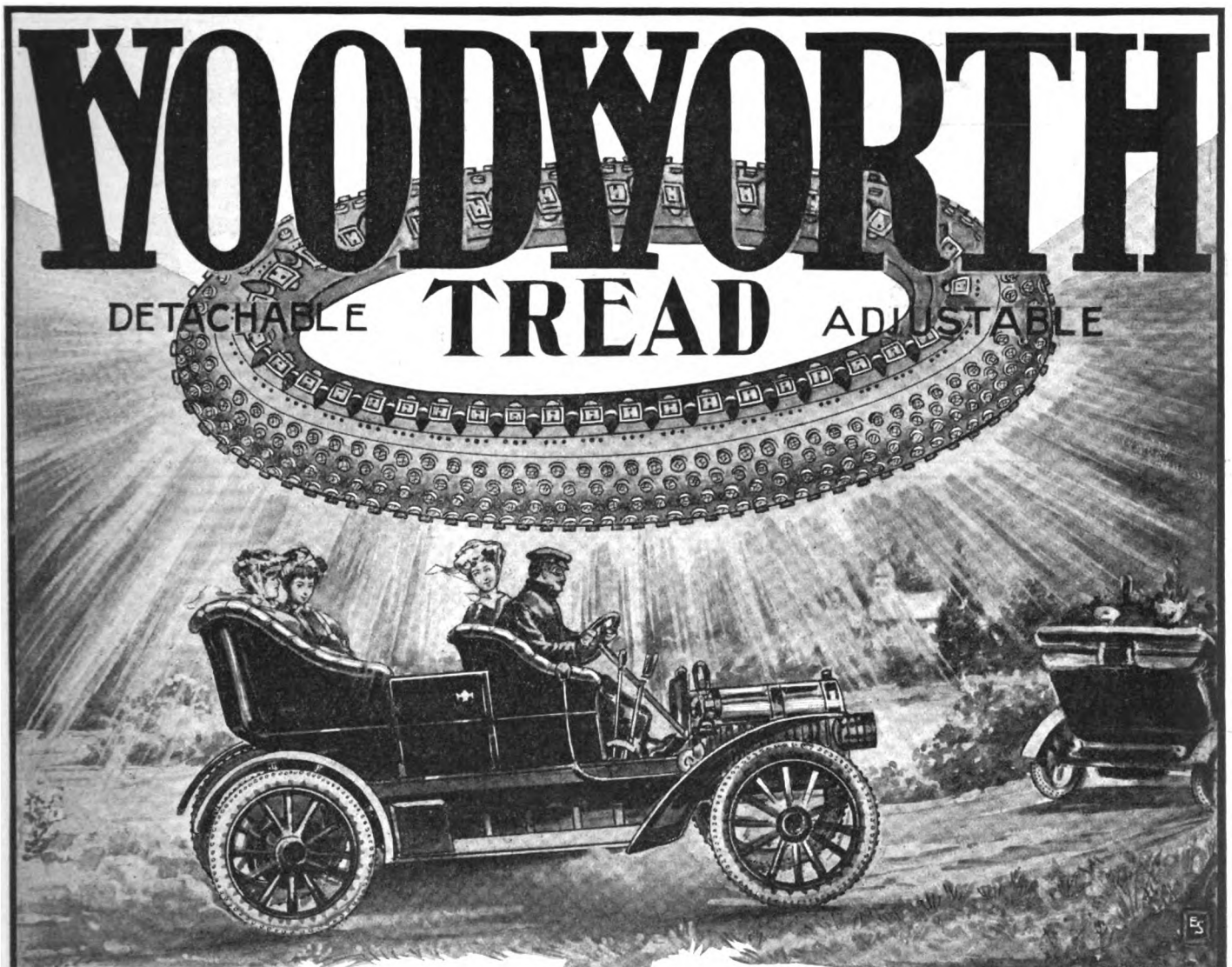
NATIONAL SALES CORPORATION

FACTORY SALES MANAGERS

296 Broadway, New York City

DISTRIBUTORS.

Albany, N. Y.: Albany Hardware & Iron Co., 48 State St.	Omaha, Neb.: Powell Auto Co., 2044 Farnam St.
Atlanta, Ga.: Alexander-Elyea Co., 35 N. Pryor St.	Peoria, Ill.: Wright Machine Co.
Baltimore, Md.: J. Frank Eline & Co., 110 E. Baltimore St.	Portland, Me.: Jas. Bailey Co., 18 Free St.
Boston, Mass.: Pettigell-Andrews Co., 160 Pearl St., New England Distributing Agents.	Portland, Ore.: Hughson & Merton, Inc.
Bridgeport, Conn.: Bridgeport Automobile Co., 388 Fairfield Ave.	Providence, R. I.: Waite Auto Supply Co., 17 Dorrance St.
Brooklyn, N. Y.: Bishop, McCormick & Bishop, Halsey St., near Bedford Ave.	Philadelphia, Pa.: Autolight & Motor Supply Co., 306 N. Broad St.
Buffalo, N. Y.: John W. Frey, 722 Main St.	" Frank H. Stewart Electric Co., 35 N. 7th St.
Chicago, Ill.: National Sales Corporation, 1436 Michigan Ave.	" Manufacturers Supplies Co., 418 Arch St.
" Excelsior Supply Co., 237 E. Randolph St.	" Sweeten-Crossen Electric Co., 816 Arch St.
Cincinnati, O.: Coughlin & Davis, 20 E. 7th St.	" Chas. S. Smith & Co., 322 N. Broad St.
Cleveland, O.: Collier & Sayle, 317 Superior St.	" James L. Gibney & Bro.
" Auto Equipping Co., 1151 Huron Road.	Pittsburg, Pa.: Jos. Woodwell Co., 211 Wood St.
Columbus, O.: Ross-Hull Electric Co., 197 E. Long St.	Reading, Pa.: E. S. Youse, 46 N. 5th St.
Detroit, Mich.: Miller-Seldon Electric Co., 55 Park Place W.	Rochester, N. Y.: Rochester Rubber Co., 53 Main St.
Elmira, N. Y.: Willys-Crew Motor Co., 117 Main St.	Syracuse, N. Y.: Syracuse Rubber Co., 214 S. Clinton St.
Harrisburg, Pa.: Central Pennsylvania Auto Co., 111 Market St.	St. Louis, Mo.: Neustadt Auto & Supply Co., 3948 Olive St.
Indianapolis, Ind.: Fisher Automobile Co.	San Francisco, Cal.: Hughson & Merton, Inc., 438 Market St.
Jacksonville, Fla.: F. E. Gilbert, 37 W. Forsyth St.	Scranton, Pa.: Chas. B. Scott, 119 Franklin St.
Lakewood, N. J.: Jos. B. Hoff, Lexington Ave.	Seattle, Wash.: Kilbourne & Clark Co., 113 Marion St.
Los Angeles, Cal.: Hughson & Merton, Inc., 1040 So. Main St.	Springfield, Mass.: Norcross-Cameron Co., 122 Bridge St.
Montreal, Can.: Dominion Motor Car Co., Beaver Hall Hill.	Tarrytown, N. Y.: Tarrytown Auto & Machine Works, 179 W. Main St.
New York, N. Y.: Motor Car Equipment Co., 55 Warren St. and 1645 Broadway.	Toronto, Can.: Rice, Lewis & Son, Ltd.
" Geo. H. Terry Co., 92 Chambers St.	Washington, D. C.: National Electric Supply Co., 1310 New York Ave., N.W.
	Rudolph & West, 1332 New York Ave.



The Glory of Automobiling is Tenfold More Delightful if the Car is Equipped with Woodworth Treads

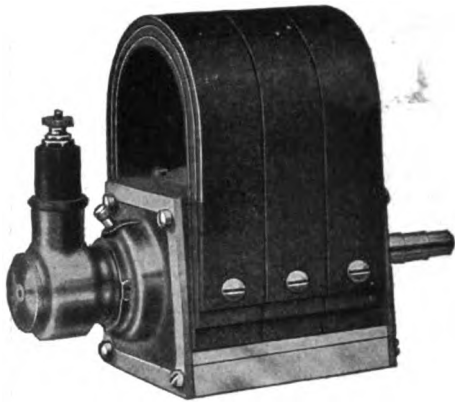
No other device has ever been invented that will give such convenient, reliable and positive protection to the pneumatic tire and the automobile as the Woodworth Tread. Punctures and other tire troubles that cause wayside delays are not only costly, but unnecessary. They can be avoided. The pneumatic tire is made of rubber, a substance too tender to withstand the hard usage to which it is subjected. It cannot last long, however careful the running. *The Woodworth Tread Protects the Pneumatic Tire Precisely as a Shoe Protects the Foot.* It bears all the hard knocks, roughs and scuffs, wear and tear of rocky roads, rutty roads, slippery roads, muddy roads, sandy roads and all kinds of roads. It does more to make the running of an automobile safe and economical than all other devices ever invented for the purpose. It has saved thousands of tires from punctures, prevented thousands of accidents, saved many a car from demolition, saved many a life and may save yours. Write to-day for booklet, "Safe and Sane Automobiling." Sizes and prices are as follows:

26x2	Each	\$ 8.00	28x3½	Each	\$14.00	32x2½	Each	\$14.00	34x3	Each	\$16.00	36x2½	Each	\$16.00	
26x2½	10.00	30x2½	12.00	32x3	15.00	34x3½	18.00	36x3	18.00	36x3½	19.00	36x4	20.00	36x4½	22.00
26x3	11.00	30x3	13.00	32x3½	16.00	34x4	19.00	36x4½	20.00	36x5	25.00				
28x2½	11.00	30x3½	15.00	32x4	18.00	34x4½	20.00								
28x3	12.00	30x4	16.00	34x2½	15.00	34x5	23.00								

LEATHER TIRE GOODS CO., NEWTON UPPER FALLS, MASS.
 New York Store, 1662 Broadway

California Distributors: Chanslor & Lyon, San Francisco and Los Angeles.

Montreal, Canada, Distributors: John Millen & Son



Model S Magneto.

A
TYPICAL
PERFORMANCE
OF THE
**Holley
Magneto**



Distributor arranged for separate mounting.

ADDRESS ALL COMMUNICATIONS TO THE COMPANY.

Ford Motor Company

AUTOMOBILE MANUFACTURERS.

HENRY FORD, President.
JAMES F. DODGE, Vice President
JAMES COUZENS, Secy. & Treas.

Detroit, Michigan.

WORKS & OFFICE.
COR. PLOUETTE & BEAUBIEN STS.

ADDRESS REPLY TO
MANUFACTURING DEPARTMENT

June 24, 1907.

Holley Bros.,

Detroit, Mich.

Gentlemen:

Our Ford, six-cylinder car, which won the 24 hour race Saturday, breaking all world's records, was equipped with the Holley Magneto. During the entire race it gave no trouble of any nature and we obtained uniformly satisfactory results.

Yours truly,

FORD MOTOR COMPANY.

Henry Ford
President.

The above letter is self-explanatory. The Ford Car which won the 24-hour race in Detroit, Saturday, June 22d, was equipped with a Holley Magneto. During the entire race the magneto was in constant use. The battery was never used, and the magneto was not repaired or adjusted in any manner whatever. A severe test like this in public proves conclusively that the Holley Magneto is not equalled by any ignition device in the world. Several of the contesting cars were equipped with foreign-made magnetos.

Holley Brothers Company, Detroit, Michigan



Solar's 4th CELEBRATION

UNITED STATES CIRCUIT COURT
SOUTHERN DISTRICT OF NEW YORK

Samuel W. Rushmore

vs.

Badger Brass Mfg. Co.

} **in Equity**

On reading the pleadings herein and the motion on behalf of the defendant herein to dismiss Complainant's Bill of Complaint with costs for lack of prosecution, together with the affidavits of Harold S. MacKaye and Lewis J. Keck in support of said motion it is hereby ordered

That the Complainant's Bill of Complaint herein be and the same hereby is dismissed without prejudice to the Complainant, all costs to be paid by the Complainant. New York — June 21, 1907.

Signed,
GEO. C. HOLT, Dis. Judge.
June 21, 1907. Order consented to,
ALFRED WILKINSON,
Atty. Samuel W. Rushmore.

SAMPLES 1908 MODELS READY

SOLAR LAMPS AND GENERATORS ARE WINNERS

YOU WILL WANT THEM

Watch for ads. for our 1908 Motor Lamp Sensations

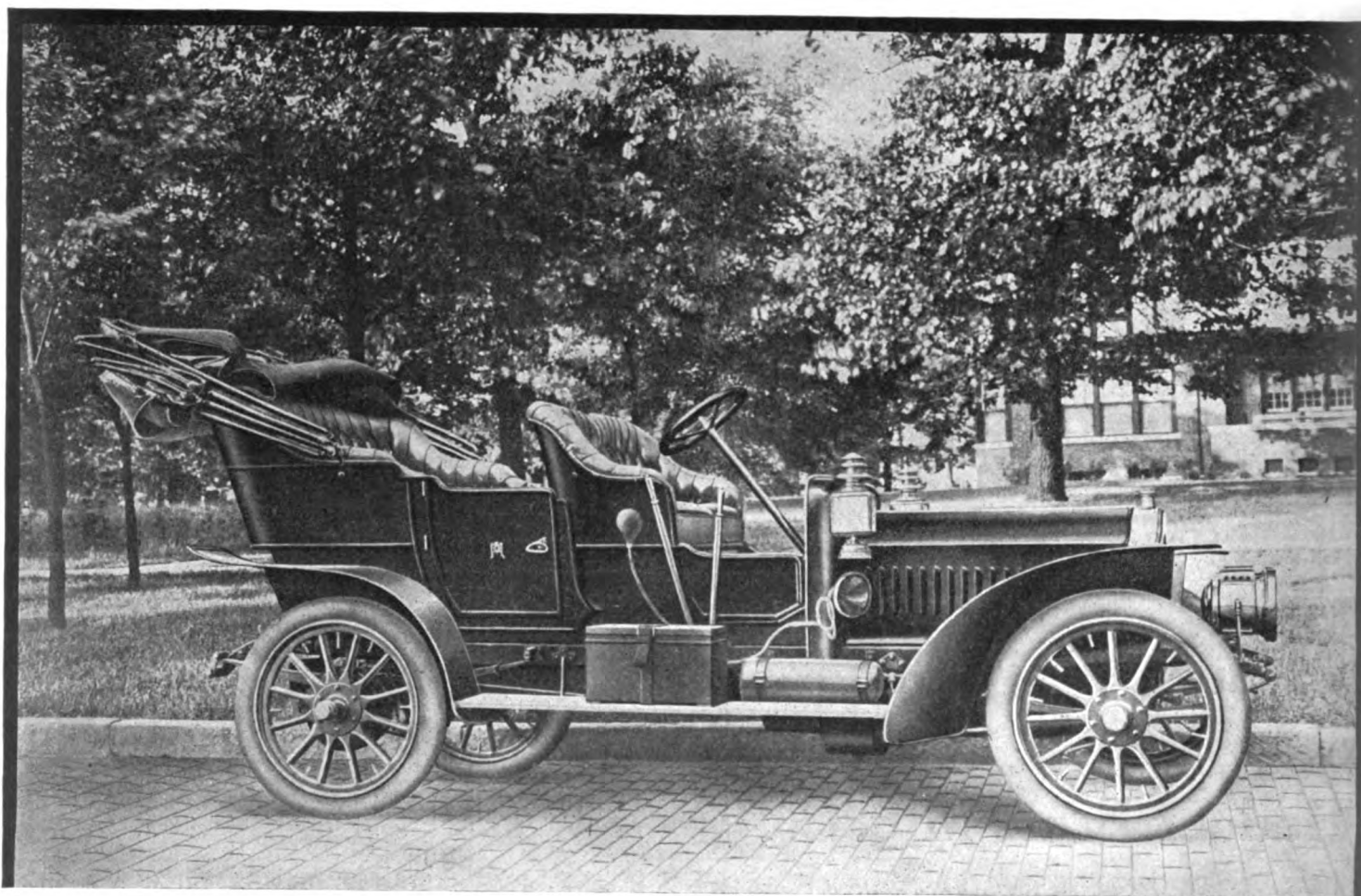
We also have something to say about Solar Lens Mirrors

BADGER BRASS MANUFACTURING COMPANY

Kenosha, Wisconsin

Eastern Branch: 11th Avenue. 36th-37th Streets, New York City

Aerocar



Did you hear about it? — the Model "F" ?

Our big forty-horsepower, water-cooled car—The car that will start on the high gear from almost anywhere—The machine that will run uphill the same as on the level—The car that is selling where foreign-built cars have sold heretofore? Did you?

For four days it ran without touching a part. 600 miles were covered and everything sealed. The gasoline and oil were replenished—the crank given a turn—and day after day it covered the course, making every control on exact time.

The official starter had placed his seal upon everything that would open. Not only the bonnet—but the coil box—the transmission—the springs—the wheels—yes, and even the tool box itself.

But it made no difference with Model "F." It is not accustomed to stopping along the road. Adjustments are seldom necessary. It is "Built for Service," and it gives it.

If you want a handsome—reliable—powerful—easy riding Touring Car—and want to save about \$1,200, ask about Model "F" at \$2,750.

POINTS TO THINK TWICE ABOUT

- Four-cylinder vertical motor.
- 5-inch bore, 5-inch stroke.
- 40 horsepower.
- Water cooled.
- Jump spark ignition with storage battery, and auxiliary dry cells.
- Float feed carburetor.
- Automatic mechanical oiler.
- Spark and throttle levers on steering wheel.
- Multiple disc clutch.
- Sliding-gear transmission, with 3 speeds forward and reverse.
- Horizontal shaft drive.
- 115-inch wheel base.
- 4 x 34 inch tires.
- Seats five persons.
- Royal Blue finish with "Cream" gear.
- Black leather upholstery.
- \$2,750 f.o.b. Detroit.

THE AEROCAR COMPANY

Member
A.M.C.M.A.

DETROIT, MICH.

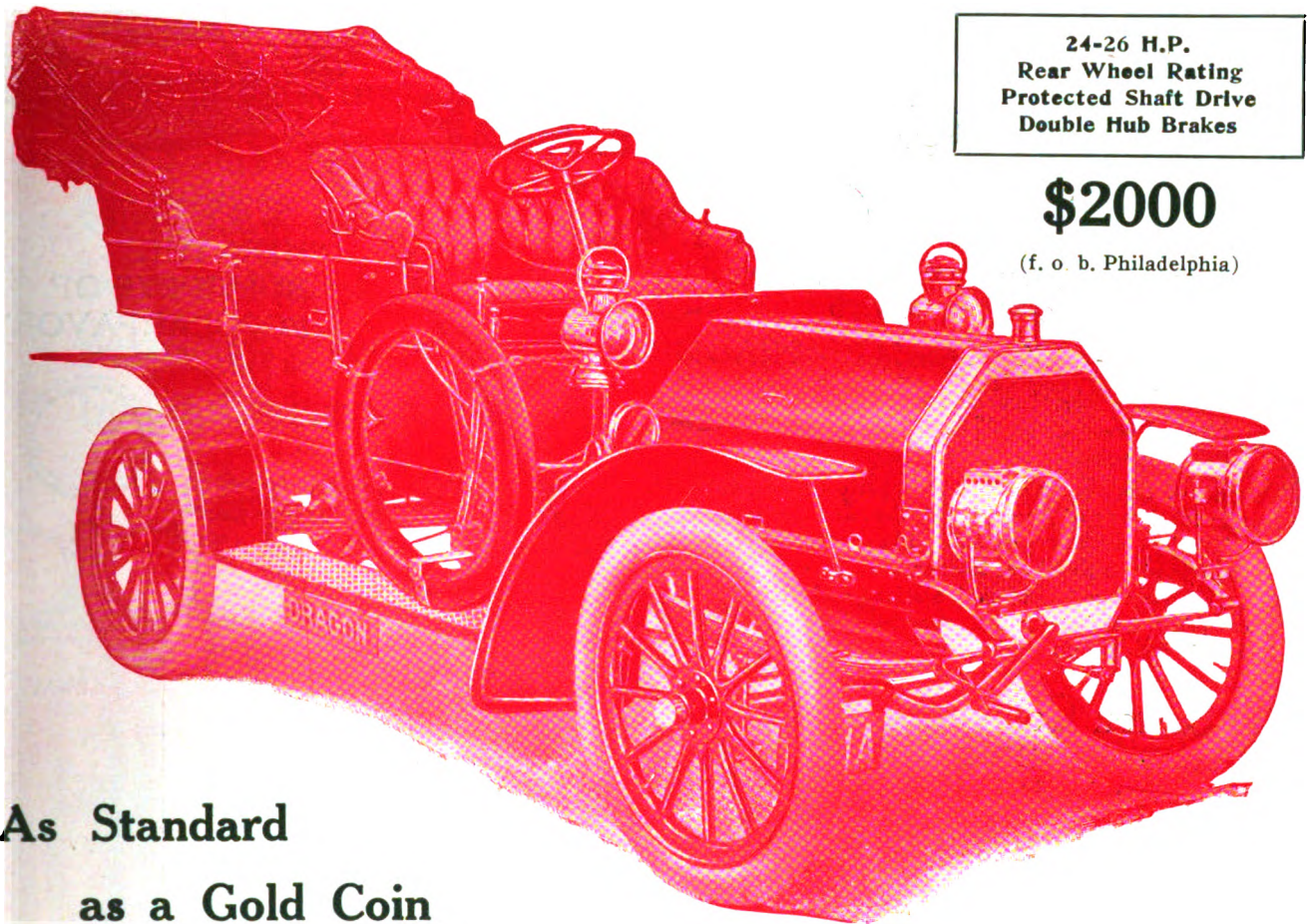


DRAGON

24-26 H.P.
Rear Wheel Rating
Protected Shaft Drive
Double Hub Brakes

\$2000

(f. o. b. Philadelphia)



**As Standard
as a Gold Coin**

The makers of the **DRAGON**—Touring Car and Roadster—have no hankering after novelty for novelty's sake alone. They started out to make a standard car. The present demand for their product shows how the public appreciates the **standard** idea.

The **DRAGON** is a unit car. Each part of it is designed and constructed in relation to every other part. [And every part is a tried and tested feature of standard automobile practice and construction.

This is why the **DRAGON**—Touring Car and Roadster—finishes in the high-powered, high-priced class in every contest it goes into.

This is why the **DRAGON** moves smoothly and silently along, mile after mile, day in and day out, and makes a **DRAGON** enthusiast of every man who buys one.

This is why the **DRAGON** sells so easily. The man can see it's what he wants—a simple, strong, full-powered, reliable car.

WRITE FOR INFORMATION TO

THE DRAGON AUTOMOBILE COMPANY

Member A. M. C. M. A.

30th, 31st and Chestnut Streets, Philadelphia

1677 Broadway, New York
524 Golden Gate Avenue, San Francisco

1337 Michigan Avenue, Chicago
101 Burnside Place, Montreal
612 Maryland Ave., Pittsburg

117 Massachusetts Avenue, Boston
16 Temperance Street, Toronto

'B'-LINE

OIL-GREASE GUNS

PUTS THE LUBRICANT WHERE YOU WANT IT AND IN THE EXACT QUANTITY WANTED

EFFECTIVE - ECONOMICAL - PRACTICAL

Absolutely Non Leakable
Never Wears Out—ALL METAL
No Washers of Any Kind

They are of the finest workmanship, perfectly adapted to handle lubricants of every description, and are constructed on lines heretofore considered impossible. The fitting of the pistons without leather, cork or other packing, the easy one-hand manipulation, and the absence of leakage, never fail to surprise the examiner and give pleasure to the operator.

The Boston Combination

Will handle the most solid lubricants in use as readily as it will the lighter ones.

Lock nut moves freely with piston unless engaged by thread. In this position the piston is driven forward by screw motion and exerts a pressure that will handle the heaviest greases.



The Handy Gun FOR Unhandy Places

OIL CUPS, GEAR BOXES and TRANSMISSIONS REACHED WITHOUT THE WASTE OF A SINGLE DROP.

MECHANICALLY PERFECT!

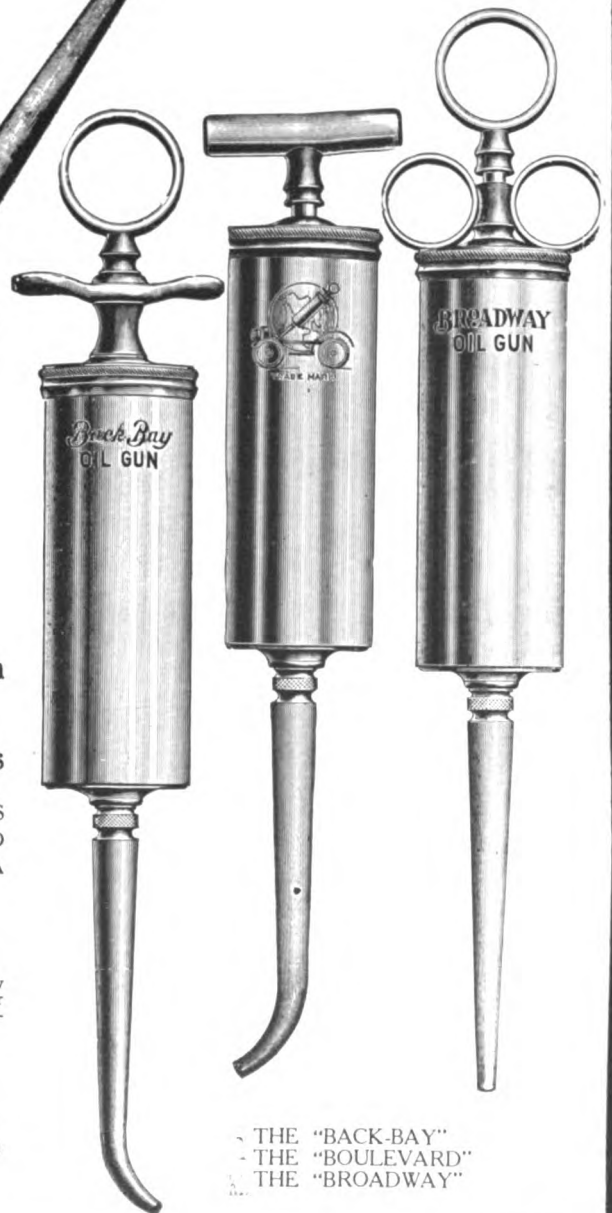
"We want to say right here that we never saw anything so well made before. We showed them to our mechanics, they consider the fit of the piston as something wonderful"

JOSEPH DIXON CRUCIBLE CO.

Write for full particulars and prices

THE RANDALL - FAICHNEY CO.
KEANY SQUARE BUILDING
BOSTON, MASS., U. S. A.

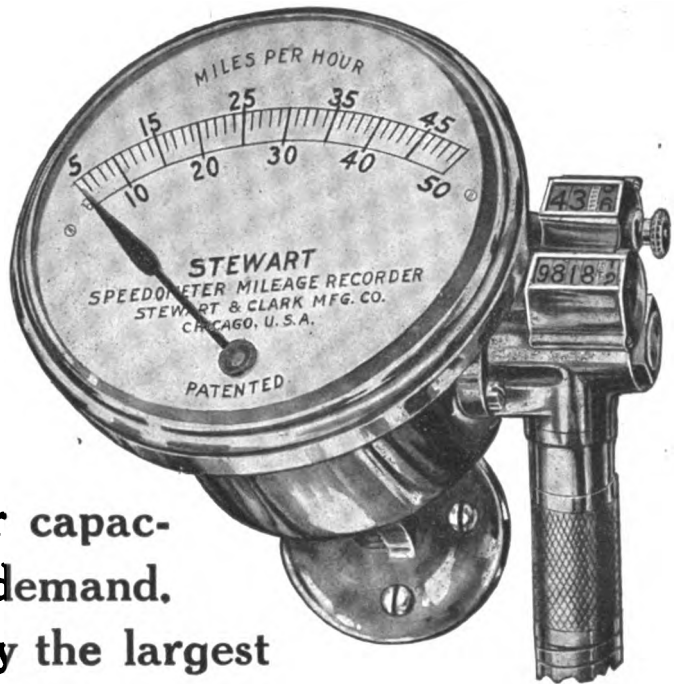
"HITS THE BULL'S EYE OF POPULAR FAVOR"



THE "BACK-BAY"
THE "BOULEVARD"
THE "BROADWAY"

Stewart Speedometer

No one who has thoroughly investigated the STEWART SPEEDOMETER has failed to be convinced of its superiority. Its adoption by leading motorists has only been limited to our capacity for supplying the demand. Our new plant---capacity the largest in the world---is now thoroughly equipped. We can make prompt shipments on our 50 and 60-mile instruments.



We are told our new catalogue, just issued, is the handsomest and most comprehensive book on speedometers yet published. It illustrates and describes the interior mechanism so that all may know why the "Stewart" is sought by those experienced in speedometer matters. Copy for the asking

Prices

No. 3,	Combination	Speedometer-Odometer	(Full Size Dial 4-in.),	50-Mile	\$	40.00
No. 4,	"	"	"	60-Mile		60.00
No. 5,	"	"	"	90-Mile		75.00
No. 6,	"	"	"	120-Mile		100.00

Stewart & Clark Manufacturing Co.

506 DIVERSEY BOULEVARD,

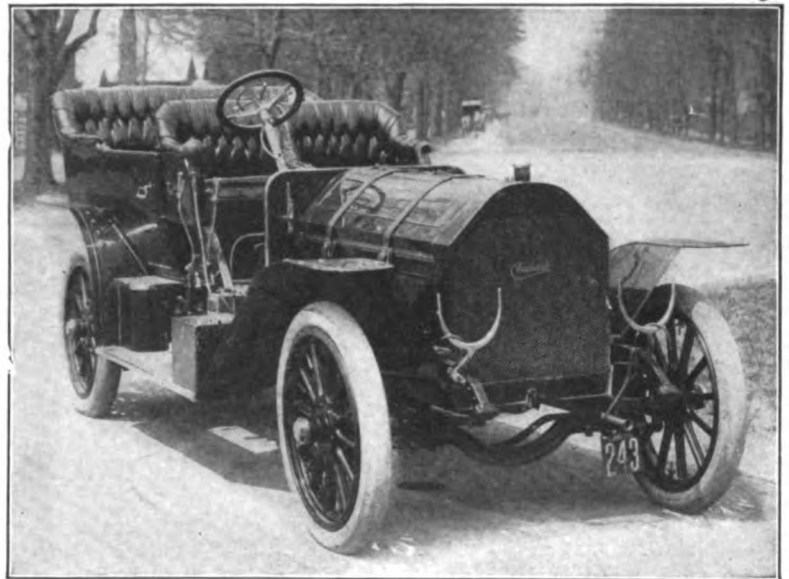
CHICAGO, ILL., U. S. A.

The Victorious, *Chadwick* SIX Great

FOR months we have been advertising this fact in the leading automobile publications, and in the greatest hill-climb America has ever known—up Giant's Despair Mountain, Wilkes Barre, Decoration Day, all our claims were conclusively proved to be correct, for the **Great Chadwick Six** met and defeated all comers, and so complete was the victory that the other cars (foreign and American) in the race could justly be termed "also rans."

WE entered but one car, which was our regular demonstrating automobile and which is for sale to anyone. We made no special preparations and we won the two most important touring car events and made the fastest time on this hill that has ever been made by a gasoline touring car. We took this same touring car and entered it in the free-for-all, against Vanderbilt Cup Racers, and finished only three seconds behind two specially built machines, which are not stock cars nor sold to the public.

IT was universally conceded by everyone that the **CHADWICK** made by far the most wonderful performance at the hill-climb, because notwithstanding its terrific power and speed, it ran quietly and easily. Remember, this very car that won this record is for sale, at the regular list price, or if you prefer, its duplicate, because it is not a specially built machine, but one of our regular stock, 1908 modeled.



The above is from a photograph of identical victorious Great Chadwick Six.

	TIME	H.P.	COST
Ninth Event			
Great Chadwick Six	2.02 2-5	50	\$5500
Thomas Special	2.05 2-5	60	?
Stearns	Did not finish		
Tenth Event			
Great Chadwick Six	2.07	50	\$5500
Matheson	2.19	60	\$7500
Matheson	2.24 4-5	50	\$5000
Fiat	2.35 4-5	35	\$9000

FREE FOR ALL
Matheson Vanderbilt Cup racer specially geared, only three seconds under time made by the Chadwick Stock Touring Car with standard gear.

A ride in the Great Chadwick Six will demonstrate that a new field of motoring pleasure awaits you.

Agencies in many large cities or write to Dept. S.

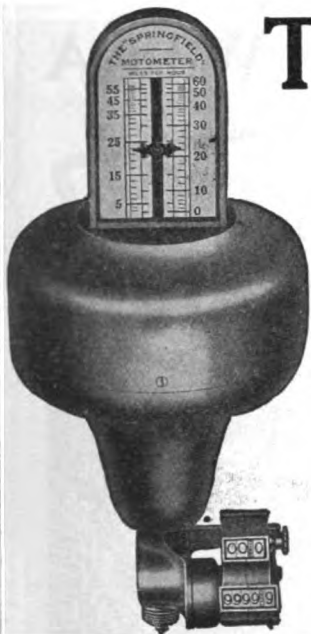
CHADWICK ENGINEERING WORKS

32d and Spring Garden Sts.

Philadelphia

The Springfield Motometer

“The Speedometer that has proved it”



Unless a speedometer is *accurate* and *stays accurate*, it is *worthless*.
 To *be* and *remain* accurate is its *whole duty*.
 Every buyer has a right to demand *proof*. Anyone can *claim* it.

If you *see* with your own eyes an *indisputable* demonstration of accuracy—holding the watch and counting the revolutions *yourself*, not on *one* but on *three* Motometers *simultaneously*—that is *proof*.

If, back of this, there is *reputation*, gained by *seasons* of *sale* and *use* under all conditions—that is also *proof*. We offer *both kinds*. The first at *all the big shows*—the second *every day* and *at all the time*.

Do you want a speedometer that you can *know* is right? Then specify the “*Springfield Motometer*.”

THE PRICE IS RIGHT

Costs *less* than any other speedometer with a *reputation*.

Costs *no more* than the experiments.
 For any car made, complete with fittings

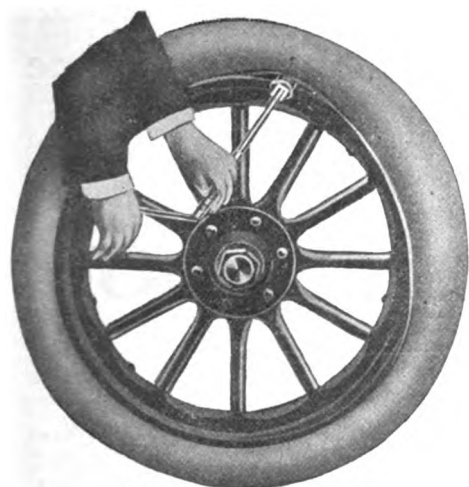
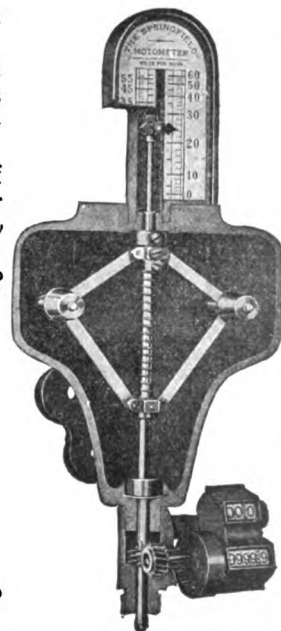
50 Mile Pattern, \$45.00
 60 Mile Pattern, 50.00

Send for Catalog and Booklet, “*Facts*.”

The R. H. SMITH MFG. CO., Springfield, Mass.

Established 1865

Incorporated 1883



“EVER READY” TIRE TOOL

Rolls the most obstinate tire on or off in a few minutes time, with remarkable ease.

No expert knowledge or practice required to operate it, simply insert the tool, turn the handle slowly and the result is accomplished.

Cannot possibly pinch or injure the inner tube. This feature alone insures a saving of many times its cost.

Must be seen to be appreciated.



ROLLING THE TIRE OFF AS SIMPLE AS IT LOOKS

Price complete, including clamp, \$8.00

Call at our show rooms and we will gladly give you a practical demonstration. If you cannot come to us, let us send descriptive catalogue to you.

WHEN FOLDED IT CONVENIENTLY FITS IN ANY TOOL BOX.

Address Department 9

AUTO IMPROVEMENT COMPANY

Uptown Office and Show Rooms, 2128 Broadway. Factory, 316 Hudson St.,

NEW YORK CITY

TIRE TOOL FOLDED

WE ALSO MANUFACTURE
 “EVER READY” VULCANIZERS
 SPEEDOMETERS
 AND AUTOMATIC STARTERS
 ASK ABOUT THEM.



You Can Watch Your Battery With A RADIUM CURRENT INDICATOR



- ¶ Adapted for automobiles, motor boats, and all gas and gasoline engines. Will positively indicate whether your battery is fully charged.
- ¶ Will positively indicate the available current at all times.
- ¶ Will prevent "burning out" of battery or "over-discharging," the main causes of battery destruction.
- ¶ The condition of your battery always before you in "plain sight."
- ¶ The Radium Storage Battery with current indicator is an absolute necessity to every autoist and power boat user; and no automobile or motor boat is thoroughly equipped without a Radium Storage Battery with current indicator. The greatest stride forward since the invention of the Storage Battery.

Write for Information. Agents Wanted Everywhere.

**GENERAL ACCUMULATOR AND BATTERY
COMPANY :: 150 2nd St., Milwaukee, Wis.**



Real Automobile Insurance

YOU GET THE BENEFIT NOW

If you adopt the policy of keeping your car in a

CORNELL GARAGE

PORTABLE

You can watch it and protect it from unauthorized use by not too scrupulous chauffeurs and others, and safe from **FIRE RISKS** and damage through neglect.

Built in style of architecture to match your residence, of Cornell interchangeable sections, which may be erected and ready for occupancy same day of delivery without nail or screw by any help of ordinary intelligence. Keeps your car free from weather, and the permeating and destructive odors of public garages and stables. We can furnish Garages, large or small, at almost any price within reason.

Regular styles at moderate prices ready for immediate shipment.

ALLISON BUTTS
Attorney and Counsellor
226 UNION ST., Poughkeepsie, N. Y.

Poughkeepsie, N. Y., May 28, 1907
Wyckoff Lumber Mfg. Co., Ithaca, N. Y.
Gentlemen—The Automobile Garage No. 3 was received in due time and I now have it put up. It meets my expectations in every particular and has been admired by everyone who has seen it. It certainly is a very attractive and artistic building.
Very truly yours,
ALLISON BUTTS

Special designs and specifications submitted and orders executed promptly.

Write for Catalogue and Prices.

WYCKOFF LUMBER & MFG. CO.,

Makers of Department T. A. ITHACA, N. Y.
PORTABLE GARAGES, COTTAGES, CAMPS, STABLES, TOOL-HOUSES, ETC.

"It's Nice to Know How Far You Go; and This Will Tell the Speed — also"

The Veeder TACHODOMETER

Is the Scientist's Speed Indicator, applied to automobiles. Used in the greatest laboratories and shops, time-tried, reliable, and now fitted for automobile use.

One shaft with paddle-wheel permanently attached forms the SINGLE moving part. Gravity and centrifugal force are the only other elements of control. Until these natural laws change the Veeder Tachodometer must remain *permanently and absolutely accurate*.

Of the many principles on which speed indicators may be designed we have chosen the liquid centrifugal, and the results are so satisfactory and so positively accurate that this system rises

SUPERIOR TO ALL OTHERS
Because there are NO SPRINGS NOR VARIABLE ELEMENTS

NO DELICATE MECHANISM.

ONLY ONE MOVING PART.

CAN BE ACCURATELY SET TO ZERO by the operator at any time. No other can.

IT IS PRACTICALLY IMPOSSIBLE TO WEAR IT OUT.

NEITHER TIME, USE, FRICTION NOR TEMPERATURE CAN CHANGE ITS ABSOLUTELY ACCURATE READINGS.

IT DOES NOT SWING NOR WOBBLE, but follows exactly and instantly every slightest variation of speed.

SHOWS SPEED FROM ZERO TO 62 MILES PER HOUR.

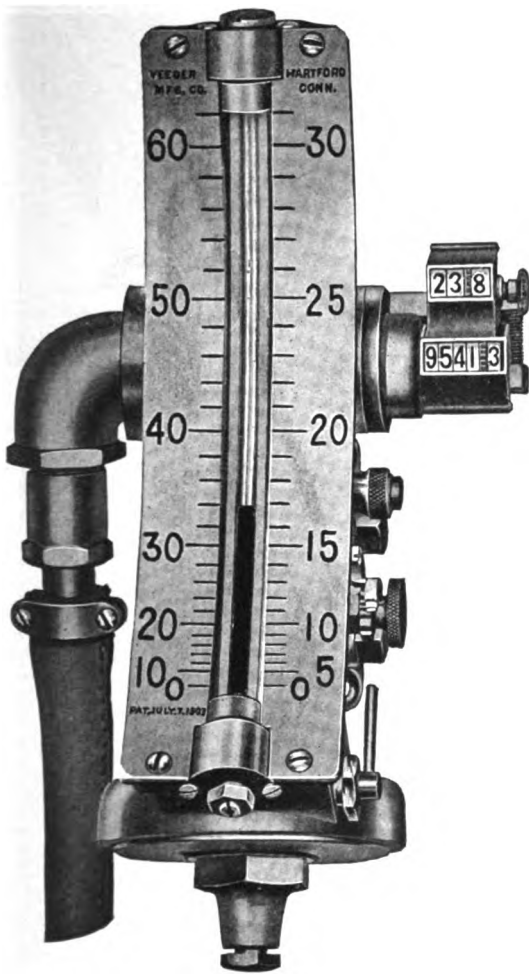
CAN BE READ FROM A DISTANCE AT A GLANCE.

CAN BE PLACED ON DASH, IN TONNEAU, or in LIMOUSINE.

REGISTERS TOTAL DISTANCE, AND FOR EACH TRIP.

No instrument in which springs are employed (and practically all other speed indicators contain springs) vary with age, temperature, and especially with the friction of moving parts; and only by special lubrication, not found in the ones you buy, can correct readings be obtained even for a short time.

Supplied with attaching fixtures for all makes of automobiles. In ordering state make and model of car; also year of manufacture.



PRICE, COMPLETE, READY TO GO ON ANY CAR. \$75

THE VEEDER MFG. CO.

22 SARGEANT STREET,

HARTFORD, CONN.

Manufacturers of Cyclometers, Odometers, Tachometers, Tachodometers, Counters and Fine Castings.

The Voice of the Road

10,000 Filled Tanks
Prest-O-Lite
 Ready to Loan to
 Responsible Dealers
 Everywhere



YOU
 NEVER
 HAVE TO WAIT

Prest-O-Lite IS EVERYWHERE

Over 1200 replacing stations where Prest-O-Lite users can have their Prest-O-Lite tanks exchanged without a moment's delay.

OUR FIVE MAIN STATIONS have 10,000 filled tanks of Prest-O-Lite ready to loan to responsible dealers everywhere—a filled tank of Prest-O-Lite is ready for you at nearly every garage from the Atlantic to the Pacific.

CAUTION Prest-O-Lite Gas Tanks are being imitated by concerns who are putting out tanks like Prest-O-Lite Gas Tanks of two years ago. Your Prest-O-Lite Tank has all the new improvements shown most practical by two years' more experience. Prest-O-Lite tanks are thus much more valuable than imitations which cannot be supplied promptly. In exchanging yours see that irresponsible dealers don't keep your Prest-O-Lite Tank and give you a cheap imitation. Be sure to see the name Prest-O-Lite on the tank you get back to protect yourself.



THE PREST-O-LITE COMPANY

MAIN STATIONS

New York, 1904 Broadway

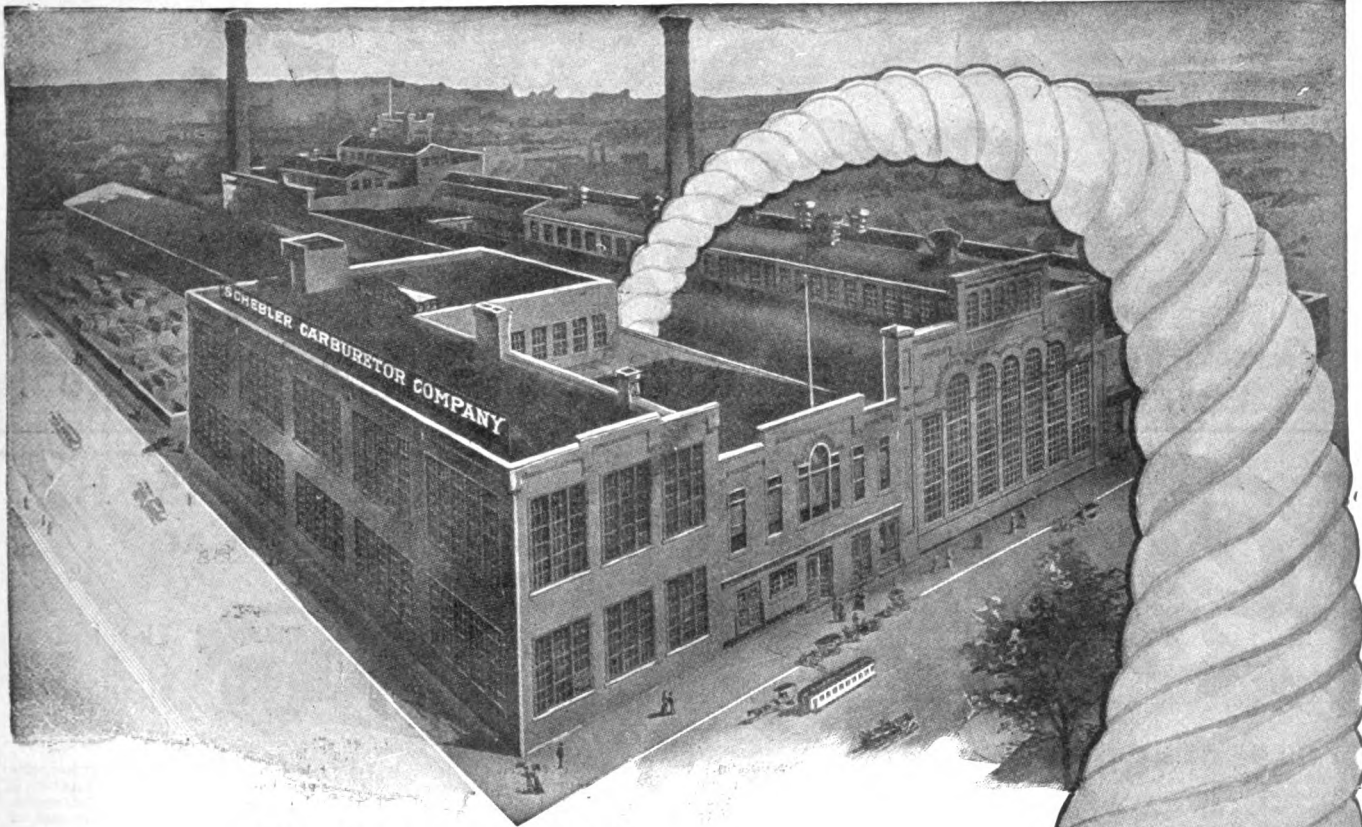
Boston, 541 Tremont

San Francisco, Point Richmond

Indianapolis, 22-24 S. East St.

Toronto, 6 King St. W.

Or at Any Responsible Dealers or Garage.



The Output of the New
SCHEBLER CARBURETER

Plant is 20,000 Per Month

All orders filled the day they are received. We can't take care of the Carbureter business of the world without any trouble whatever.

Schebler Carbureters are high in public estimation because of their quality — their never failing dependability in fulfilling every requirement of perfect carburetion.

Write for proofs—full particulars and prices.

Wheeler & Schebler, Indianapolis, Ind.

LIST OF AGENTS

- | | |
|--|---|
| Excelsior Supply Co., Chicago, Ill. Exclusive agents for Chicago and Cook County, Ill. | Chauslor & Lyon Motor Supply Co., 930 S. Main St., Los Angeles, Cal. |
| E. J. Edmond, 75 W. 44th St., New York. | Chauslor & Lyon Motor Supply Co., 503 Golden Gate Ave., San Francisco, Cal. |
| Pope Manufacturing Co., Hartford Conn. | Wilson & Co., Ottawa, Ont., Can. |
| Chas. E. Miller, 824 Main St., Buffalo, N. Y. | Schuman Carriage Co., Honolulu, T. H. |
| Chas. E. Miller, 406 Erie St., Cleveland, O. | Canada Cycle Motor Co., Toronto Junction, Can. |
| Chas. E. Miller, 227 1-2 Jefferson Ave., Detroit, Mich. | McCulloch & Boswell, Winnipeg Man. |
| E. B. Belcher, 26 Green St., Malden, Mass. | Geo. Neil & Co., 38 Fenchurch St. London, Eng. |
| Hub Automobile Exchange, Dorchester, Mass. | Bull-Flintze Co., Newark, Ohio. |
| J. W. Lathrop Co., Mystic, Conn. | Smith Electric Engineering Co., Wattown, N. Y. |
| National Elec. Supply Co., Washington, D. C. | Kansas City Motor Car Co., Kansas City, Mo. |
| Joe. Bransard, Central Falls, R. I. | Neustadt Auto & Supply Co., St. Louis, Mo. |
| G. D. Thorndike, State of Maine Agt., Portland, Me. | C. J. Smith & Co., 354 St. Peters St., St. Paul, Minn. |
| Wallace Bros. Co., Norfolk, Va. | |
| The Autolight & Motor Supply Co., 508 N. Broad St., Philadelphia, Pa. | |
| E. K. Cumbe, 1228 Court Place, Denver, Colo. | |
| F. C. Bowler, 322 Baronne St., New Orleans, La. | |
| The Angler Co., Boston, Mass. | |

20,000 Per Month

The Locomobile

Locomobile Company of America, Bridgeport, Conn.
 New York, B'way and 76th St. Boston, 400 Newbury St.
 Philadelphia, 249 N. Broad St. Chicago, 1354 Michigan Ave.

The Most Reliable American Car

Columbia

Mark XLIX 40-45 H.P. Touring Car



The Leader of Its Class

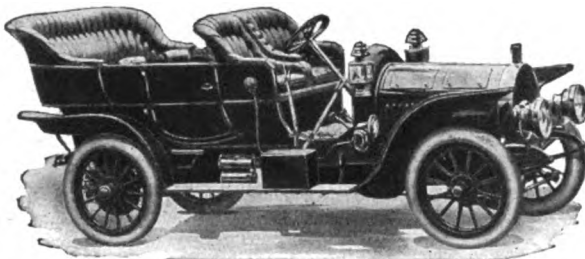
Mark XLIX-40-45 H. P.

Embodies absolutely the best things possible in motor car construction. Compare this car with others in the same class selling at nearly twice the price and note that in mechanical equipment, general design, painting, trimming and appointments, no other automobile, whether foreign or domestic, is more carefully or honestly built. No expense has been spared to make it the Leader of Its Class and the materials that enter into its construction are the best procurable. It is built to meet any and all conditions of touring and is a fast, roomy and comfortable seven-passenger touring car of extremely easy riding qualities. **Standard Touring Car, \$4,500. Limousine, \$5,500.**

New York Branch: Electric Vehicle Co., 134-136-138 West 30th St.
 Chicago Branch: Electric Vehicle Co., 1332-1334 Michigan Ave.
 Boston: The Columbia Motor Vehicle Co., Trinity Pl. and Stanhope St.

Catalogues of this and other models on request.

ELECTRIC VEHICLE CO. HARTFORD CONN.
 Member A. L. A. M.



An Astounding Performance

Perfect score in Sealed Bonnet Contest of A. C. A. at New York.

And, without breaking seals or making adjustments of any kind.

A fast run to Cleveland from New York over rough roads (691 miles in 33 hours 20 minutes). Time from Buffalo to Cleveland, 6 hours 30 minutes (202).

Seals examined at Cleveland by Mr. Asa Goddard, Secretary of Cleveland Automobile Club and found intact. This car has now made 1800 miles with absolutely no attentions except occasional doses of gasoline, oil and water.

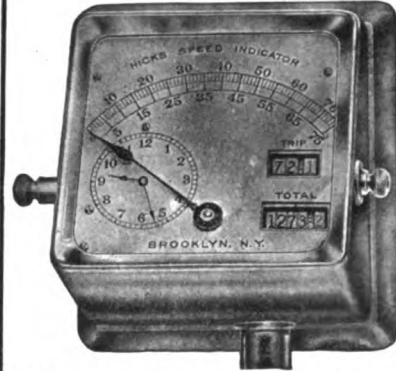
It seems almost unnecessary to say that the car is a

Royal Tourist

THE ROYAL MOTOR CAR COMPANY

Member A. L. A. M.

CLEVELAND, OHIO



"PEER OF THEM ALL"
HICKS
Speed Indicator
 (MODEL D)

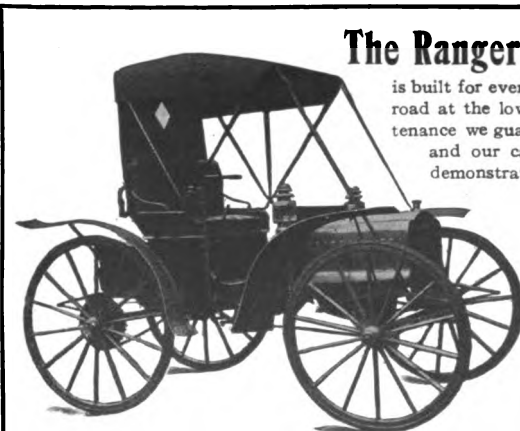
COMPLETE, COMPACT, ACCURATE, HANDSOME. NO WABBLING OF INDEX HAND. SIMPLE AND SCIENTIFIC CONSTRUCTION.

Four Sets Ball Bearings, Speed Indicator, Trip and Total Distance Recorder and Clock all on One Dial.

Price \$50.00, Complete Fully Guaranteed.

Send for Illustrated Booklet Write Us About Agency Proposition.

HICKS SPEED INDICATOR CO., 920 UNION ST. BROOKLYN, N. Y.



The Ranger Roadster

is built for every day use on any road at the lowest cost of maintenance we guarantee the result, and our cars are ready to demonstrate at any time what the Ranger is capable of doing under actual road conditions. Write for our catalog and agent's proposition.

Ranger Motor Works
 4815-17 Evans Ave. Chicago, U.S.A.

DID YOU EVER WISH YOU HAD MORE POWER THAN THE OTHER FELLOW

When he passed you, and you had to take all the dust, while he was driving a car that had a 2-cylinder engine as your car has?

Maybe you had to go up the next short grade on slow speed because you had five people in the car.

If you owned a **GALE** this would never have happened. Our nearest agent will prove this to you

WESTERN TOOL WORKS,

110-118 **KELLOG ST.,**

GALESBURG, ILL.

THE MASON

"THE FASTEST AND STRONGEST 2-CYLINDER CAR IN AMERICA"

At the first hill-climbing contest of the Iowa Automobile Club held at Des Moines on July 4, 1906, The Mason won easily against all competitors, including 4-cylinder car listing at \$4,000, and rated at 40 H. P.

Built for any road, and especially for rough and hilly country roads. Exceptionally strong construction.

24-H.P.; 2-cylinder opposed motor; cylinders, 5x3; weight, 1,750 lbs.; seats 5. Takes any hill on high gear. Speed, 4 to 40 miles per hour. Price, \$1,350.

Made by the **MASON MOTOR CAR CO.,** East Fifth and Vine Streets, Des Moines, Iowa.

Address **MASON CAR SALES CO.**

310 W. 9th St.

Kansas City, Mo.

TO KNOW

What To Do and How To Do It

When your gasoline motor or gas engine gets stubborn, can be quickly learned by owning a copy of the

Practical Gas Engineer

A Book of 172 Pages Neatly Bound in Cloth

By **E. W. LONGNECKER.** Twelve years' constant experience with Hydro-Carbon Engines. **SIXTH EDITION JUST OUT** and selling rapidly. First and Second Editions exhausted in thirteen months.

Special Chapter on Automobile and Motor Boat Engines.

Sent Postpaid on Receipt of Price, \$1

Book Dept., The Automobile, Flatiron Bldg., Madison Sq., N.Y.

The "Blomstrom Thirty"

THE MOST FOR THE MONEY EVER OFFERED

4 Cylinder, Vertical, 30 H.P. PRICE \$2,250

Write for Catalogue—Dealers, Get Busy

The Blomstrom Manufacturing Co.
Detroit, Michigan, U. S. A.

RALPH TEMPLE, 309-311 Michigan Ave., Chicago,
Agent for Chicago and Middle Western States.

WHAT IS BEING DONE BY THE

Wayne

In the 24-hour endurance contest held at the State Fair Grounds, Detroit, Michigan, on June 21st and 22nd, under the sanction of the A. A. A., the Model N Wayne beat the World's Record by 132 miles, the Wayne's total mileage for the 24 hours being 958 miles against the old World's Record of 826.

On the same date, June 22d, in the 100 mile endurance contest held by the Detroit Automobile Club, the Model N Wayne Roadster, driven by Mr. Geo. Lane, FINISHED WITH THE ONLY PERFECT SCORE IN ITS CLASS. Only two other cars, both of them in a different class and considerably higher priced, finished with a perfect score.

We want some more good agents in territory where we are not represented

- 30-35 H. P., 5 passenger Tourist.....\$2,500
- 30-35 H. P., Gentlemen's Roadster.....\$2,500
- 35 H. P., 5 passenger Touring Car.....\$2,500
- 50 H. P., 7 passenger Pullman Car.....\$3,500

Descriptive Catalogue Sent Anywhere Upon Request

WAYNE AUTOMOBILE CO.

Dept. 7

Detroit, Mich.



An Ideal Car for
Business and Professional Men

The FEDERAL

Model C Runabout, \$600

A car for every day service, constructed upon the simplest lines to attain the maximum of power, speed and durability, and needs no mechanical knowledge to operate it successfully.

It is a car of style and practicability.

If you are contemplating the purchase of a car, this is the car for you to buy.

Dealers, this is the car for you to handle.
Write for full particulars.

Federal Automobile Co.
40th St. and Wentworth Ave., Chicago, Ill. ☐

The Auto Car Equipment Co.

Make the Highest Powered
Limousines in the
Market



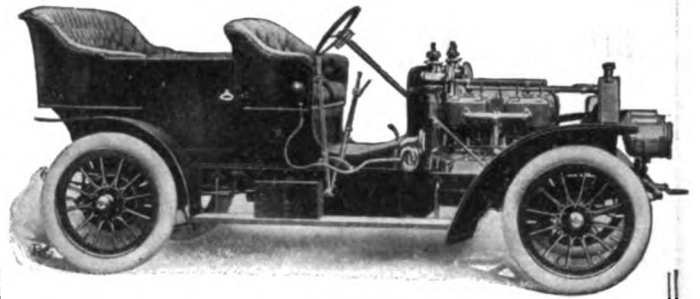
6-Cyl., 60-H.P., Seating 7 to 10 People. Elegant, Luxurious.

Also Manufacturers of

Trucks, Omnibuses and Sight-Seeing Cars—Gasoline and Electric

ADDRESS

THE AUTO CAR EQUIPMENT CO.
87 Edward Street, Buffalo, New York



Model 19

"St. Louis" Motor Cars

Æsop tells us of a man who could give a skillful imitation of the nightingale. One man refused to listen, because, as he said, "I have heard a real nightingale."

He was right. Now, why buy an imitation when the original "Rigs That Run" cost no more and are infinitely better?

Three four-cylinder models
Catalogs free

"St. Louis" Motor Car Co.
PEORIA, ILL.

• Member American Motor Car Manufacturers' Association, N. Y. •

RETAIL PRICE, \$2.00



Comfortable Dusters

THAT DEFY
DUST

At Popular Prices

OUR coats are made in the latest French style out of Pongee cloth and light and dark shades of linen goods for both

Men and
Women

Send Check or Money Order telling us which of the two grades you wish, with your breast measurement and height, and we will send garment by Prepaid Express. If same does not please you your money will be gladly refunded. In this way you save the middle man's profits, which are enormous.

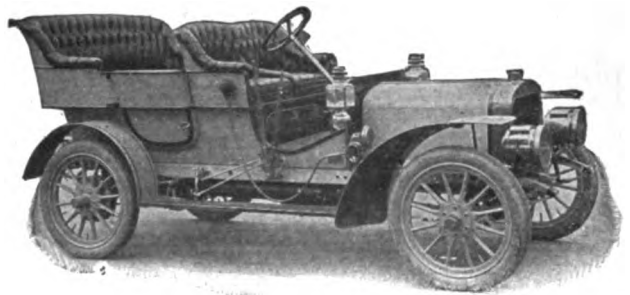
Silk Pongee, \$5
Light or dark shade linen cloth, \$2

OURS ARE EXCLUSIVE
DESIGNS

Smith, Crary & Davidge
178-9 Water St., Binghamton, N. Y.

Write today. Don't wait

DORRIS



Model B

ONE MODEL FOR ALL

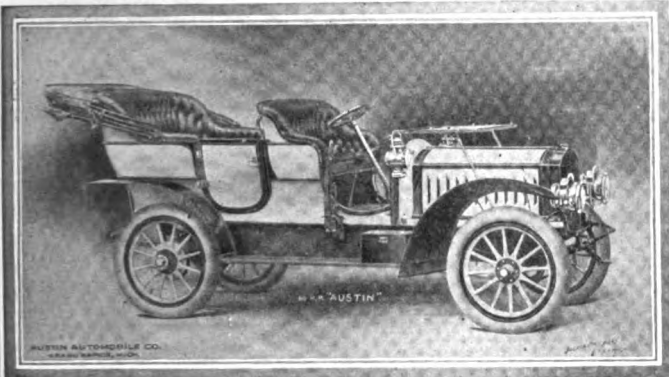
30 Horse Power

Runabout	-	-	\$2500
Touring Car	-	-	\$2500
Limousine	-	-	\$3500

SILENT POWERFUL SIMPLE
EASY OF CONTROL

Dorris Motor Car Co.
ST. LOUIS

AUSTIN



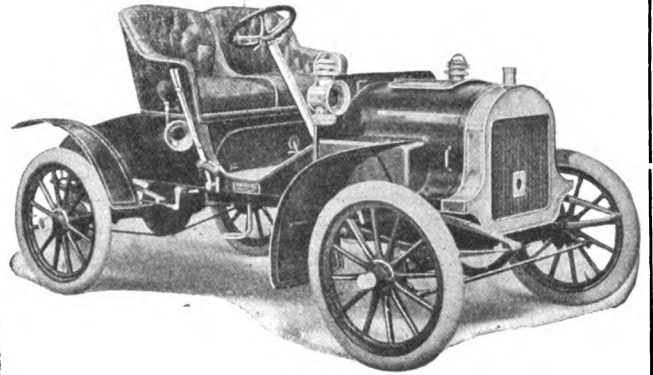
60 H.P. TOURING CARS, 90 H.P. TOURING CARS,
 RUNABOUTS, LIMOUSINES. RUNABOUTS, LIMOUSINES.
 PERFECT IN ALL MECHANICAL DETAILS

☞ We make more of the complete car in our own factory than any other American Manufacturer. The axles, gears, steering knuckles and all vital parts are exceptionally large and strong, insuring safety and durability.

Send for catalogue giving full details of our many special and improved features.

AUSTIN AUTOMOBILE CO., Grand Rapids, Mich., U. S. A.

The MARVEL Automobile Roadster



The Greatest Value on the Market
 A Car of Superior Merit
 Gives Most Satisfactory Service
 WRITE FOR FULL PARTICULARS

Marvel Motor Car Co.
 284-290 Rivard St., DETROIT, MICH.



Stanhope
\$800
Runabout
\$600

JEWEL argument is not a matter of superlatives nor extravagant, boastful claims. It is based upon these definite points:



There is no other gasoline car that is so easily controlled.

There is no other gasoline motor so simple.

There is no other gasoline car that costs so little for repairs and maintenance expense.

Let us give you the whole story of JEWEL construction and equipment in our free booklet. It fully describes the JEWEL Valveless, Two-cycle engine, and shows why experience, rather than advertising, has made the JEWEL famous.

FOREST CITY MOTOR CAR CO.

136 Walnut St., Massillon, Ohio, U. S. A.

A CAR FOR SERVICE

"Servitor"

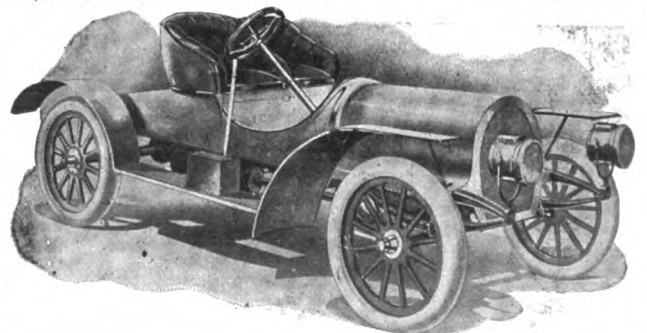
Something New and Distinctive

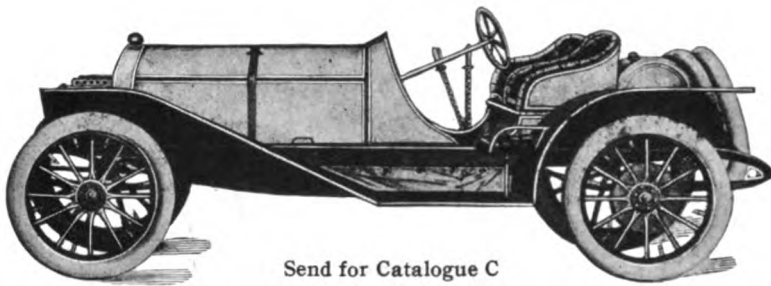
in a high-powered "Gentlemen's Roadster." Its graceful lines and harmony of coloring make it a thing of beauty. There is nothing overlooked to make this a most desirable car for men of moderate means.

The mechanical construction is as near perfection as is possible to make it. Every pound of weight is eliminated by the use of our system of air cooling, no radiators, pumps or tanks to leak or get out of order. Get our interesting catalog giving full details.

We still have some good territory open. Great chance for reliable agent to make fine income. *WRITE for particulars.*

THE BARNES MANUFACTURING CO.
 1400 COLUMBUS AVENUE, SANDUSKY, OHIO





Send for Catalogue C

THE COLT Six-cylinder Runabout

\$1,500 { Bore 4 1/2"
Stroke 5"

Weight, 1,800 lbs. "Forty" H.P.
"Mile-a-minute"

COLT RUNABOUT CO.

Office, 52 Broadway Factory, Yonkers
NEW YORK



CONOVER WIND SHIELD

(Patent Applied For)

ENHANCES THE APPEARANCE OF ANY CAR

The only folding wind shield that is automatically held open or shut, or that can be operated by the driver with one hand, without stopping car. No adjustments of bolts or nuts.

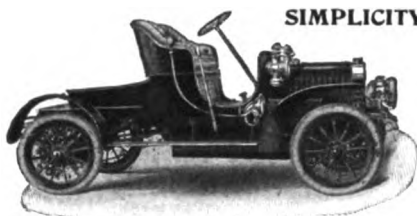
Send for Fully Illustrated Circular with Prices

THE CONOVER MOTOR CAR CO., - Paterson, N. J.

NATIONAL SALES CORPORATION, Factory Sales Managers, 296 BROADWAY, NEW YORK, N. Y.

"CARTER CAR"

FR
IC
T
I
O
N



SIMPLICITY

T
R
A
N
S
M
I
S
S
I
O
N

NO GEARS TO STRIP—
NO CLUTCH TO SLIP

MOTOR CAR CO.

DETROIT, MICH.

"BUSINESS"

The "Atlas" Runabout

¶ The simplest engine ever made, with a *four years* test behind it. Fast, easy, flexible and handsome. A remarkable car. \$1400 worth of vim and "get there."

ATLAS MOTOR CAR CO.,

Harry A. Knox, Pres.

SPRINGFIELD, MASS.

THE GARFORD COMPANY, Elyria, Ohio



Makers of the
CELEBRATED "GARFORD" TOURING CAR CHASSIS

Also

Brakes, Artillery Hubs, Heavy Steering Gears, Hangers, Counter-shafts, Reduction Gears and Sprockets for Electric Wagons. Parts for Power Wagons, Gasoline or Electric. Parts for Power Wagons, Light and Heavy. Equipment "L" makes the Best Light Electric Delivery yet produced.

HAYDEN EAMES, Sales Manager

AMERICAN TRUST BUILDING,

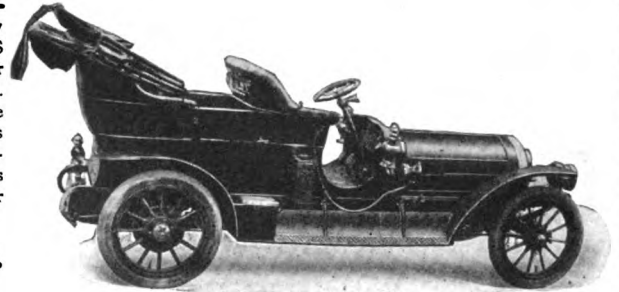
CLEVELAND, O.

The PAYNE MODERN CAR

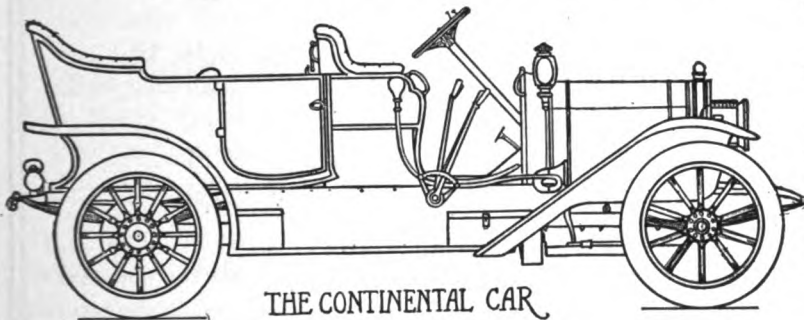
The Solution of the Problems

Years of testing have proved it so. An air-cooled motor that keeps cool with eighty pounds of compression, THAT MEANS POWER. A transmission gear with four speeds forward. Gears always in mesh. No stripping of teeth. On direct drive every gear as well as the lay shaft stands absolutely still and only one non-adjustable clutch used. Many other features just as valuable can be learned from our booklet. Write for it.

MODERN TOOL CO.
ERIE, PA.



THE CONTINENTAL CAR



THE CONTINENTAL CAR

True to its name and motto: "All that a Motor Car should be"

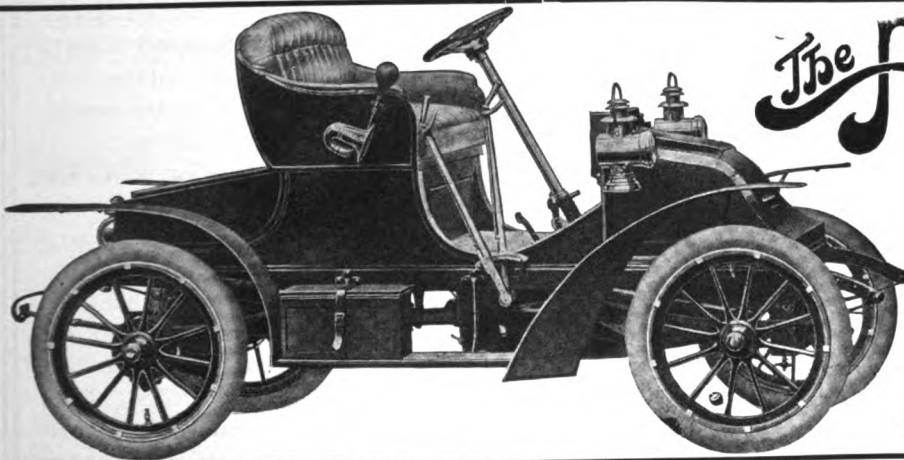
The first foreign designed car built in America at a moderate price
First to finish in Sealed Bonnet Contest, and has gone 1000 miles without an adjustment

DEALERS TAKE NOTICE

The Continental Automobile Mfg. Co.

New Haven, Conn.

1908 agencies now being contracted for.



The Autocar

Type XV--12 H.P.
\$1200

The Autocar Company

8th Street, Ardmore, Pa.

Member: Association Licensed Automobile Manufacturers



The Solution of the Delivery Problem

MAXIMUM STRENGTH—
MINIMUM EXPENSE
OF OPERATION

COMPACT POWERFUL
ECONOMICAL RELIABLE

Exactly sums up the essential features of "American" trucks. Far the best truck on the market to-day.

WRITE FOR FULL DESCRIPTION
AND PRICES



AMERICAN MOTOR TRUCK CO., Lockport, N. Y., and Monadnock Bldg., Chicago, Ill.

**Not one
tire complaint
this year**

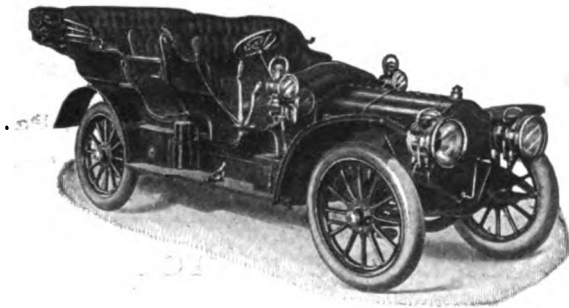
Thomas Flyer

Hundreds of cars in daily use for months. Some have traversed thousands of miles over roughest kind of roads. One made over 8,000 miles. Another 10,000 miles. **Not one complaint** of tire trouble.

Reason found in splendid policy of providing 1,500 pounds surplus tire capacity by equipping cars with larger tires and wheels at additional cost to us of over \$100. Front tires 36 x 4 inches. Rear tires 36 x 5 inches.

Proves again that we will not only eliminate all structural troubles but eliminate practically all operating troubles, such as tire troubles by use of big tough tires and ignition troubles by the use of a double ignition system.

All this is submitted for the cool and critical buyer—the conservative business man. Regardless of price no other large car can present such a grand record.



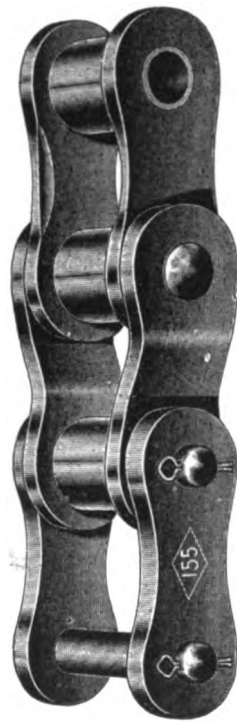
60-H. P. Thomas Flyer, \$4,000 f. o. b. factory.
40-H. P. Thomas Forty, \$2,750 f. o. b. factory.

E. R. THOMAS MOTOR COMPANY

Member A. L. A. M.

Buffalo, N. Y.

DIAMOND Automobile CHAINS



operate smoothly even when hard driven under bad conditions. The hardened nickel steel rivets won't crack or break under the heaviest load, and their bearings are so uniformly tempered that no serious wear results when dirt and grit finds its way in. The elasticity of the special steel side bars prevents permanent stretch from sudden jerks, and when **Diamond Chains** are used as we advise, the pitch will not elongate enough to impair their action.

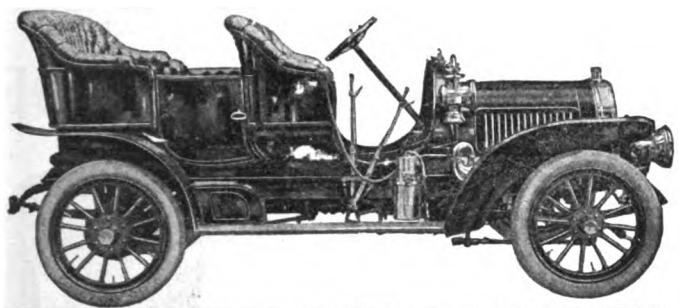
Diamond Chains were first put before the public seventeen years ago, when we originated the machined chain industry. They have since been proved, tested, improved and re-tested by actual service, until their superiority is generally conceded. They may be found on representative cars everywhere, and are made in every size. When your old chain is worn out replace it with a Diamond. Kept in stock by all jobbers.

Write for instructive book on Chain Power Transmission. Free if you mention this paper.

THE DIAMOND CHAIN & MFG. CO.

Capacity 8,000,000 ft. per year

230 W. Georgia Street, Indianapolis, Ind.



POPE-HARTFORD

Model L, Price \$2,750

SIGNIFICANT RECORDS

A long, unbroken record of satisfactory service: a reputation for hill-climbing ability second to no American car regardless of price, horsepower, or class; extreme flexibility of motor and successful daily operation meeting every possible test, have proved that in design, construction and workmanship the 1907 Model L is

THE PEER OF ANY CAR IN ITS CLASS

Essentially the American Car for American Roads

Possessing speed, efficiency, perfection of control, and accessibility of working parts, combined with graceful appearance, the Pope-Hartford meets the demand for a mechanically perfect car, dependable at all times.

In the hill-climbing contest at Manchester, N. H., June 19th, 1907, a Pope-Hartford Model L won every event in which it was entered, defeating cars that sell for \$5,000 to \$8,500.

SUPERIOR TO ALL

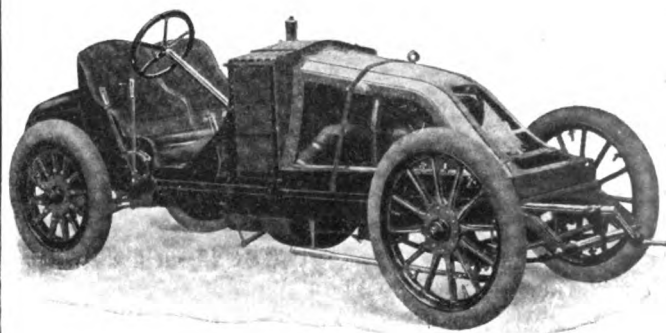
**Pope Manufacturing Company
HARTFORD, CONN.**

M. A. L. A. M.



RENAULT

"The Expert's Car"



Silence Speed Simplicity

35-45 H.P. Special Racing Roadster,	-	\$8500
Touring Body,	- - -	9250
Limousine or Landauette,	- -	9750
20-30 H.P. Runabout,	- - - -	6000
Touring Body,	- - - -	6500
Limousine or Landauette,	-	7000
14-20 H.P. Chassis,	- - - - -	4500
10-14 H.P. Chassis,	- - - - -	3200
8-10 H.P. 1908 Paris Taximeter Cab complete,		2950

Orders Now Booked

RENAULT FRÈRES SELLING BRANCH

PAUL LACROIX, General Manager

57th Street and Broadway, New York

Telephone 3004 Columbus

AGENTS—We are now appointing agents for 1908. Application for territory should be made without delay.

KNOX

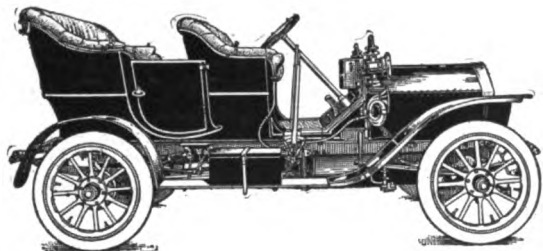
2 KNOX WATERLESS 2 PERFECT SCORES

In the four-day reliability test held June 12-15 by the Automobile Club of America, the best and fairest contest ever conducted in the automobile industry. The bonnets and all mechanism were sealed, no adjustments were permitted, and on the Knox cars, none were necessary. The minimum run was 150 miles in one day. Both of the participating Knox cars were stock models, one has been in daily use as a demonstrator for six months, the other for three months. Both were run to New York the day prior to the contest, and back to Springfield the day after.

IS ANY BETTER TEST OF KNOX RELIABILITY POSSIBLE OR NECESSARY?

Every Model "H" Knox will do as good work, and do it not only for six consecutive days, but for 365 consecutive days, and then some more. We do not build special cars, and every Model "H" is the same as every other Model "H," except in the color of the paint. Knox construction is right, and what is more important, stays right.

Illustrated catalogue is yours for the asking. Better get acquainted with the best car for the price of the year.



Knox Automobile Co.

Member Association Licensed Automobile Manufacturers

SPRINGFIELD, MASS.

GET READY FOR 1908

The sale for Cadillac cars has always been so great that our factory has never been able to fully meet the demand and we have, therefore, not been in a position to take on many new dealers.

We have, however, recently enlarged our manufacturing facilities and shall be in a position to make arrangements with a limited number of new dealers in unoccupied territory.

It is not necessary here to go into details about Cadillac cars. They are the most popular and easiest cars in the world to sell. Their unequalled dependability and economy of operation and maintenance is so universally known that the Cadillac usually receives the first consideration of a prospective purchaser, the question being whether he could get one.

If you are an automobile dealer or expect to take up the business, your success depends upon handling cars that give satisfaction and that you can sell in increased quantities year after year.

Cadillac dealers as a rule are the most successful dealers because they can sell more of them than any other and because it takes less effort and less expense to sell a Cadillac.

The line is in part as follows:

10 H. P. Runabout	\$ 800.00
10 H. P. Four-Passenger Car	950.00
10 H. P. Enclosed Coupé	1,350.00
20 H. P. Four-Cylinder Runabout or Touring Car	2,000.00
30 H. P. Four-Cylinder Touring Car	2,500.00

Now is the time to get ready for 1908 by selling some Cadillacs this fall and getting trade started which no other car can take away from you.



Cadillac Motor Car Company

Detroit, Mich.

Members of Ass'n Licensed Auto. Mfrs.

The American Tourist

"NO NOISE BUT THE WIND"



Price, \$3250 F. O. B.
Indianapolis.

Satisfies the Idealist

Define your own ideal of touring car perfection and note how ably the American Tourist meets it.

For a car of its size, elegance and comfortable capacity it is comparatively light (2,600 pounds). Large wheels, drop frame and special spring arrangement insure ease of motion and a welcome relief from tire troubles.

Its powerful engine (four cylinder, 5x5, rated very conservatively at 40) insures reserve energy for all occasions.

A Car of Thorough Design

Special features provide for perfect control at all speeds, and freedom from engine or other mechanical troubles. And yet its construction is extremely simple.

Combine all this with its excellence of materials, careful hand workmanship, and beauty of appearance, and you will find the American Tourist much to your liking.

WRITE FOR CATALOG

American Motor Car Company

903 State Life Bldg., Indianapolis, Ind.

Selling Agencies: New York City, Detroit Motor Car & Supply Co., 2230 Broadway. Boston, Mass., W. A. Fredericks, 16 Columbus Ave. Chicago, Ill., Pardee & Canary, Inc., 1218 & 1220 Michigan Ave. St. Louis, Mo., Peper Automobile Co., 3922 Olive St. Denver, Col. Smith Automobile Co., 1420 & 1422 Court Place. Los Angeles, Cal., S. California Motor Car Co. Tonapah, Nev., Renfros Garage. Cedar Rapids, Ia., A. E. Durin. Oklahoma City, Okla., Oklahoma Motor Car Co. Elmira, N. Y., Willys Crew Motor Co.

**Have You Seen the American Roadster?
The Sportiest Thing on the Road!**

Matheson

TWO Matheson cars add perfect scores in the 4-day Sealed Bonnet Contest to the long list of Matheson performances.

Mr. R. G. Kelsey, an Amateur, drove his 1906 Matheson throughout this contest with no more need for an adjustment than on the famous trips to Chicago and Boston which he made with this same car and on which he made the best time of the year under the frightful road conditions. This in spite of the fact that the rules obliged Mr. Kelsey to make 25 miles a day more than any other car except one of a famous European make.

This performance means but little in itself, but coming as it does—so close on the other Matheson victories—the new record for gasoline cars made in the hill-climb up "Giant's Despair" and the perfect scores in other endurance runs on Decoration Day—it tells a story eloquent of Matheson reliability in any event—under all conditions.

No car in the world—not the greatest of the foreign cars—can equal the Matheson in service over American roads. The Matheson will carry seven people seventy miles an hour. You cannot purchase a more beautiful and luxurious car.

Licensed Under Selden Patent

Reasonable Deliveries

Touring Cars—Runabouts

35 H.P., \$4,500

50 H.P., \$5,500

The Matheson Company of New York

1619-21-23 BROADWAY

Tel. 4876 Col.

Smith Tourists' Companion

The "Tourists' Companion" (type No. 9), one of the finest products of the great English instrument and watch makers, S. Smith & Son, Ltd., combines in one handsome fixture:

1. **The Smith Perfect Speed Indicator:** The only speedometer on the market which is exactly accurate for every speed. The unique three-spring construction and the individual hand-marked dial make it possible.

2. **Barometer:** It will foretell rain before the sky does.

3. **Trip Odometer:** 100-mile limit. Turning a button returns it to 00 whenever desired.

4. **Season Odometer:** For registering totals up to 10,000 miles.

5. **Compass:** Balanced on universal joint. Makes the road maps intelligible and saves errors.

6. **Eight-Day Clock:** Our well-known workmanship. Accurate and absolutely vibration-proof. Extra at small additional expense: A "maximum hand" on the Speedometer. It saves arrest and prevents unauthorized use of car.

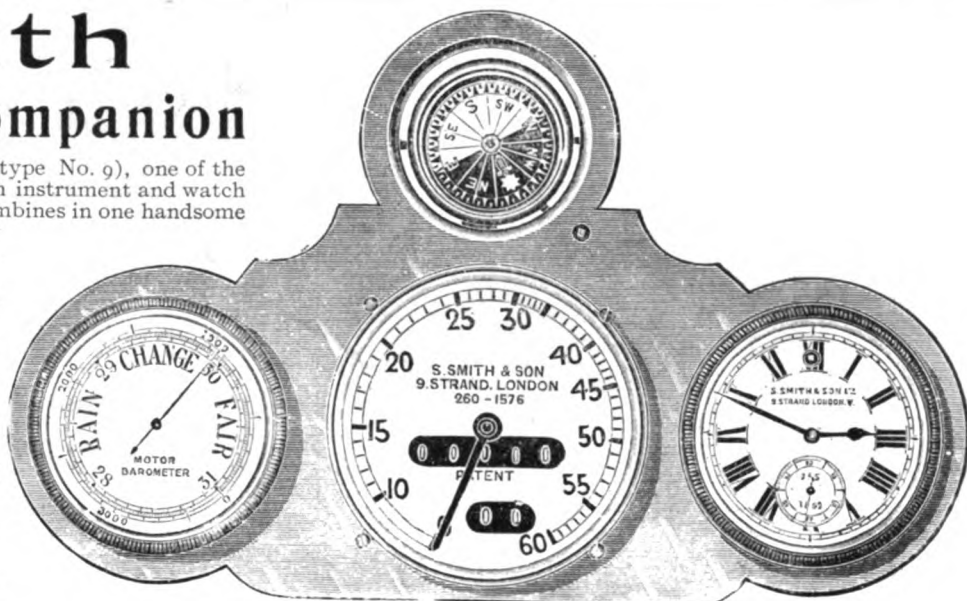
In ordering, always specify in full "S. Smith & Son Tourists' Companion."

Full instructions for applying sent with every instrument.

Ask your accessories dealer for particulars, or write directly to us for large catalogue of speedometers, odometers, combination attachments, clocks, compasses, head and side lights, horns, and other interesting and convenient automobile fixtures. Mailed free to any automobilist.

S. SMITH & SON, Ltd., 116 Broad Street, New York

To Dealers: Write for our terms to the trade. We want good representatives at once in every city and town in the United States. Our line is of the very best grade and can be handled with perfect confidence. Send for particulars.



John Boyle & Co.'s TRUNKS

Need small comment as far as reputation for QUALITY, SERVICE, DURABILITY and STYLE goes.—Select any one of the shapes for the various makes of cars and you are assured of the highest quality. Like everything else that's good, however, there are imitations. Be careful in your choice. Buying a trunk without a reputation is like spinning a coin, a "hit or miss" proposition.

No Trunks will give such satisfaction as those made by JOHN BOYLE & CO.

A letter asking for particulars and prices will bring proof aplenty.

WRITE TO US

JOHN BOYLE & Co.

112-114 Duane St. 70-72 Reade St.
NEW YORK

Type XVIII
7 Passenger Touring Car, 40 H. P.
\$4500

Type XVI
5 Passenger Touring Car, 40 H. P.
\$4000

ACME

A LOGICAL STORY
"Fur," said the Deacon, "'t's mighty plain
Thut the weakes' place mus' stan' the strain;
'N' the way t' fix it, uz I mainta'n,
Is only jest
To make that place uz strong uz the rest."
—*The Wonderful One Hoss Shay*

Type XVI
Runabout Roadster, 40 H. P.
\$3500

Type XVI
Roadster, 30 H. P.
\$3000

The Deacon's sentiments are ACME sentiments. The ACME car is built *entirely* by the ACME MOTOR CAR COMPANY and is constructed so that each part is proportionately as strong as the rest. The result is an all-round, *strong*, well assembled car. Externally, it has the finish of a Pullman Palace car. Internally, it is constructed with the accuracy characteristic of a Jurgensen watch. The "One Hoss Shay" was built to run One Hundred Years to a day. The "Forty Hoss Acme" is built along the same lines.

"The Car That Continues to Make Good"

The ACME MOTOR CAR COMPANY
READING, PA.



How Far Can You READ this?

Hold it Away From You and See

It's the scale of **The Warner Auto-Meter**, actual size. It says your Automobile is traveling 4 miles an hour. It is just as steady on your car as it is in your hand—for the scale of

The Warner Auto-Meter

is not influenced by the jar of the car—speed alone moves it. It doesn't bob around, the way other indicators do, until you are not certain whether it says 5 miles or 15.

Let us tell you more about this wonderful instrument—how it's made with sapphire jewels like a watch, yet is so strongly built that it takes an axe or a bad collision to break it or render it inaccurate, and how we use *magnetism* (in the only practical way), which makes **The Auto-Meter** as reliable as a mariner's compass forever.

Let us **prove** to you the good reasons why our **Guarantee of The Auto-Meter** is more liberal than any other manufacturer of speed and distance indicators **dares** to make.

Write us **The Model or Power** of your car and we will send you full information about **The Auto-Meter** with price ready to install on the dashboard.

THE WARNER INSTRUMENT CO., 677 Roosevelt St., Beloit, Wis.
The Auto-Meter is sold by all Dealers and at the best Garages.

Stevens-Duryea Limousines

WE are preparing a limited number of Light 6 Limousine Bodies for delivery, commencing the latter part of this month. If you desire a Limousine for your Light 6 for use in the Fall, we would advise sending in your specifications through your dealer as soon as possible.

Comfort as well as style was kept in mind in the designing of these bodies. The curved windows in front afford the occupants within an unobstructed view. The bodies are of aluminum, with round backs, seating four inside comfortably or five with a little crowding, and two in the front seat.

A limited number of Model R Limousines are ready now. These bodies can be fitted to any Model R sold in 1905, 1906 or 1907. The inside seating capacity is three comfortably. On account of the limited supply it is policy to place your order at once.

STEVENS-DURYEA COMPANY

900 Main Street

CHICOPEE FALLS,

Members A. L. A. M.

MASS., U. S. A.

IT STAYS NEW

That phrase is borrowed from the remarks of a man who has driven 28,000 miles in the



The distinctive **Berliet** lightness and strength, unfailing compression and remarkable longevity, are largely due to Vanadium, "the anti-fatigue metal," which for years has been used in all its steel and iron.

It is economy to buy what lasts longest. It is good business to sell what is serviceable.

The **Berliet** combines the best of imported material and the best of American workmanship.

The energies and guarantee of a \$50,000,000 company are behind it.

All cars overhauled free at end of first year and customers kept content.

24 H. P., \$5,500

40 H. P., \$7,500

60 H. P., \$9,000

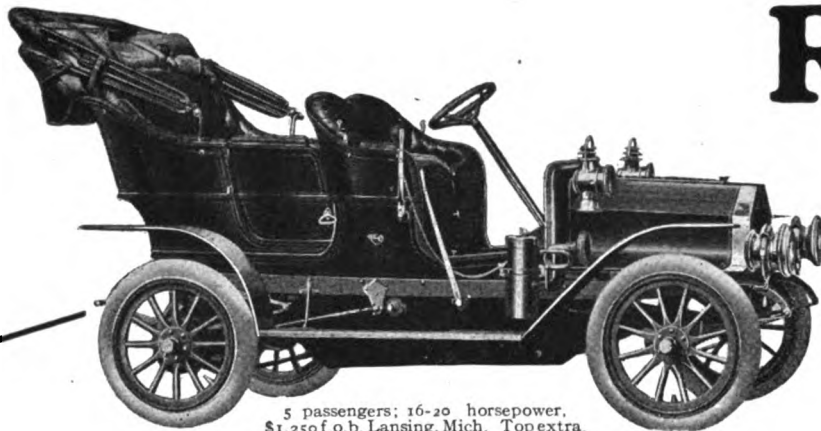
AMERICAN LOCOMOTIVE AUTOMOBILE COMPANY

PARK SQ. AUTO STATION
Boston

Factory, Providence, R. I. 1886 Broadway, New York

H. OSCAR BROWN, Philadelphia

W. W. SHAW CO.
Chicago



REO

\$1,250

5 passengers; 16-20 horsepower.
\$1,250 f.o.b. Lansing, Mich. Top extra.

WHAT'S BENEATH IT ?

When a \$1250 car goes out, as the REO did, on Pasadena Hill, and beats two \$4000 cars, two at \$3000 each, five at \$2500 and five at \$2000—when it climbs a 10 to 20 per cent. grade at 40 miles an hour, and wins the silver cup from 5 competitors, as the REO did on Sport Hill, Bridgeport, Conn.—and when, as in the terrific New York to Albany try-out, among 27 starters and only 16 survivors, it is one of the first five to finish (all bigger and costlier cars) then its claims must surely be founded on

BED-ROCK MERIT

Write for the interesting 24-page "Story of the REO"

R. M. OWEN & CO.,

Lansing, Mich.

General Sales Agents

The VICTORIOUS

Darracq

"The Fastest Car in the World"

DARRACQS DE LUXE

¶ Any maker can add two cylinders to his engine and announce that he has produced a six-cylinder car, but a true six-cylinder car means more than that. A six-cylinder engine has problems that are all its own, not to be solved by a simple extension of four-cylinder principles.

¶ But the Darracq for 1907 is a real six-cylinder car—one of the very few on the market. Unique devices have been developed to answer properly the unique needs of this form of engine. Novelties in design have fulfilled the necessities of novel principles.

¶ Almost alone of Automobile builders, Darracq et Cie are ready to declare that their six-cylinder model is as perfect and complete to the uttermost detail as their standard four-cylinder cars.

¶ Equipped with the finest bodies of every style, the 1907 six-cylinder Darracqs de Luxe are recognized by every expert who sees them in our salesrooms as the summit of achievement in the automobile industry.

¶ We have several of these cars for immediate delivery; also the well-known standard four-cylinder cars with open or closed bodies.

DARRACQ MOTOR CAR CO., 1989 Broadway, New York

Licensed Importers under Selden Patents

Boston—171 Huntington Ave.
Philadelphia—514 North Broad St.

Chicago—1502 Michigan Ave.
Pittsburg—507 Wood St.
Los Angeles—1030 South Main St.

Providence—7 Dorrance St.
San Francisco—387 Golden Gate Ave.

ORBIN

Not One, but Three

The three "full-jeweled" Corbins entered in the Sealed Mechanism Contest (600 miles) of the A. C. A. **all finished with perfect scores.**

You will find it just the car you want

THE CORBIN MOTOR VEHICLE CORPORATION, New Britain, Connecticut

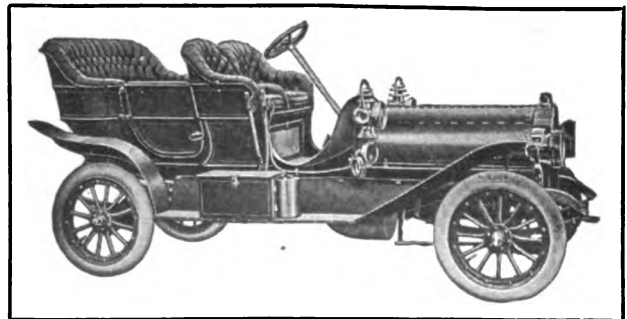
Member Association Licensed Automobile Manufacturers

CORBIN MOTOR VEHICLE CORPORATION of New York, 1888 Broadway
CORBIN CAR COMPANY of Boston, Motor Mart

THE LAMBERT

FRICITION FLYER

Combines More Good
Points Than Any Car
on the Market



It is up to the minute in construction, from the motor to the smallest bolt in the car. Starts easy—rides easier—costs less. Ask for a demonstration from our nearest agent, or write direct to the Buckeye Manufacturing Company, Anderson, Indiana, for handsome art catalogue, describing our models.

Delivery guaranteed within three days of receipt of order.

Elmore
Valveless 2-Cycle

Where's the Power Gone That I Bought
With This Expensive Car?

Three-Cylinder, \$1,750. Four-Cylinder, \$2,500.

That's the question the owner of a costly four-cycle car asks himself after the first year of his purchase.

Perhaps the car was as well built as it could be—but the principle was wrong.

There's a difference between the intermittent, spasmodic power of the four-cycle car and the rhythmic, steady, continuous power of the two-cycle Elmore.

Yes—and there's a difference between the cost of upkeep of the four-cycle car with valves and the two-cycle Elmore which has no valves.

Yes—and there are a dozen other differences—all of which you should learn about before you buy any car.

Our booklet, "Our Daily Mail," tells most of them—get it.



The Elmore Mfg. Co.
1304 Amanda St., Clyde, O.
Members A. L. A. M

HERE'S HOW WE BUILD

DIAMOND TIRES
Wrapped Tread. 32 x 3 1/2 front and rear

MARSH DETACHABLE RIMS
Quickest Safest Best

A-1 Second Growth HICKORY WHEELS
Same as used on cars costing highest prices

CONTROL, One Lever
Ideal in its simplicity

BRAKES, Two on Hubs

FRAME
Pressed Steel. 108-inch Wheel Base

SPRINGS
Garden City Spring Co.'s Triple Action with Supplementary Spiral Shock Absorbing Service in rear

BODY
Straight line seating five. Plenty of leg room

CURLED HAIR UPHOLSTERY
No Moss All Hair

VENTILATED AIR SPRING CUSHIONS

FLANGE-EDGED FENDERS All Round
With Mud-guard Aprons preventing mud from splashing on body of car

ENGINE BEARINGS
Highest grade Phosphor Bronze and Parsons White Brass

E. & J. LAMPS
Meaning quality. Five of them. Two Gas Headlights and Generator

THE C.-F. CAR

Read the Specifications

TWO MODELS	ONE PRICE
4-Cylinder, 30 H. P.	4-Cylinder, 30 H. P.
\$1750	\$1750
BOTH MODELS SAME PRICE	



READ THE DETAILS OF THEIR CONSTRUCTION

THERE IS NOOTHER CAR ANYTHING LIKE IT

We can close with a few more dealers for 1907
Correspondence solicited far and near for 1908

Cornish-Friedberg Motor Car Co.
1233 Michigan Avenue, Chicago

COLORS AND EQUIPMENT
Brewster Green Finish or Red with Black Trimmings. Special Colors when preferred at no extra cost. Equipment includes E. & J. Lamps, full set of 5-inch Generators and complete set of Tools

ENGINE
4-Cylinder 4 1/2 x 4 1/2. 30 Horsepower. Dust Pan

OILING
Mechanical Force Feed. 9 Leads. Feeds through Glycerine Sight Feeds on Dash

IGNITION
Jump Spark with Storage Battery and one set Dry Cells

SPLITDORF COIL—On dash

WITHERBEE BATTERIES

LONG RADIATOR
Famous as the Spiral Tube Kind Made on honor

COMMUTATOR
Four point roller contact, enclosed from dirt and filled with lubricant

SCHUBLER CARBURETOR
Standard of the Carburetor World

MUFFLER "YANKEE"
Absolutely silent. No back pressure

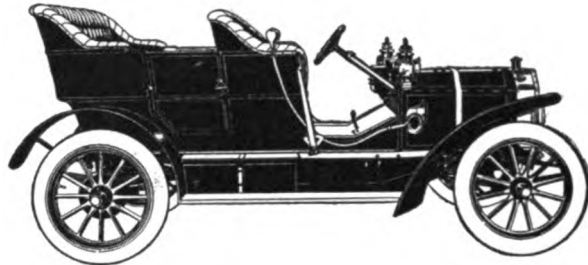
TRANSMISSION
Full proof. Gears Nickel Steel

DRIVING SHAFT And Universal Joints
BLOOD BROS.

AXLES, Bevel Gear
Standard Roller Bearings

WHERE ELSE CAN YOU GET SUCH
VALUES AS THESE?

1907 GREAT SMITH CAR



Price, \$2500 F. O. B. Topeka

Q Four cylinders, $4\frac{1}{2} \times 5$ inches, water cooled engine, sliding gear transmission, three speeds forward and one reverse, 107 inch wheel base, 34x4 inch tires. Multiple disc clutch, ample tonneau, magnificent upholstery. Full elliptic unbreakable springs. Refrigerator in box at side. Ample room for extra tire, three powerful, durable brakes

In all respects a perfect machine—Built as well as any car in the world

SMITH AUTO CO., Topeka, Kansas, U. S. A.

Makers of the World's Greatest \$2500 Car

AMERICAN MORS

A CAR BUILT FOR PERMANENCE

Built to do everything that a perfect automobile should do, and it does it.

The American Mors is the triumph of the best French and American Engineers.

Licensed by the Société Anonyme d'Electricité et d'Automobiles "MORS," Paris, France

GUARANTEED FOR ONE YEAR

AMERICAN MORS TOURING CARS—THREE TYPES:

14-18 H. P., \$3,000

24-32 H. P., \$5,000

40-52 H. P., \$6,000

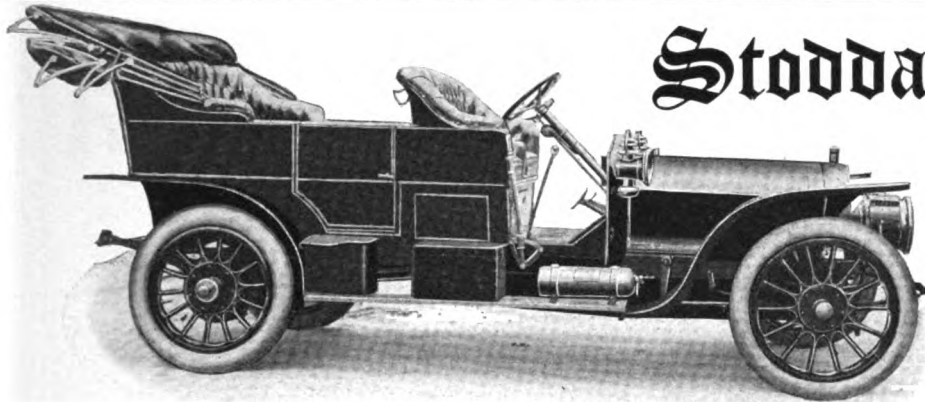
All Bodies of the Most Perfect Designs—Complete Equipment

Send for our Catalog. Address Dept. G^a

THE ST. LOUIS CAR COMPANY, Automobile Department, St. Louis, Mo.

NEW YORK: 1706-1718 Broadway, cor. 54th Street

**BUILT BY THE
LARGEST BUILDERS OF STREET CARS IN THE WORLD.**



Stoddard-Dayton

**SIX CYLINDERS
ALL IN ACTION**

Model 8G, the Six-Cylinder Stoddard-Dayton, has proved the most delightful surprise of the year. If YOU want a powerful touring machine not as heavy as a freight car and built on modern lines with just enough hood to give it graceful proportions, Model 8G will fill the bill of particulars.

It embodies all the points of excellence which have proved factors in the success of every Stoddard-Dayton—the cars that have ALL made good. Perfection in construction has been attained in Model G, for

Every One of the Six Cylinders Work Regularly

instead of several getting in an occasional spasmodic explosion. Bosch High-Tension Magneto and jump spark with sextuple coil and storage battery give two complete systems of ignition.

Stoddard-Dayton Six Cylinder is a roomy car, big enough to comfortably seat seven large people. The extra seats are of the disappearing type—out of the way when not in use.

A powerful car, riding like a baby carriage, as easily controlled as a runabout and combining strength, silence, simplicity, beauty, elegance, comfort and luxury.

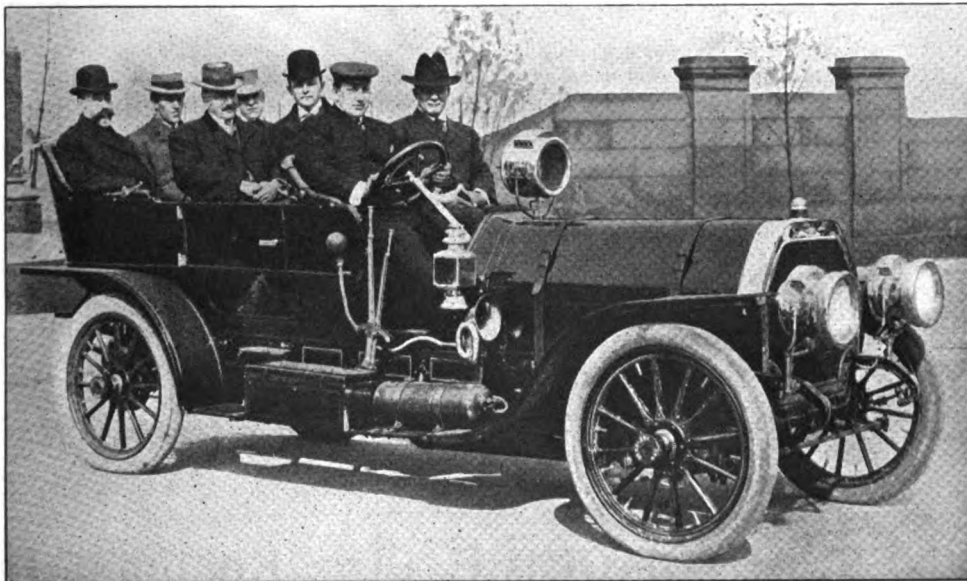
Model 8G—a seven-passenger, Six-Cylinder Touring Car. Cylinders cast in pairs, 4 5-8 x 5 inches. 50-60 H. P. Transmission—selective, sliding gear type—three speeds forward and reverse. Price, fully equipped, \$4,500.00.

Let us send you full description of this Modern Car—the BEST in its class.

THE DAYTON MOTOR CAR COMPANY, - - - DAYTON, OHIO

GEARLESS CARS REPRESENT REAL VALUE

The "Great Six" shown herewith with its 75 H.P. Motor, comfortably seating seven passengers, lists at \$4,000

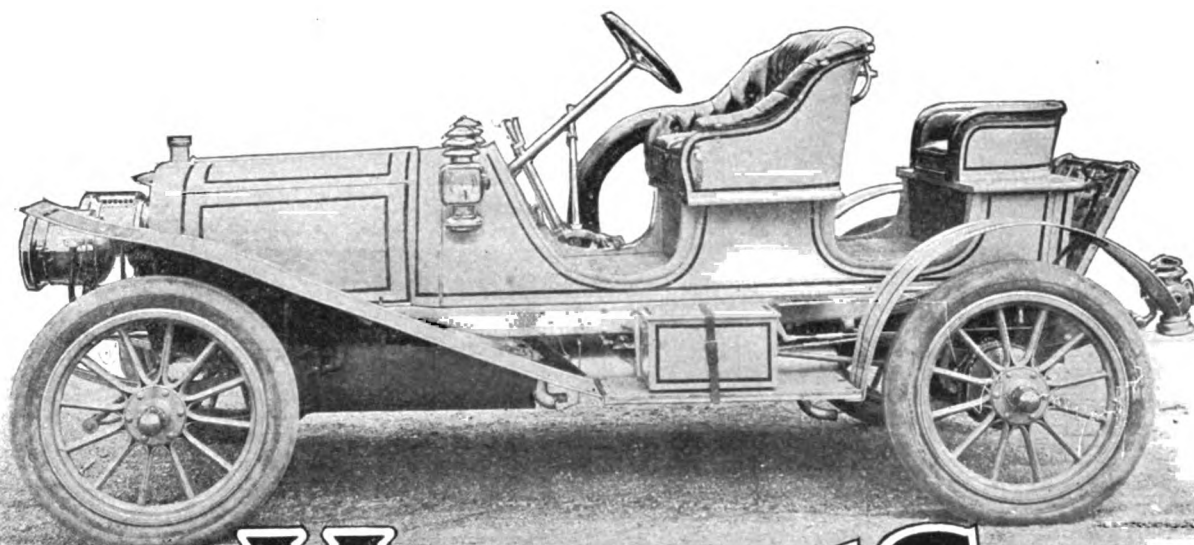


Model 60—60 H.P., with Magneto, seats five, room for more, \$3500. Model 50—50 H.P., "The Gearless Valveless 2-Cycle Car," \$3250

All Models Equipped with "THE GEARLESS TRANSMISSION. THE DIRECT DRIVE TRANSMISSION."

WRITE FOR CATALOGUE. DEMONSTRATING CARS READY.

GEARLESS TRANSMISSION CO., ROCHESTER, N. Y. Motor Car Dept.



HAYNES

The New Semi-Racer Proves Itself

After it had been on the market less than a month the new Haynes Semi-Racer won its first competitive test in the 200 Mile Endurance Run of the New York Motor Club, June 6th. Over roads which recent rains had put in horrible condition, under conditions that required an average of 20 miles an hour, a very high average for touring, this Haynes Runabout won in its class. It reached its destination at Albany ahead of time, and in fact through a mistake of the timing was permitted to cross the line too early and was penalized. Experienced drivers said that the run was the hardest endurance test which had ever been held in this country for stock cars.

The Haynes led all the cars during most of the race, beating the high powered touring cars at most of the controls.

The chassis of this car is the same as our Model "S" touring car with all the improved and advanced features which have made our 1907 models famous. It has the patented roller pinion and sprocket direct drive, solving satisfactorily the old problems of rear-axle strains.

It is impossible for the driver to injure the car by careless or rough handling, because the master clutch cannot be made to take hold otherwise than softly, and the exclusive transmission control allows change of gear without releasing the clutch by a single movement of the hand with no possibility of burring or stripping the cogs. The Haynes positive cooling system makes overheating unknown.

Unlimited speed, perfect comfort, a silent engine and transmission, a snappy style, and a name that is thirteen years old—these are what can be had in this new semi-racer.

No one can doubt the supremacy in its class of "the latest model from the oldest maker." Price \$2,500.

OTHER MODELS:

Model "T," the Vanderbilt Cup Racer Chassis, 50 H.P. Touring Car, seating 7, \$3,500.

Model "S," 30 H.P. Touring Car, seating 5, \$2,500.

For catalogue address desk C 54.

HAYNES AUTOMOBILE CO., Kokomo, Ind.

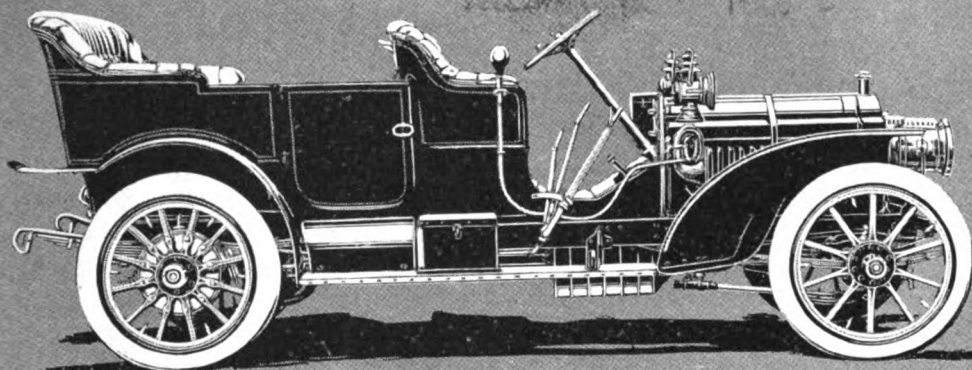
Oldest Automobile Makers in America

Members A. L. A. M.

NEW YORK, 1715 Broadway

1420 Michigan Ave., CHICAGO

Packard
"THIRTY"
1908



PACKARD MOTOR CAR COMPANY
DETROIT, MICHIGAN



Both of *The*
"Maxwell" Cars

entered in the "Sealed Bonnet" Contest made Perfect scores

One was the 12-14 H. P. Tourabout shown above, and the other a 5-Passenger 16-20 H. P. Touring Car—both of them ordinary stock cars.

Although the "Maxwell" was by no means the only car to finish this peculiarly exacting test with a perfect score, I want to call your especial attention to the fact that this "Maxwell" Tourabout, costing only \$825.00, and the touring car, costing only \$1,450.00, performed every bit as well as the successful cars which cost three and four times as much.

The "Maxwell" also swept the entire field of light cars at the great Wilkes-Barre and Bridgeport hill climbs.

The "Maxwell" holds the 3,000 mile non-stop record of the world, won the Deming Trophy in the Glidden Tour of 1906, and has won endurance contest after contest.

Be sure to address Dept. 3 for complete "Maxwell" literature, and write me for a demonstration of the "Maxwell."

30 Palisade Ave., Tarrytown, N. Y.

Main Plant: Tarrytown, N. Y.

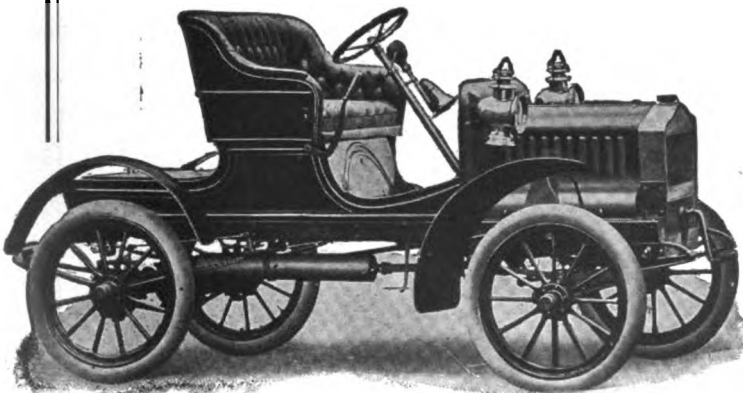
Factories: Chicago, Ill., Pawtucket, R. I.

DEALERS IN ALL LARGE CITIES

Benj. Briscoe

President, Maxwell-Briscoe Motor Co

Members A. M. C. M. A.

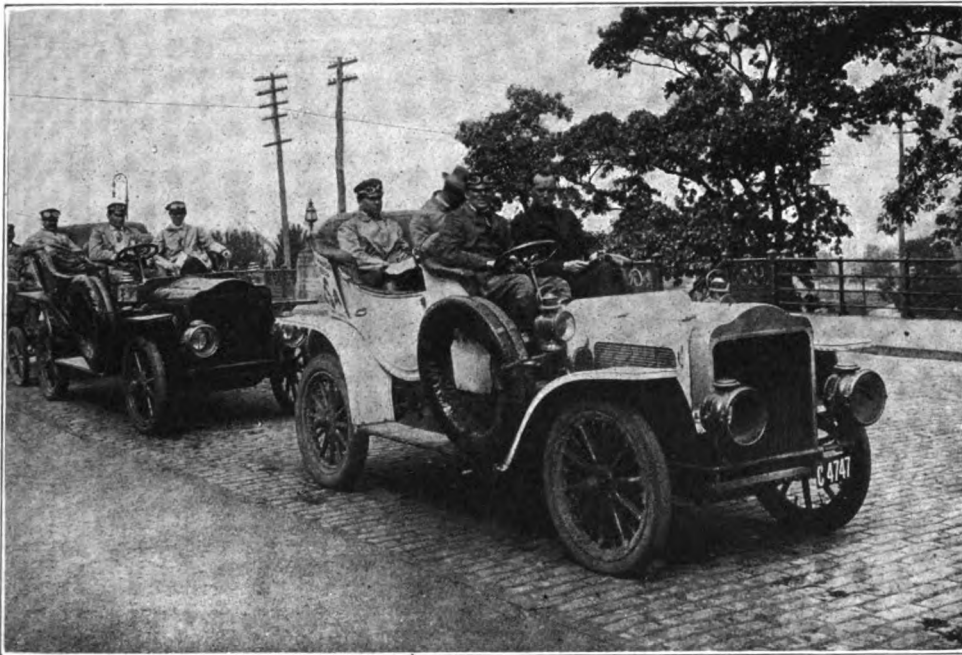


12-14 H.P., \$825



16-20 H.P., \$1,450

The Incomparable WHITE THE CAR FOR SERVICE



WHITE RELIABILITY DEMONSTRATED ON THREE CONTINENTS

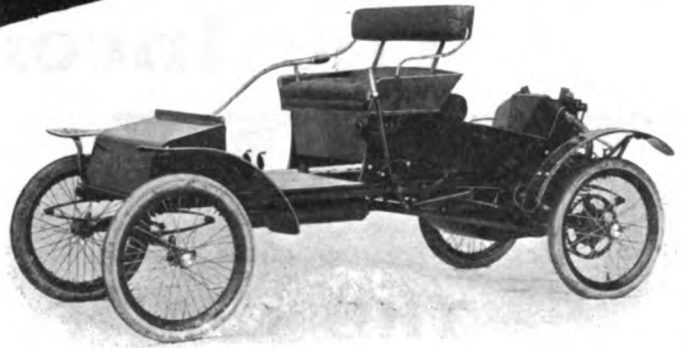
In **AMERICA**, perfect scores were made by the two 30 H. P. White Steamers entered in the 600-mile Sealed Bonnet Contest of the Automobile Club of America. Both cars finished in perfect condition and were ready for several more contests of the kind.

In **EUROPE**, a 30 H. P. White Steamer recently completed an 1871-mile non-stop run from London to Glasgow, then over the route of the Scottish Reliability Contest, and back to London. This trip was made under the surveillance of an official observer appointed by the Royal Automobile Club.

In **ASIA**, White Steamers were selected by the Punjab Motor Transport Company, after severe competitive tests in which the leading makes of the world took part. Low cost of up-keep, supreme reliability, and suitability for continuous 'bus service in a mountainous country, where there are practically no repair facilities, were the factors which determined the choice. Ten White cars have just been placed in service by this company.

THE WHITE COMPANY

CLEVELAND, OHIO



From One Year's End
to the Other

WALTHAM CARS

May Be Depended Upon For
Reliable Service

They Minimize Investment Cost. They Eliminate Trouble and Save Money in Maintenance Cost over all Other Cars in either BUSINESS or PLEASURE CAR SERVICE.

READ THIS LETTER — IT'S INTERESTING

MR. E. P. CHALFANT, Sales Manager,
Waltham Mfg. Co., Waltham, Mass.

CHICAGO, ILL., June 8, 1907.

Dear Sir:—Since receiving the two-cylinder Model BR I have not had an opportunity to take it over the country roads until last Sunday. This was due to the fearful weather, which has been continuous with us for quite a long time; however, last Sunday showed up pretty nice and I drove the car to Sandwich, Illinois, visiting several towns between here and there, and gave a good many exhibitions as to hill climbing, etc. From the time that I left Chicago until I returned, the tool box was never opened, not a single adjustment of any description was made on the engine, and for the first time in the history of my automobile experience my hands were perfectly clean, and I stepped out of the car in Sandwich, Illinois, just as clean as I stepped into it in Chicago. For speed, great power on the hills and quiet running, I believe that Model BR excels all other cars, regardless of price.

Between this city and Aurora we met many cars. We met no car that passed us nor was there any car close to us when we reached Aurora. At no time during the trip did I use the full power of the engine, nor anywhere near its full power, and it is certainly a very satisfying feeling to know that you have so much power in reserve. The absolute quietness of the engine is not only a revelation to everyone who rides in the car, but it was a revelation to myself. Between Bristol and Sandwich is quite a country for game, and there were a great many rabbits on the road. The quietness of the car can be imagined when on two or three occasions we got mixed up with the rabbits. They simply did not hear us coming.

On the road to Aurora between Downers Grove and Naperville is the old Snake Hill, the terror of bicycle riders in past days. This hill staggers a great number of good cars. This was where I wanted to fully test the power of Model BR. I went up that hill three times faster than I ever before went in a car. I only pulled back one notch on the transmission, and the car simply rushed ahead. Our odometer showed 173 miles, and when I stepped out of the car I felt as if I had not ridden 20 miles. There is absolutely no engine vibration of any description and the springs are very flexible, giving that easy motion over the country roads which is never tiresome. You will hear from me again on this subject after the Reliability Contest, which takes place here the latter part of this month. This car cannot help being widely known before the season is half over, as it can more than hold its own against any car on any road.

Very truly yours,
(Signed) J. H. TOOLE.

What it Does for Mr. Toole, it Will Do for You

Types of Cars to Meet Every Business
and Pleasure Car Requirement.

Write for Illustrated Catalog giving
Full Particulars (FREE).

NEW YORK
1615 Broadway

WALTHAM MANUFACTURING CO.
WALTHAM, MASS.

CHICAGO
433 Wabash Ave.

A Wonderful NEW Record for Motor Cars

and

A Most Decisive Victory for the PREMIER 24

¶ A Premier 24, regular stock touring car has just completed the most remarkable **non-stop** run in history, having covered over **4,906** miles **over the roads** between New York and Bridgeport, Conn.

¶ This sturdy car carried from two to ten passengers each trip, over a distance equal to that from

NEW YORK TO SAN FRANCISCO AND BACK TO OMAHA—WITHOUT A STOP

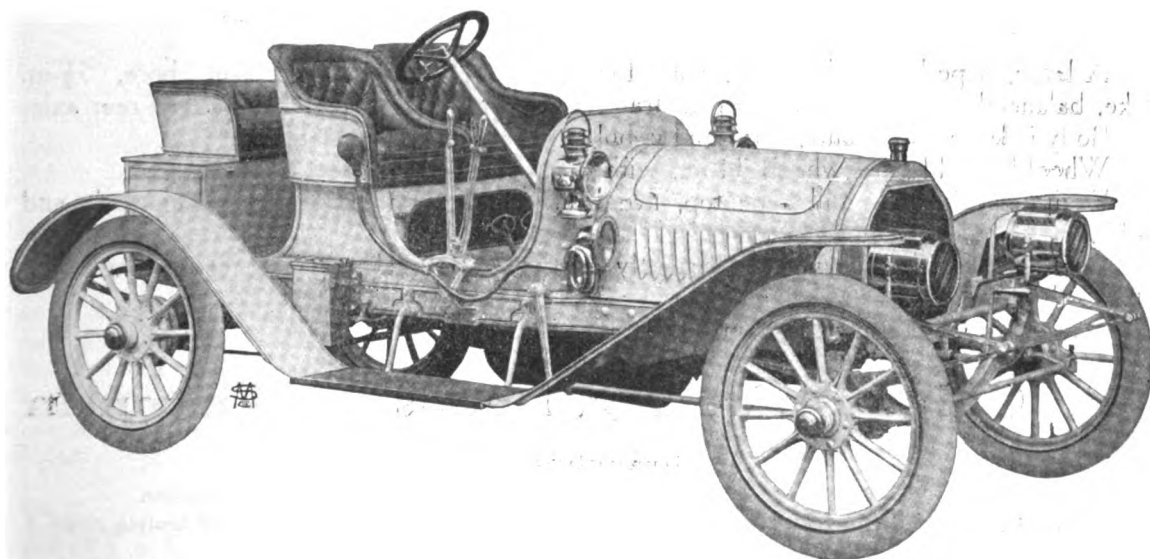
¶ Such a feat was never before accomplished.

¶ This constitutes such a **mountain** of evidence of PREMIER reliability, durability and superiority as should convince everyone that the PREMIER fulfills our claims that it is the **best road car made**.

¶ This run was terminated by the breaking of a battery wire, the car in all respects being in as good condition at the end of the run as in the beginning.

¶ Two stock Premier cars finished the Chicago Reliability Run with perfect scores.

¶ Learn more about the Premier car from our catalog T.



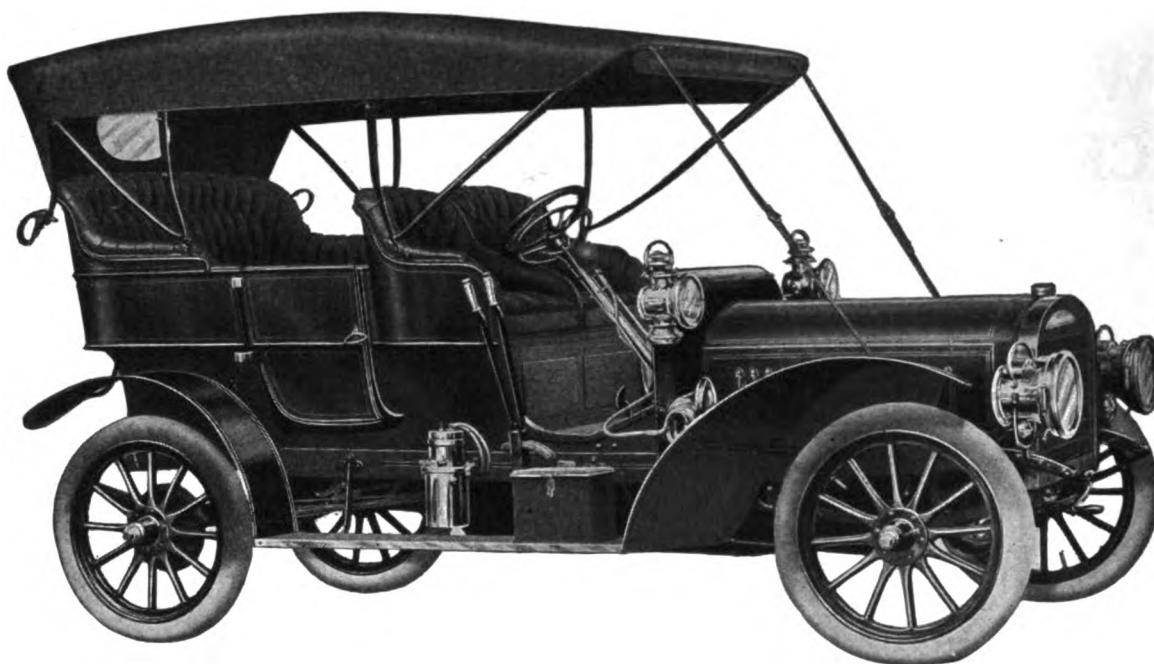
PREMIER MOTOR MFG. CO., INDIANAPOLIS, IND.
U. S. A.

Members A. M. C. M. A.

The New Rambler

MODEL 245.

The Greatest Value Ever Offered



A large, superbly-finished car, with four-cylinder vertical motor, 5-in. bore, 5½-in. stroke, balanced cone clutch, sliding gear transmission, shaft drive and floating type rear axle.

Body is large and roomy, finish and upholstery the finest attainable.

Wheel base 112 in., wheels 34-in., with 4-in tires.

Equipment includes full cape top, five lamps, storage battery, horn, pump, tools and tire kit.

The price is \$2,500, and we earnestly invite comparison with any car selling at up to twice the price.

One of six models in price from \$950 to \$2,500.

Main Office & Factory, Kenosha, Wisconsin

Branches:

Chicago, Milwaukee,
New York Agency, 38-40 West 62d Street

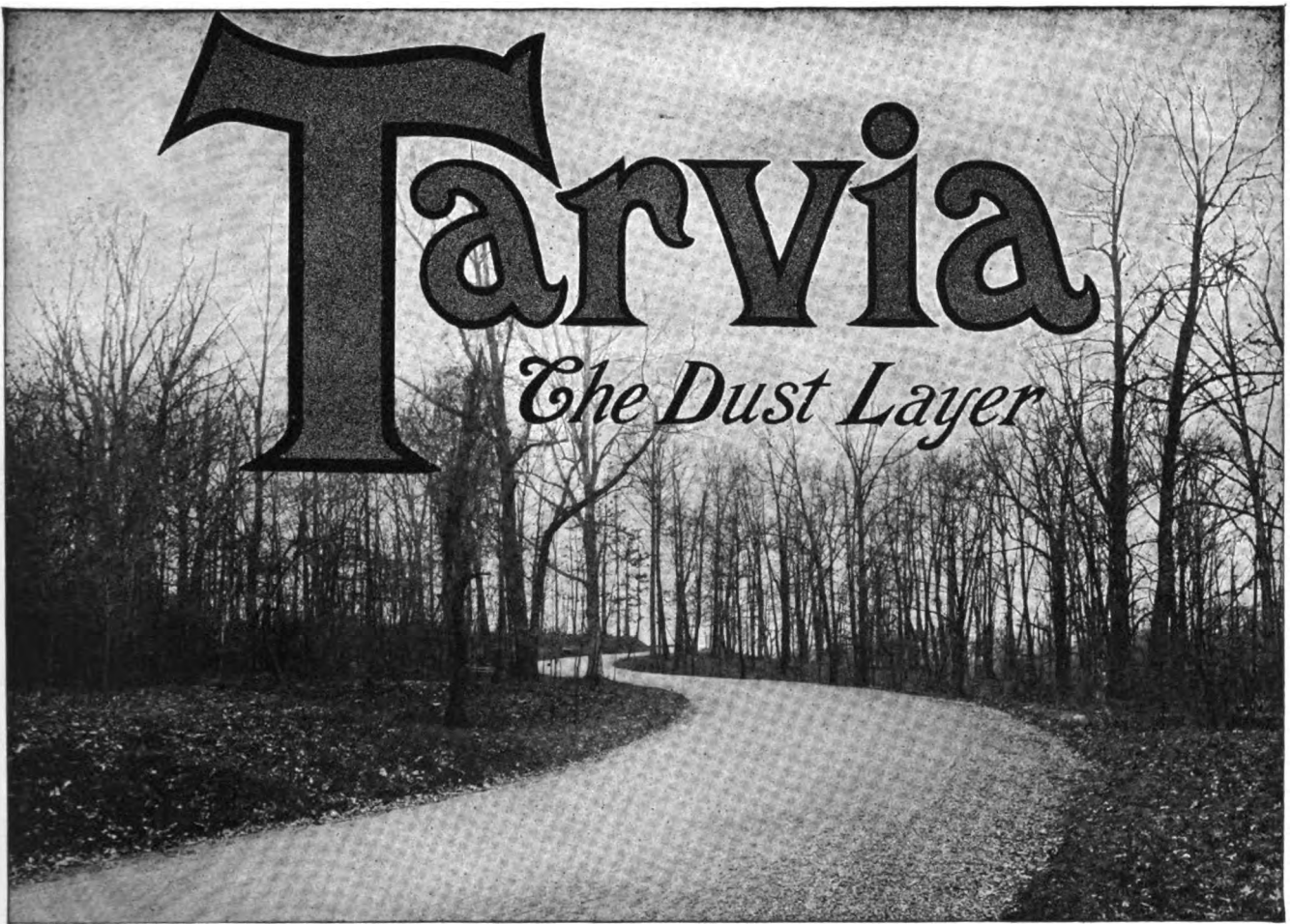
Boston,

Philadelphia,

San Francisco.

Representatives in all leading cities

Thomas B. Jeffery & Company



PARK DRIVE, WILMINGTON, DEL., MADE DUSTLESS WITH TARVIA

THE DUST PROBLEM SOLVED

The problem of suppressing road dust is now receiving the attention of the best engineers and road makers in all civilized countries. The suppression of this nuisance has become a necessity, for not only does it damage crops and decrease real estate values, but it is a menace to health itself.

Various methods have been tried for suppressing dust, including sprinkling roads with fresh water, treating them with calcium chloride, impregnating the road surfaces with crude oils of various kinds, etc., but all of these methods have fallen short of their purpose.

Within the past two years, following some experiments by French engineers, this company introduced Tarvia, a special tar preparation. The results from this treatment have been unusually successful. Some 800,000 yards of macadam roads were treated in about thirty different cities. This included work at Jackson, Tenn., under the supervision of the United States Department of Agriculture and work on New York roads under the supervision of the State Boards. It was absolutely demonstrated that Tarvia not only suppresses dust but adds materially to the durability of the road. It has been estimated that its use reduces the wear on the road itself about one-half, and in this way the treatment practically pays for itself.

To anyone interested we will gladly send booklet showing numerous roads which have been treated, with full data covering the subject.

Barrett Manufacturing Company

New York
Chicago

Philadelphia
Cincinnati

Minneapolis
Cleveland

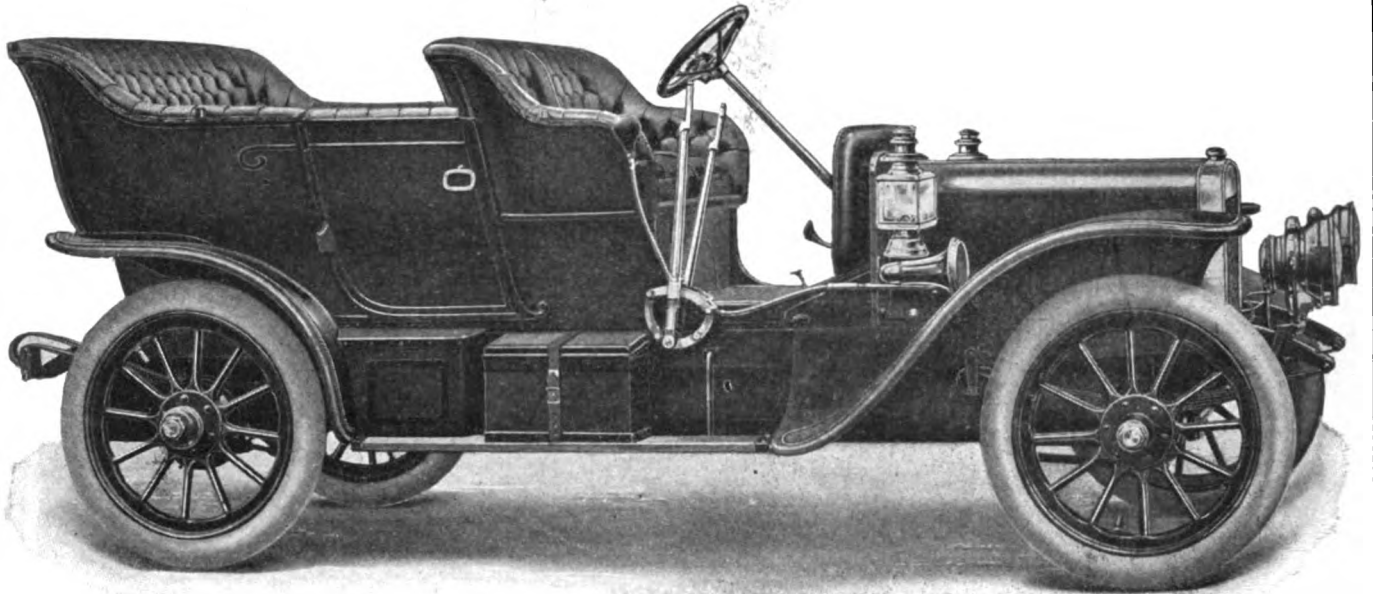


Kansas City
Boston

New Orleans
St. Louis

Allegheny
London, Eng.

WINTON



These Are The Facts

About the Long Island Automobile Club's Endurance Test:

Five cars, costing \$3,500 or more, made perfect scores in the original run of 200 miles in two days. These five participated in a second 200-mile run in one day. The course was over the worst possible roads and highest hills, part of it being like a ploughed field and part of deep sand. Two cars—a 40 H.P. and a 50 H.P.—fell by the wayside. The Winton Model M and two other cars costing more money made perfect scores.

Chas. A. Carlson, who drove the Winton, says:

"This record justifies my faith that there isn't a car in America at any price that can do better work than the Model M Winton. This particular car ran 6,000 miles before starting in the test, and was not especially prepared for the contest. Indeed, I have hardly looked into the motor since I bought the car last November. It went through both contests without a skip."

40 H.P., Model M, - \$3,500.
 30 H.P., Type X-I-V, \$2,500.
 In Runabout bodies at the same
 prices. Limousines \$1000 higher.
 Write for details of landaulets
 and physician's coupes.

The Winton Motor Carriage Co.,

MEMBER A. L. A. M.

CLEVELAND, OHIO, U. S. A.

WINTON BRANCH HOUSES in New York, Boston, Philadelphia, Pittsburg,
 Detroit, Chicago, Seattle and London.

1908 TINCHER

The Krupp Chrome Nickel Steel Car

GUARANTEED
3
YEARS

50-60 H.P. Chassis, - - \$5,250

50-60 H.P. Chassis, Body and Complete
Equipment, - \$6,500

Watch these pages for more about the TINCHER

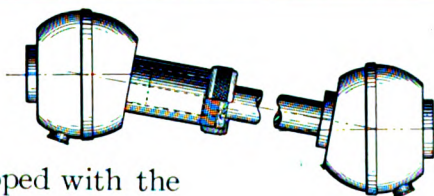
DESCRIPTIVE MATTER MAILED ON REQUEST

TINCHER MOTOR CAR CO.

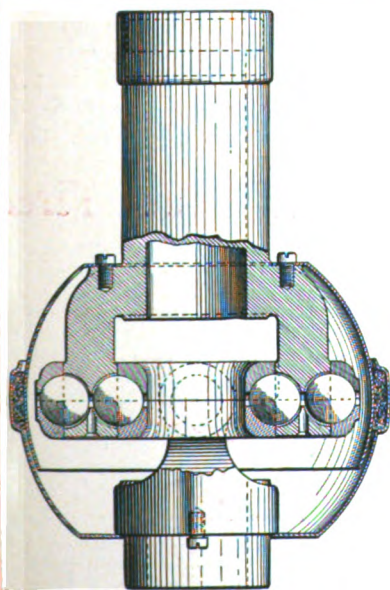
SOUTH BEND, INDIANA



For easy running
have your car equipped with the



K-B Ball Bearing Universal Joint



It is Simple, Strong and Durable.

All parts made from steel drop forgings.

All bearings are hardened and all parts are *guaranteed* interchangeable.

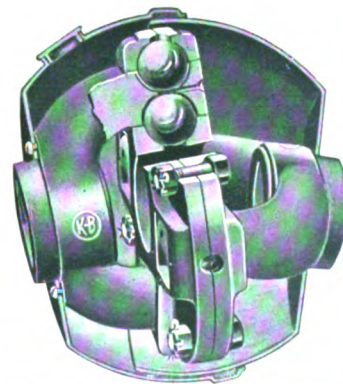
PERFECT LUBRICATION

Without doubt the best joint on the market.

Send specifications for your 1908 cars to the

Kinsler-Bennett Co.

62 Market Street Hartford, Conn.



THE SPIRIT OF '76 Liberty! Independence!

which gave birth to this great country is as strong to-day in *commercial activities* as politically in '76. As the warm-hearted, sympathetic French nation, through its envoy, Lafayette, lent incalculable aid to the thirteen colonies in their righteous struggle for political independence, so Leon Rubay extends to the whole country, through the medium of FRENCH PRODUCTS, the means of dissolving forever the bonds which have bound motorists to the evils of poor ignition systems for the operation of Automobiles.

LAFAYETTE IN '76 - RUBAY IN 1907



I, LEON RUBAY, Sole Importer to the United States and Canada for the

J. LACOSTE & CIE.

**World Famous
Ignition Apparatus**

do hold these truths self-evident. The history of the average ignition system is a history of repeated troubles, and the time has come to throw off the yoke of *High Taxation at the battery without representation at the spark-plug*, by adopting the most reliable, effective and desirable outfits manufactured by J. Lacoste & Cie., of Paris, France.

Lacoste Coils

Famous wherever automobiles are used.

Lacoste Commutators

Used on all the highest-priced cars.

Lacoste Terminal gives perfect insulation with the advantage of being instantly removable. No short circuiting at the plug. No electric shocks when testing. A device adopted wherever seen.

Lacoste Magnetos

The strongest, most reliable, and best in the world.

Lacoste Spark Plugs

The plugs that are always dependable under all conditions.

AND TO STILL FURTHER ELIMINATE TROUBLES FOR THE AUTOIST, I IMPORT

M. a. B. BALL BEARINGS Used on the leading cars of Europe

BLERHOT LAMPS World famous for their light-giving quality.

Limousine Fittings and Michelin Tires

The high-grade quality of these products have won the appreciation of all who want THE BEST.

A cordial invitation is extended to all our customers and friends, and all persons interested in automobiling to visit my new salesroom, 1697 Broadway; or catalogue and prices will be sent upon request. **WRITE TO ME**

LEON RUBAY

BOSTON—Leon Rubay, 226 Columbus Ave., N. E. Agency for Michelin Tires.

1697 BROADWAY, NEW YORK
Phone, 6355 Columbus — Cable, "YABUR," New York

CHICAGO — Franco-American Auto Supply Co., 1406 Michigan Ave.

THE AUTOMOBILE



the session concluded. In the evening the rooms of the Cleveland Automobile Club in the Hollenden Hotel were crowded to suffocation and not a few failed to woo Morpheus until an early hour this morning. Statistics of the tour give 47 touring cars as competing for the Glidden Trophy, with these clubs represented: New York Motor Club, 11; Cleveland Automobile Club, 9; Chicago Automobile Club, 9; Automobile Club of Buffalo, 5; Pittsburg Automobile Club, 4; Automobile Club of America, 4; Detroit Automobile Club, 4; Westchester Motor Club, 3. There are 14 more touring cars which figure as non-contestants. For the Hower Trophy 13 runabouts are competing, with two runabouts not engaged. Five press and officials' cars bring the total to 81 registered cars, but a score of free lances will be more or less in evidence nearly all the way.

CLEVELAND, O., July 10.—They're on their way—first to Toledo, next to South Bend and then to Chicago—where a two-day rest intervenes before the auto cavalcade will turn about face and start homeward, for the Big Town is home to the whole country at some time during the year, and everyone wants to take a walk along Broadway. It is mighty kind of the Chicagoans to insist upon entertaining in their enthusiastic way, but since many of us have a "show week" near Lake Michigan and—it seems ungenerous to say it—in the pall of smoke which seldom lifts its smutty face we might yearn to continue on our way, Saturday at least and arrive one day sooner at the Jersey City ferry.

Headquarters for the tour have been in the Hollenden Hotel for several days and Chairman F. B. Hower, nervously conscientious, and Secretary Dai Lewis, complacently industrious, accomplished wonders in the final hours of preparation. Numbers and pennants were distributed, rules supplied, hotel applications filed, questions innumerable asked and answered, and finally even the late and noisy ones sought a few hours' rest before the coming of the dawn and its early bestirring in order that "No. 1," an Apperson, driven by the determined yet kindly countenanced Van Sicklen, at 7 o'clock sharp should take to the confetti trail that had been begun as soon as Old Sol showed his ruddy features above the eastern horizon.

Chairman Hower called all the contestants together Tuesday afternoon for final instructions and little was left undone when

About a hundred cars and 500 people will create some excitement along the route. Trophy donor Glidden is riding in the same car with Chairman Hower, who did not leave until after all the contestants had been sent away. Several of the cars are adding to their quest for honors by endeavoring to complete the run with sealed bonnets. No. 51 Elmore and No. 39 Berliet are in this class. Extra parts carried are scanty and seldom aggregate over \$10 in value. The committee did not give out this information in detail, but will do so later in the tour. In two cars, No. 3 Pierce and No. 19 Premier, surgeons are passengers, but it is hoped that their services will not be required.

Schedule of the Long Tour.

The first day's run to Toledo consists of a stretch of 121 miles, at the end of which the tourists will have an opportunity to compare their experience of past years with the working of the present arrangements for hotel accommodations, the entire charge of which has been turned over to professionals well equipped to give every satisfaction—Thomas Cook & Sons. An experienced advance man in the employ of that firm will precede the tourists and will make all assignments for the occupants of every car, of which he constantly carries a list, the finishing touches to each day's arrangements being made by getting into communication with the executive committee by long-distance 'phone.

As the test is one for touring cars and runabouts under actual



FORTY MILES OUT FROM SOUTH BEND, INDIANA.

touring conditions, the committee deemed it only proper that each tourist should carry his own impedimenta of this kind and so that no provision for an official baggage wagon was made.

The second day's run is to be to South Bend, Ind., a little over 166 miles, and the third day will be slightly more than a century into Chicago, where the Windy City autoists have been making great preparations for the entertainment of the tourists.

The complete route of the tour is as follows:

Date	Route	Miles	Hotel
July 10	Cleveland to Toledo, O.....	121.0	Boody House
" 11	Toledo to South Bend, Ind.....	166.3	Oliver Hotel
" 12	South Bend to Chicago.....	101.1	Auditorium Annex
" 13	Chicago		
" 14	"		
" 15	Chicago to South Bend, Ind.....	101.2	Oliver Hotel
" 16	South Bend to Indianapolis, Ind.	147.5	Denison Hotel
" 17	Indianapolis to Columbus, O....	174.2	Hartman Hotel
" 18	Columbus to Canton, O.....	151.4	Cortland Hotel
" 19	Canton to Pittsburg.....	99.8	Schenley Hotel
" 20	Pittsburg to Bedford Springs...	97.2	Bedf'd Spgs. Hotel
" 21	Bedford Springs		
" 22	Bedford Springs to Baltimore...	140.2	Belvedere Hotel
" 23	Baltimore to Philadelphia.....	171.9	Bellevue-Stratford
" 24	Philadelphia to New York.....	98.2	
		1,570	

How the Trophy Contestants Will Be Scored.

Some idea of the severity of the conditions under which the cars are to compete may be gleaned from the following excerpts from the rules. For instance, Rule 3 of "Touring Conditions" reads:

"No replacements, replenishments, adjustments, repairs or inspection shall be made upon the car after the same shall have been registered at any night stop of the tour and before it shall

be registered out the next succeeding morning. No replacements (except tires) shall be made with parts not inventoried and carried at the start, and if replacements except as above specified are made, the entrant may continue the tour, but not as a contestant. Each entrant may carry as many tires as desired."

This provision was chiefly aimed at the charge made in previous tours that some of the cars were rebuilt between daylight and dawn at many of the stops to enable them to continue the next day. In other words, it means that cars must do the entire distance with no other adjustments than can be made without difficulty, or risk of being penalized, on the running schedule, and also without making other than the most ordinary replacements, all of which must be carried on the car and not added to, as provided by Rule 9, which calls for an inventory of all parts carried previous to the start. It reads as follows:

"Each entrant must furnish an inventory, previous to the start, of all the extra parts carried in his car, and the same shall be put in the records."

Rule II also deals with this point in the following manner:

"A statement must be made by the operator and attested by each occupant of the car at the conclusion of each day's run, naming new parts put on the car and repairs or adjustments, if any, made; and failure to do so, fully and correctly, shall disqualify."

But owing to the impossibility of framing any code of regulations that would satisfactorily eliminate all but one or two cars from the running for first place by the time the end of the tour was reached, it was decided in framing the rules to award the Glidden Trophy to a club, instead of an individual, as previously, though the performance of each car is to be carefully recorded and each successful competitor will receive an award in the shape of a certificate, this being provided for by Rule 6, as follows:

"The Glidden Trophy will be awarded to a club, but the score of each car will be recorded daily during the tour, and at the finish of the contest, each entrant, unless previously disqualified, will receive a certificate in accordance therewith."

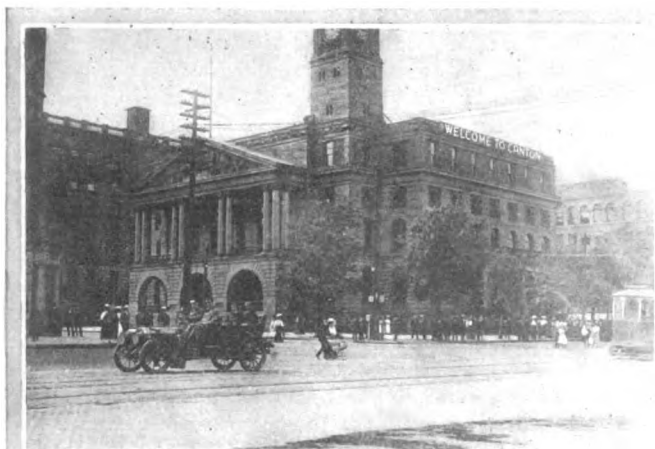
An objection was raised, however, to permitting high-powered runabouts to compete on the same basis as touring cars, and, to overcome this, the Hower Trophy of a bronze statue was offered, the rule of the touring conditions covering this point merely stating that "The Hower Trophy will be awarded to the entrant whose car shall have the most points to its credit at the finish."

Each team entered for the Glidden Trophy will start with 1,000 points to its credit, regardless of the number of cars composing it, as formerly provided, instead of 1,000 for a three-car team and 1,280 for a ten-car team, a sliding schedule having been devised to maintain the contestants on the same equal footing in the matter of penalization.

Club of	Initial Credit	Penalization per minute or fraction thereof in excess of two minutes at controls.	Penalization per dollar or fraction thereof of value of parts as per manufacturers' price list.
3 cars	1,000	1-3 point	1-3 point
4 "	"	1-4 "	1-4 "
5 "	"	1-5 "	1-5 "
6 "	"	1-6 "	1-6 "
7 "	"	1-7 "	1-7 "
8 "	"	1-8 "	1-8 "
9 "	"	1-9 "	1-9 "
10 "	"	1-10 "	1-10 "

Previous Tours of the A. A. A.

The first annual tour of the American Automobile Association, starting July 25, 1904, had as its objective point St. Louis, where the Louisiana Purchase Exposition was being held. Sixteen machines started from New York and joined themselves to eleven others from various New England towns. The ranks of the travelers were swelled by additions from all points, continuing by way of Albany, Utica, Syracuse, Rochester, Buffalo, Erie, Cleveland, Toledo, South Bend, Chicago, Pontiac (Ill.), Springfield (Ill.) to St. Louis. At the same time another portion of the tour was being run over the National Highway and through Columbus, Indianapolis and Terre Haute to the Exhibition City, bringing the total number of participants to 108. Practically all



PUBLIC SQUARE AND CITY HALL AT CANTON, OHIO.

CONTESTANTS IN THE A. A. A. TOUR FOR THE CHARLES J. GLIDDEN TOURING TROPHY.

No.	Entrant.	Car.	Horsepower.	Club.
1	N. H. Van Sicklen.....	Apperson	40-45	Chicago Automobile Club
6	T. J. Clark.....	Packard	30	Chicago Automobile Club
24	W. M. Lewis.....	Mitchell	30	Chicago Automobile Club
38	H. C. Tillotson.....	Stoddard-Dayton	35	Chicago Automobile Club
54	Edward Noble.....	Haynes	50	Chicago Automobile Club
55	F. N. Nutt.....	Haynes	30	Chicago Automobile Club
56	F. E. Dayton.....	Columbia	40-45	Chicago Automobile Club
3	R. D. Garden.....	Pierce Arrow	40-45	New York Motor Club
26	A. Cuneo.....	Rainier	30-35	New York Motor Club
39	Arthur N. Jervis.....	Berliet	40	New York Motor Club
45	A. M. Robbins.....	Aerocar	40	New York Motor Club
48	A. J. Scalfé.....	White	20	New York Motor Club
32	W. J. Howard.....	Oldsmobile	40	New York Motor Club
30	H. M. Coale.....	Autocar	30	New York Motor Club
31	E. S. Lea.....	Walter	40	New York Motor Club
43	J. W. Mears.....	Acme	40	New York Motor Club
52	Wm. G. Houck.....	Deere	30-35	New York Motor Club
2	K. R. Otis.....	Pierce Arrow	60-65	Cleveland Automobile Club
25	S. Black.....	Lozier	40	Cleveland Automobile Club
28	P. Gaeth.....	Gaeth	35	Cleveland Automobile Club
42	R. H. Tucker.....	Royal Tourist	45	Cleveland Automobile Club
49	Chas. H. Burman.....	Peerless	30	Cleveland Automobile Club
50	W. C. Straub.....	Peerless	30	Cleveland Automobile Club
37	A. L. Petersen.....	Meteor	50	Cleveland Automobile Club
47	Walter C. White.....	White	30	Cleveland Automobile Club
9	George S. Salzman.....	Thomas Flyer	60	Automobile Club of Buffalo
11	Montgomery Hallowell.....	Thomas Flyer	60	Automobile Club of Buffalo
17	F. S. Dey.....	Pierce Arrow	60-65	Automobile Club of Buffalo
27	A. Kumpf.....	Pierce Arrow	40-50	Automobile Club of Buffalo
34	R. L. Lockwood.....	Reo	16	Automobile Club of Buffalo
44	Gus G. Buse.....	Packard	24	Automobile Club of Buffalo
7	A. R. Welch.....	Welch	50	Automobile Club of Detroit
12	R. D. Chapin.....	Thomas Forty	40	Automobile Club of Detroit
36	E. B. Finch.....	Pungs-Finch	40	Automobile Club of Detroit
46	George F. Barr.....	Aerocar	40	Automobile Club of Detroit
14	Phillip S. Flinn.....	Pierce Arrow	40-45	Pittsburg Automobile Club
21	Thos. P. Jones.....	Pierce Arrow	40-45	Pittsburg Automobile Club
22	H. H. Perkins.....	Packard	30	Pittsburg Automobile Club
29	G. P. Moore.....	Welch	50	Pittsburg Automobile Club
23	H. C. Shoemaker.....	Shoemaker	35-40	Chicago Motor Club
16	Orrel A. Parker.....	Royal Tourist	45	Automobile Club of America
33	R. M. Owen.....	Reo	16	Automobile Club of America
35	R. A. Rainey.....	Reo	16	Automobile Club of America
41	I. C. Kirkham.....	Maxwell	16-20	Westchester Motor Club
58	L. S. Tyler.....	Maxwell	16-20	Westchester Motor Club
59	C. A. Fleming.....	Maxwell	24	Westchester Motor Club
19	G. A. Weldely.....	Premier	24	Automobile Club of Indiana

RUNABOUTS ENTERED FOR THE FRANK B. HOWER TROPHY.

100	A. E. Hughes.....	Pierce Arrow	40-45	Rhode Island Automobile Club
102	H. E. Coffin.....	Thomas Forty	40	Automobile Club of Detroit
103	H. O. Smith.....	Premier	24	Automobile Club of Indiana
104	G. S. Smith.....	Stoddard-Dayton	35	Quaker City Motor Club
106	R. G. Kelsey.....	Matheson	40-45	Long Island Automobile Club
107	Harry E. Stutz.....	Marion	24	American Automobile Association
108	H. K. Sheridan.....	White	30	Cleveland Automobile Club
109	C. S. Johnston.....	Continental	35	American Automobile Association
111	Wallace Owen.....	Pennsylvania	35	Cleveland Automobile Club
112	J. W. Haynes.....	Dragon	24	Chicago Automobile Club
113	H. P. Branstetter.....	Dragon	24	Chicago Motor Club
114	J. G. Barclay.....	Thomas	40	Automobile Club of Buffalo.

NON-CONTESTANTS, TOURING AND RUNABOUT, PARTICIPATING IN THE RUN.

4	H. A. Grant.....	Maxwell	36-40	Westchester Motor Club
13	George M. Davis.....	Thomas Flyer	60	Automobile Club of Buffalo
40	R. H. Johnston.....	White	18	New York Motor Club
51	J. H. Becker.....	Elmore	30-35	Cleveland Automobile Club
105	J. C. Zimmerman.....	Loco runabout	35	Chicago Motor Club
57	A. D. Cressler.....	Thomas	40	Chicago Automobile Club
10	F. J. Pardee.....	American Mors	40-52	Automobile Club of St. Louis
15	G. Cabaune.....	American Mors	24-32	Automobile Club of St. Louis
60	William Turner.....	Thomas Flyer	60	Automobile Club of Buffalo
61	H. G. Smith.....	White	24	Automobile Club of Indiana
90	Special Press Car.....	Packard	30	Chicago
91	THE AUTOMOBILE.....	Aerocar	40	New York
92	Special Press Car.....	Haynes	50	New York
98	Officials' Car.....	Premier	50	Indianapolis
99	Chairman Hower.....	Pierce	50	Buffalo
119	J. W. Moore.....	Moore	40	Automobile Club of America



ON THE A. A. A. TOUR—AN INCIDENT OF WHAT WILL.

the machines reached St. Louis, the tour being more of the nature of a combined run than a competition.

Thirty-two automobiles competed in the 870-mile A. A. A. tour in 1905, the first contest for the Charles J. Glidden touring trophy. Starting from New York, the itinerary was through Hartford, Boston and Plymouth, N. H., to Bretton Woods, and returning by way of Concord, Worcester and Lenox, Mass., to New York. Percy P. Pierce was awarded the trophy. Others finishing with clean scores were Ezra H. Fitch (White), Ralph Coburn (Maxwell), S. B. Stevens (Darracq) and J. C. Kerrison (Cadillac).

No official observers were carried, the contestants as a whole observing the performance of the competing cars, and at the end of the tour voting for the three entrants whose cars, in their opinion, had made the best records. In addition, the Glidden commission employed a formula which took price, equipment and general touring conditions into consideration in awarding the trophy. First class certificates were given to twenty-two contestants who completed the tour and arrived at all night controls before the official closing time. Four second class certificates were awarded to others who completed the tour but failed to make one or more of the controls on time.

Last year's event, the third annual A. A. A. tour and the second competition for the Glidden trophy, was a 1,200-mile run from Buffalo to Bretton Woods, N. H., by way of Utica, Saratoga, Elizabethtown, Lake Champlain, Montreal, Quebec, Jackman and Rangeley, Me. Forty-eight machines started, 13 secured perfect scores, 19 completed the journey with a greater or less number of penalizations, and 20 retired at various points on the journey. Of the six cars competing for the Deming



ABANDONED CHARCOAL OVENS NEAR PITTSBURG, PA.

trophy two obtained perfect scores and four were penalized. The trophy was awarded to C. W. Kelsey, driving a Maxwell.

The 13 with perfect scores for the Glidden Trophy were: Percy P. Pierce (Pierce), A. E. Hughes (Pierce), P. S. Flinn (Pierce), W. E. Wright (Knox), George Soules (Pope-Toledo), Frank E. Wing (Marmon), G. M. Davis (Thomas), C. F. Barrett (Columbia), L. J. Petrie (Stearns), Charles Burnham (Peerless), W. C. Walker (Pope-Hartford), Ernest Keeler (Oldsmobile), G. G. Buse (Packard). Since no winner had evolved and Percy Pierce was one of the perfect score performers, the trophy, according to the deed of gift, remained in the possession of the club which he represented.

But the Automobile Club of Buffalo, at the suggestion of the one who twice had won the trophy for the organization, advised the framing of a new rule, which would prevent the club from retaining possession in case of another tie. Mr. Glidden accepted the changes proposed and now the trophy will go to the club which produces the best team.

Where the Rule of the Road Is Not Always Observed.

When it comes to crossing the mountains of Pennsylvania there will be occasions when the tourist will find it advisable to disregard the rules of passing to the right whenever there is a steep declivity or bad ditch on one side. While horses are becoming more and more accustomed to automobiles, there still will be met with equines which have yet to become placidly acquainted with the automobile. Invariably drivers of such horses will take the inside of a mountain road, whether it be on the right or the left, and those on the run will do well to keep this in mind. The same plan is followed in mountainous countries of Europe, especially in Switzerland. It will be well to have an understanding with the driver of the horse-drawn vehicle before passing, motioning as to which side of the road you will take. There will be miles of mountain highways in Pennsylvania where this situation is apt to arise at any time.

AIRSHIP "PATRIE" SAILS OVER PARIS.

PARIS, July 8.—For the second time in its brief career the military airship *Patrie*, built by the Lebaudy Brothers for the French Government, has sailed over the capital. With a crew of two officers and two men, the dirigible left the army aeronautical station at Meudon, fifteen miles to the west of Paris, at 7:30 A.M. to-day and headed for the city against a fairly strong northwest breeze. After passing the Eiffel Tower the machine veered toward the northwest, passing over Montmartre, then traveled completely over the city, stopping a few minutes above the Place de l'Opéra. Thousands of spectators watched the evolutions of the balloon, which appeared to be under perfect control. A return was made to Meudon about 9 o'clock. The highest speed attained was 31 miles an hour with the wind, and 18 miles an hour to windward. The *Patrie's* previous appearance over Paris was during the automobile salon last year.

AUTO TRAPS ON WAY TO PHILADELPHIA.

PHILADELPHIA, July 8.—Tourists traveling over the main route between Trenton and Philadelphia, via Middletown Township, Bucks County, are warned that the local authorities are operating auto traps as follows:

1. Between Langhorne Borough and Neshaminy Creek, on what is known as Byberry Road.
2. Between Holmesburg Pike and Hulmeville, known as Hulmeville Road.
3. Between Langhorne and Fallsington, leading through Oxford Valley (hamlet).

The tourist is not arrested at the time, but subsequently receives a notice from a Philadelphia law firm, representing the township authorities, requesting him to call and settle, or warrant and appearance will be required.



ONE OF THE THIRTEEN BRIDGES ERECTED TEMPORARILY ACROSS THE GRAND PRIX COURSE NEAR DIEPPE.

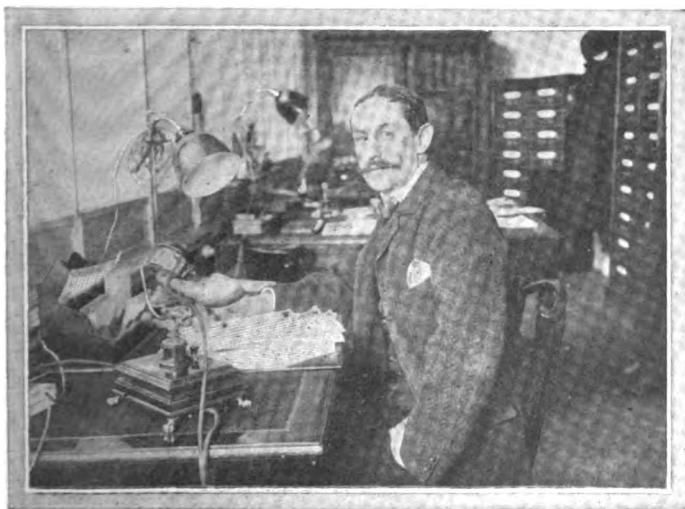
FINAL TRIAL SPINS ON DIEPPE COURSE

DIEPPE, June 30.—Tuesday, Wednesday and Thursday last a large proportion of the thousands of visitors gathered here from all parts of the world had an opportunity of watching the cars engaged in the Grand Prix at work on the triangular circuit which will be the scene of the great international contest on July 2. For a month the course has been rigorously closed to racing machines, and those drivers who had not become acquainted with all the sharp turns and grades had to be content with a leisurely jaunt on a touring car under the vigilant eye of Norman gendarmes. The Automobile Club of France enforced this measure to keep the road in perfect condition, and local authorities supported it for the safety of the rural inhabitants, who fear for their lives.

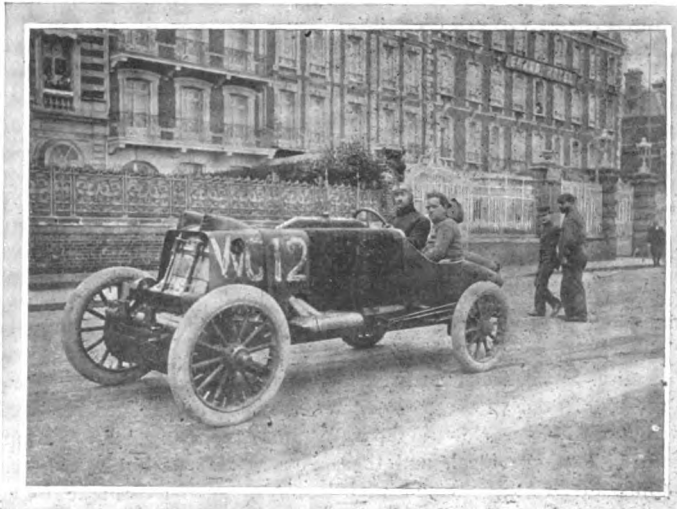
From 3 to 5 o'clock on Tuesday morning thirteen machines were allowed on the course, comprising complete teams of Erasier, Bayard-Clement, Porthos, Motobloc and La Buire. No attempt was made to guard the course, and despite the early hour huge crowds gathered to witness the speeding. Christie and Strang, who were among the spectators, expressed themselves as delighted with the arrangements for the race, but regretted that they had not been able to test their machines on the road as thoroughly as had been done by all the European contestants. Most of the competitors were satisfied with a leisurely run around the course to test their gasoline consumption, Alezy, the late Albert Clement's mechanic, being the only one to travel at top speed over the course.

Darracq, Renault, Panhard, Lorraine-Dietrich and Gobron were given the exclusive use of the course Wednesday morning, also from 3 to 5 o'clock. Rain and wind continuing, some anxiety was displayed by certain drivers as to their ability to finish on the allowance of gasoline. Duray and Rougier had an interesting duel, the former covering the circuit in 44 minutes, or at the rate of 65 miles an hour, and his companion being only one minute slower. Christie was out early on the highway between Dieppe and Rouen, where he covered 100 kilometers, including three complete turns, in 57 minutes, which gives an average of 65 miles an hour.

Thursday morning, the course being thrown open to all the foreign machines, comprising Christie, Fiat, Mercedes, Germain, Hisa, Weigel and Baras' Brasier, the crowd was so dense that it is miraculous no accidents took place. Victor Breyer, general manager for the racing board, as well as the members of the club who were present, did not hesitate to condemn the Dieppe authorities for refusing to allow the road to be guarded by gendarmes. Nazzaro, on his Fiat, made an excellent impression by traveling round the course in 42 minutes, thus confirming the good opinion already held of him here. Christie made a couple of rounds in good time, the manner in which his machines took the curves calling forth much admiration. The two Weigel machines only arrived from England at three o'clock and one hour later were on the course, but failed to show anything more than a moderate speed. By six o'clock the two



VICTOR BREYER, SECRETARY OF THE COMMISSION SPORTIVE.



CHRISTIE AND HIS GRAND PRIX RACER WITH A DIEPPE SETTING.



GILLET-FOREST, CANDIDATE FOR SPORTING COMMISSION CUP.

Britishers were back in Dieppe, where they took possession of the only two empty rooms to be found in the town, and refused to move out despite the cries and gesticulations of the landlord.

Contrary to last year's muddle of figures on the Sarthe course, the score board on the Dieppe circuit will be the embodiment of simplicity, declare officials. Total elapsed time only for each machine will be recorded on the score board, and not clock time as on previous occasions. On the completion of each round the general classification, again with elapsed time, will be published on a separate board. The machines of each nation having been given a distinctive color, the same colors will form the ground work on which the names of the cars will be painted on the score board. To enable spectators to calculate the rate of travel for each round, a printed table will be distributed showing the time necessary to cover the 77 kilometers of the course at all speeds from 80 to 125 kilometers an hour. Sporting Commission machines will have their own score board, their times being kept quite distinct from that of the Grand Prix racers.

DUPUY AND STEARNS VISIT FRENCH CLUB.

PARIS, July 1.—Tanned by sixty days' exposure to the fiery rays of the southern sun, the blinding mistral and mountain winds, Georges Dupuy piloted his dusty, travel-stained Yankee Stearns through the octroi gates at Vincennes Saturday last, passed down the crowded Grands Boulevards and drew up in front of the majestic home of the Automobile Club of France on the Place de la Concorde with a toot of the horn containing a world of significance. As the manager of the Gold Cup tour descended triumphantly from behind the steering wheel and advanced both hands to greet the twenty-five pairs outstretched to meet him, there was a touch of pardonable pride in his rejoinder, "nothing could have been easier" to the slightly sarcastic *Tiens*, got back?"

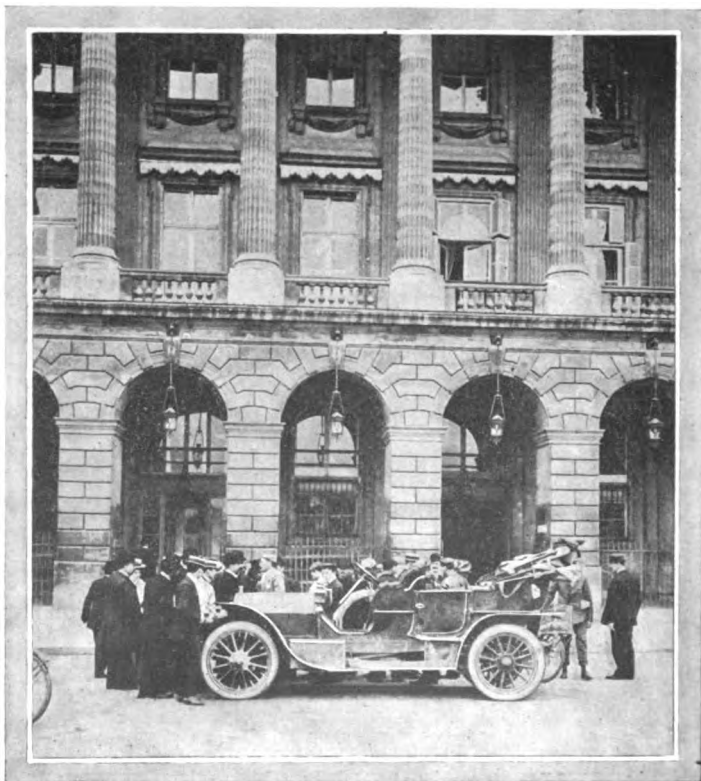
Although the American caravan, as the French have unanimously dubbed it, will not be seen in France this year, Dupuy's preliminary trip has made its realization possible next summer under most favorable conditions. A start was made from New York at too late a date, and although no time was wasted en route, so much detail work had to be attended to and so much information gathered for the guide book to be published on touring in Europe that the original schedule could not be adhered to. This preliminary journey of 4,000 miles through France, Spain, Italy, Austria, Germany and Belgium proved that the tour is one of the most interesting and agreeable to be found in the whole world. Compared with America, road conditions throughout are ideal, and there is a wealth of old world customs, historic scenes and varied scenery such as can be found nowhere else. Starting from Antwerp, Dupuy relates that he ran directly to Paris, where the actual work of organizing for

the final tour commenced. From the French capital the run was into Normandy and Brittany, doubling back to Le Mans in order to make a complete circuit of the Chateaux of Touraine, then down to Bordeaux, followed by an all-night journey, time being precious, as far as Bayonne on the Spanish frontier. Here the original plan had to be departed from, the Stearns only proceeding over the Pyrenees as far as San Sebastian, doubling back and heading for the French shores of the Mediterranean. Points touched on the southern run through Italy were Genoa, Florence, Rome and Naples, the machine then heading northward along the shores of the Adriatic into Austria and Germany. Vienna, Dresden, Berlin, Hanover and Cologne each had an opportunity of inspecting the American machine, and the entry into France was made through Belgium, and after which a straight run was made to Paris. England was not visited on the preliminary trip, touring conditions there being so well known and the British clubs having offered to give generous help in the organization of the journey.

Not only in Paris, but throughout all the town en route where European touring machines are familiar sights, the liveliest interest was shown in the American machine. The safe return to Paris has brought before the public the fact that other than French machines are capable of undertaking a journey which calls for the highest qualifications. American machines have often been round Europe individually, but it needed the publicity attached to the performance of the Stearns to bring their value prominently before the French public. Georges Dupuy intends to run to Havre in a few days and will ship his machine for New York, arriving there about the middle of the present month, and will immediately begin work on next year's plans.

MANAGEMENT PERFECT, SAYS MR. THOMPSON.

PARIS, July 6.—Chairman Jefferson DeMont Thompson, of the A. A. A. Racing Board, has arrived here on his automobile from Dieppe, where he was the guest of the Automobile Club of France at the Grand Prix. He is enthusiastic over the excellent management of the race, and declares the patrolling of the course by troops and gendarmes was perfect, while the arrangements controlling the cars themselves could not have been better.



GEORGES DUPUY FINISHING TOUR BEFORE THE A. C. F.



IN view of the action of the New Jersey Assembly in passing the special bill permitting the use of the Jersey roads for the Vanderbilt Cup Race this fall with but five dissenting votes, it would appear as if its ratification by the Senate were merely a formality, and that the holding of the race is assured. The Senate is to convene this week and, it is believed, will act favorably upon the measure without delay, and as Governor Stokes has already given his approval to the Racing Committee of the American Automobile Association, he will doubtless sign the bill at once. Jefferson DeMont Thompson, chairman of the Board, who is now abroad, has been kept advised of the developments and will be notified by cable of their successful culmination, in which event he will make arrangements to obtain foreign entries before returning to New York.

A. R. Pardington, acting chairman of the A. A. A. Racing Board; F. H. Elliott, secretary of the American Automobile Association, and Charles T. Terry, chairman of the Association's Legislative Board, visited Trenton on Monday and held a long conference with Governor Stokes regarding the prospects for holding the race in New Jersey in October. The Governor is heartily in favor of it, and believes the Senate will unanimously concur in the action of the House, which has already given its sanction, the bill having been introduced by Assemblyman Randolph Perkins, of Union County, himself an enthusiastic automobilist. At least thirteen Senators are counted upon as being favorable to the measure, while only eleven are required to pass it.

Once in effect, there is little doubt that at least half a dozen

counties will bid for the event. There is already a good sized boom in Monmouth County to obtain it for that section, the most favored course being that from Lakewood past the Rockefeller estate to Burnside, 5 miles; straight to West Point Pleasant, 9 miles; to Manasquan, Sea Girt, Spring Lake and Como, 15 miles; to Five Point Corners to Alairs, 22 miles, and back to Lakewood, 28 miles. This is, however, but one of the many thirty-mile circuits which can easily be found in the State once the proper sanction is obtained. Naturally, no course will be decided upon until the officials of the A. A. A. have closely inspected all the most desirable locations. The route will naturally be kept as far away from large towns as possible, and will also be one that is not too accessible from New York.

In anticipation of favorable action without delay, the Racing Board of the A. A. A. has held several conferences within the past few weeks, at most of which W. K. Vanderbilt, Jr., was present, though no public announcement will be made until it is possible to issue entry blanks. The date for the elimination race, however, has been set for October 5, with October 19 as the date of the race itself, though it is hoped to be able to dispense with the running of an elimination race altogether, and even though it should be necessary to hold such trials, it is by no means certain that they will be run off on the regular cup course. The Association has made all preparations for the holding of the race, and is only awaiting the favorable action of the New Jersey Senate, on which point there appears to be little or no doubt of success, so that a Vanderbilt Cup Race over a Jersey course seems assured.



ON THE SPRINGFIELD ROAD, NOT FAR FROM PLAINFIELD, ONE OF NEW JERSEY'S HIGHLY IMPROVED THOROUGHFARES.



BOULEVARD AT WILDWOOD WHICH WAS USED FOR RACING.

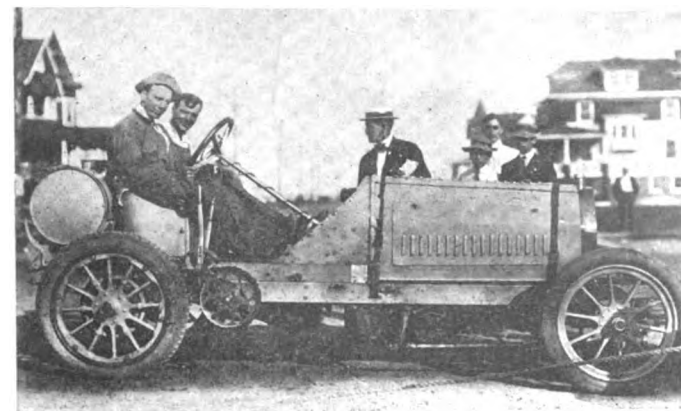
WILDWOOD'S TWO-DAY CARNIVAL.

WILDWOOD, N. J., July 5.—The two-day automobile carnival which has made the habitués of this resort forget their wonted amusements for the time, and has brought the virtues of the billiard table as a couch to the fore, came to a close yesterday afternoon in a speedfest which even the blasé racegoers admitted was first class. The direct rays of the limelight were concentrated, of course, on the 120-horsepower Thomas Flyer, driven by Montague Roberts, which demonstrated its ability to the satisfaction of the expert and tyro alike. Twice it officially burned up the mile course in the fast time of 46 and 44 seconds. Although nearly 100 feet wide, Central avenue is but a trifle over a mile and a half long, and, with but a quarter mile at either end to attain speed and halt, Roberts was badly handicapped, as he had to shut off long before the finish.

In the free-for-all the Stanley 30, driven by Walter Harper, was but 50 yards behind the big Thomas at the finish, with the Stearns 30-60, Hoffman driving, but 20 yards behind the steamer. The Stanley's time was figured out at .52 flat and the Stearns at 53 4-5. In the time trials Roberts did the mile in 0:44 flat—a most excellent performance under the circumstances.

Another fast race was that for the Hand Cup, which went to the Packard 30, which, with Samuel Cullom driving, negotiated the course in 1:05. The Oldsmobile 35, George Parker up, captured the \$2,750-and-under gasoline class race for the Wildwood-by-the-Sea Cup in 1:05 from a big field. Harper drove his 20 Stanley to a win in the Quaker City Motor Club runabout race for the Martindale Cup in 1:06, and in the touring car class open only to Quaker City members "Ollie" Hoffman beat out the Chadwick and the Stanley in the fast time of 1:03 4-5.

In the \$3,500-and-under class for the Founder's Cup Roberts evidently had the other drivers scared, for he was allowed to pull down the cup in the comparatively slow time of 1:09 1-5 from such fast cars as the Stearns 30-60 and the Chadwick 60,



MONTAGUE ROBERTS AND THE THOMAS "VANDERBILT CAR."

which had negotiated the course under the minute several times in practice. Following is a summary of the races:

GASOLINE CARS, \$1,500 AND UNDER.

- | | Time |
|--|----------|
| 1. Reo, 16-h.p.; driver, George Vennell..... | 1:14 1-2 |
| 2. Buick, 22-h.p.; driver, C. A. Godshalk. | |

GASOLINE CARS, \$2,750 AND UNDER (WILDWOOD CUP).

- | | |
|---|------|
| 1. Oldsmobile, 35-h.p.; driver, George P. Parker..... | 1:05 |
| 2. Wayne, 35-h.p.; driver, N. C. Mullen. | |
| 3. Maxwell, 40-h.p.; driver, W. C. Longstreth. | |

FOUR-CYLINDER CARS, \$2,000 AND UNDER (ELSA CUP).

- | | |
|--|------|
| 1. Buick, 24-h.p.; driver, C. A. Godshalk..... | 1:40 |
| 2. Moline, 24-h.p.; driver, J. A. Bunn. | |
| 3. Mora, 24-h.p.; driver, Wm. M. David. | |

OPEN, \$5,500 AND UNDER (FOUNDER'S CUP).

- | | |
|---|----------|
| 1. Thomas, 60-h.p.; driver, Montague Roberts..... | 1:09 1-5 |
| 2. Stearns, 30 to 60-h.p.; driver, Oliver W. Hoffman. | |
| 3. Chadwick, 60-h.p.; driver, William Haupt. | |

UNATTACHED OWNER'S RACE (HAND CUP).

- | | |
|---|---------|
| 1. Packard, 30-h.p.; driver, Samuel Cullom..... | :60 1-5 |
| 2. Stanley, 20-h.p.; driver, M. F. Dobbins. | |
| 3. Stoddard-Dayton, 30 to 35-h.p.; L. W. Dykeman. | |

FREE-FOR-ALL (GREAT CUP).

- | | |
|--|-----|
| 1. Thomas Flyer, 120-h.p.; driver, Montague Roberts..... | :46 |
| 2. Stanley, 30-h.p.; driver, D. W. Harper. | |
| 3. Stearns, 30 to 60-h.p.; driver, O. W. Hoffman. | |
| 4. Packard, 30-h.p.; driver, Samuel Cullom. | |

QUAKER CITY MOTOR CLUB RUNABOUT (MARTINDALE CUP).

- | | |
|---|------|
| 1. Stanley, 20-h.p.; driver, D. W. Harper..... | 1:06 |
| 2. Packard, 30-h.p.; driver, Samuel Cullom. | |
| 3. Oldsmobile, 35-h.p.; driver, George P. Parker. | |

QUAKER CITY MOTOR CLUB TOURING CARS (OTTEN'S CUP).

- | | |
|---|----------|
| 1. Stearns, 30 to 60-h.p.; driver, O. W. Hoffman..... | 1:03 4-5 |
| 2. Chadwick, 30-h.p.; driver, Edward Wilkie. | |
| 3. Stanley, 20-h.p.; driver, M. W. Dobbins. | |

GASOLINE CARS, \$2,500 AND UNDER.

- | | |
|---|----------|
| 1. Stoddard-Dayton, 30 to 35-h.p.; driver, L. Dykeman.... | 1:18 1-5 |
| 2. Wayne, 30 to 35-h.p.; driver, W. C. Mullen. | |
| 3. Buick, 24-h.p.; driver, C. A. Godshalk. | |

TIME TRIALS (CITIZENS' CUP).

- | | |
|--|-----|
| 1. Thomas Flyer, 120-h.p.; driver, Montague Roberts..... | :44 |
|--|-----|
- (All other contestants withdrew.)

TIME TRIALS, FULLY EQUIPPED TOURING CARS.

- | | |
|--|----------|
| 1. Autocar, 30-h.p.; driver, W. G. Brooks..... | 1:18 1-5 |
|--|----------|

The tournament began on Wednesday afternoon with a reliability run of the Quaker City Motor Club and unattached automobilists from Gloucester to this place, in which forty-five cars took part. The run was a nearest-to-a-mile-in-three-minutes affair, and checkers were located at unknown points along the 82-mile course to keep tabs on the contestants as they passed. In this manner those who exceeded or fell behind the 20-miles-an-hour schedule were easily apprehended. The roads were in such condition and the country so flat that the majority of the cars would have had little difficulty in making the run in two and a half hours. The committee, after a three-hours' wrestle with the checkers' lists and starters' and judges' cards, announced Evans Church, driving a White steamer, as the winner of the Quaker City Motor Club class cup, and J. F. Buchanan, in a Royal Tourist, as the victor in the unattached class. To Church went the real honors, for Buchanan had a five-point penalty chalked up against him by the first checker. After the run all the competing cars were placed on exhibition on the Board Walk, and this phase of the carnival was a huge success. On the morning of the Fourth over a hundred cars turned up for the big parade along the five-mile Board Walk. First prize in the touring car class was awarded by the judges to the West-Stillman Company's Pennsylvania, with a handsomely decorated Thomas Flyer a close second. In the runabout class A. L. Kull's Golden Dragon was the unanimous choice of the judges, and Herman Buckborn's Oldsmobile was awarded second honors.

DENMARK'S INTERNATIONAL AUTO SHOW.

In connection with the Copenhagen International Automobile show, from September 28 to October 7, a brief descriptive handbook has been issued in English by the organizing committee. Denmark being the largest user of motor boats in the world, considerable attention will be paid to power craft; commercial vehicles, motors for agricultural purposes, lifeboats and automobile fire equipments are to form important sections of the show. Chairman Herr L. Bendixen, of Copenhagen, has charge of entries.

MATERIALS FOR AUTOMOBILE CONSTRUCTION*

By THOMAS J. FAY, E.E.

THE right thing for the place demands as a condition that the place be located, and so it is with the automobile—the service for which an automobile is designed must have a lot to do with the class of materials to be selected and used. In the main, it will be possible to say, high-speed cars must be light and hence the materials must have great initial strength, whereas on the other hand low-speed automobiles do not have to be so light and so it is feasible to employ comparatively more of the weaker material.

Skill and judgment can be displayed in the selection of the several grades of materials for the respective parts, in view of the service to be rendered, and the cost, as well as the degree of satisfaction, must depend almost entirely upon that skill. In any establishment devoted to the manufacture of automobiles there are several matters to be viewed with more or less alarm, and they must receive mention here because the question of the materials of construction depends to some extent, if not in a large measure, upon them.

One extremely serious question is the relation of the purchasing forces to the designing department. It is not at all uncommon to find that between the departments that fix upon the sizes of parts and the forces that select and purchase the materials there is no binding relation, and in some cases not even the outward semblance of accord. It is useless to depict a part, such as a crankshaft, axle or radius rod of any size, demanding specification steel, unless the desired grade of steel is purchased. This is so self-evident that it would seem wholly unnecessary to even mention the fact; but it so often happens that the materials purchased are not in conformity with the specifications that it is not only desirable but necessary to emphasize the fact and deplore the circumstances.

There are times of industrial exhilaration during which it is difficult to procure materials of some extra quality, and this circumstance is frequently accepted as an excuse in the purchase of inferior products. Sometimes vendors who prefer to dispose of wares in stock claim equally high ability for what is obviously inferior product and sustain their claim with incompetent purchasing representatives whose position and authority enable them to disregard the specifications. In any case, it is quite plain to be seen how essential it is to fix upon the materials to be employed in any given situation, and having done so, to allow a vendor or representative to disregard the requirements is equal to not having fixed upon that quality at all. This is not to say everything should be as fine as possible from an abstract point of view, for in many situations positively low grades of materials can be made to serve perfectly well, and it should be considered no impropriety to utilize such products when the situation warrants.

Of the parts in an automobile, some of them cannot be altered in quality with the weight or speed of the car, and should be considered on a basis representing the responsibility of position, as, for instance, crankshafts must be looked upon as quite independent of car weight or speed and should be designed in view of:

- (a) The diameter of one cylinder.
- (b) The diameter and weight of the flywheel.

It not infrequently happens that even a one-cylinder motor holds all the conditions that would demand the use of an alloy steel crankshaft of the most excellent quality. Where a car, by striking an obstruction, as when the wheels depress into a mud hole, arrests the motion of a flywheel of good diameter and some weight, the dimensions and quality of the crankshaft will there be fixed quite independent of all other considerations.

What must be claimed, then, is that crankshafts are governed, in so far as their materials are concerned, by special and more or less independent considerations, some of which are too obvious to require mention here. Moreover, crankshafts must be of extra good quality of material to be worthy.

The selection can be made over a wide range merely because a wide range of superior steel is afforded, but there is very little carbon steel that can properly apply to an automobile crankshaft; indeed, the author does not recommend the use of carbon steel for the purpose, although much carbon steel is employed under product No. XXXXIL., and would serve very well for certain classes of motors—that is, four or six-cylinder motors with a bore and stroke of four inches or less and a flywheel sixteen inches in diameter or less. But this material would not be nearly so secure for the purpose as No. LI. or numerous other products available, and at equal cost for finished crankshafts it would be absurd to select the carbon steel product instead of chrome-nickel or chrome-vanadium steel.

The reasoning that applies to crankshafts applies equally to the several other parts, provided only an allowance be made for the respective duties, and the selection be made accordingly. The most direct way to settle this matter would be to name the parts and state the quality of materials for each under the varying conditions. True, this method of procedure would leave out the reasons, but they are more or less obvious and the purpose here is to compact as much actual data as possible in such form as to render it readily available. With this idea uppermost the data will be set down in the Table A, and besides giving the names of parts the qualities of materials will be referred to by test record numbers, thus enabling selections over the broadest ranges and in view of the service to be rendered.

TABLE A.

MATERIAL CLASSIFICATION.

Dynamic Work.—Including crankshafts, distance rods, clash gears, piston pins, jackshafts and parts generally which are required to sustain prime shock loads should be composed of materials as follows:

- | | | |
|--|---|----------------------------------|
| From the finest raw materials low in sulphur and phosphorus. | } | (a) chrome-nickel steel |
| | | (b) chrome-vanadium steel |
| | | (c) chrome-nickel-vanadium steel |
| | | (d) chrome-wolfram steel |
| | | (e) silico-manganese steel |
| | | (f) chrome steel |
| | | (g) vanadium steel. |

Static Work.—Including parts subject to high static loads; no shock.

- | | | |
|--|---|-----------------------------------|
| From fine raw materials, fairly low in sulphur and phosphorus. | } | (a) chrome-nickel steel |
| | | (b) chrome-vanadium steel |
| | | (c) vanadium steel |
| | | (d) silico-manganese steel |
| | | (e) finer grades of carbon steel. |

Static Work.—For minor drop forgings and other parts of small responsibility.

- | | | |
|--|---|----------------------------------|
| From excellent grades of raw material. | } | (a) chrome-nickel steel (mild) |
| | | (b) chrome-vanadium steel (mild) |
| | | (c) mild carbon steel |
| | | (d) wrought iron. |

There are many cars in which the materials employed are not nearly so good as the products listed for parts in Table A, and for that matter the tests given in this work, such as are recommended for use, are of much finer steel than that to be had by ordering "machine steel" or "cold rolled steel" or even some "brands" of steel. The test No. CV. is of an average machine steel product and as an inspection of it will show, this product has no rightful place even in a low-priced runabout, although there are uses for just such steel, but not in automobiles. Table A does not provide for absolutely everything for an automobile, but space would not allow of any such amount of detail; moreover, so many parts are so obviously like other parts in so far as duty is concerned that they will readily suggest themselves.

* Extract from Chapter I, Materials for Automobile Construction. By Thomas J. Fay, E.E. Published by the Class Journal Publishing Company, New York.

INFORMATION
U.S. STANDARD THREADS

Major Diameter	Pitch Diameter	Minor Diameter
1/8	0.750	0.625
5/16	0.875	0.750
3/8	1.000	0.875
7/16	1.125	1.000
1/2	1.250	1.125
9/16	1.375	1.250
5/8	1.500	1.375
3/4	1.625	1.500
7/8	1.750	1.625
1	1.875	1.750

THE COLUMN ON THE RIGHT GIVES THE NUMBER TO BE SUBTRACTED FROM THE DIAMETER TO OBTAIN THE CLEARER READING. ALL BOLTS TO BE 1.00% TO ONE ABOVE DIAMETER GIVEN.

Table D

NOTE - WHEN SPECIFYING A BOLT ONLY PREFIX THE LETTER D TO THE FIRST NUMBER OF THE GIVEN BOLT TYPE & BOLT SIZE AND DESIGNATED AS D-1/2".
WHEN SPECIFYING A NUT ONLY PREFIX THE LETTER N TO THE FIRST NUMBER OF THE GIVEN BOLT TYPE & BOLT SIZE AND DESIGNATED AS N-1/2".

design was faulty, as the shoulders were sharp, whereas they should have been rounded. The question also enters into this matter, for if chrome-nickel steel or some other good alloy steel were used there would have been no need to increase the size and the weight after numerous customers were made sad by their purchase. True, the shoulders should be rounded in any event, but alloy steel, even with sharp shoulders of the diameter given in Figure 2, would transmit the power of the motor used and have a large margin to spare.

In general, weight is deplored because of the effect of weight on pneumatic tires, but it is equally a disadvantage from every other point of view. The effect of weight is rendered potent when power enough is provided to create speed; in general, it will be possible to compare weights and speeds as follows:

- (1) $88^2 \times 4,000$
 $\frac{\quad}{2 \times 32.2} = 480,923 = E.$
- (2) $44^2 \times 2,000$
 $\frac{\quad}{2 \times 32.2} = 60,124 = E.$
- (3) $22^2 \times 1,000$
 $\frac{\quad}{2 \times 32.2} = 7,515 = E.$
- (4) $11^2 \times 12,000$
 $\frac{\quad}{2 \times 32.2} = 22,546 = E.$

E=Energy of impact, neglecting some minor friction considerations.

- (1)=Standard touring car at one mile per minute.
- (2)=Light touring car at half a mile per minute.
- (3)=Small electric runabout at one-quarter mile per minute.
- (4)=Large truck at one-eighth mile per minute.

The energy of impact is a certain measure of the stresses speed will engender in the parts, but to render such a comparison of value the static moments must be adjusted to suit the respective cars. In other words, a 12,000-pound (gross) truck requires axles of a greater section than a 4,000-pound touring car because the static load is 12,000 pounds instead of 4,000 pounds, but the



materials would not have to be so fine because the impact moment of 12,000 pounds at 7½ miles per hour is only 22,546 foot pounds, whereas the energy of impact of 4,000 pounds at 60 miles per hour would be 480,923 and $\frac{480,923}{22,546} = 21.33$ ratio in favor of the truck.

This is not to say that trucks may be built of materials over twenty-one times inferior to those now used in touring cars, but it does mean, that material that is as good as possible being used in trucks, it should be twenty-one times better for touring cars.

In deciding upon the quality of material to use it is necessary to fix the speed, because the speed factor of the moment of impact is a square value. If this matter were to receive its due measure of serious consideration, builders of cars would not be

Bolts, for instance, are not provided for, but the Table D takes care of this matter in a very simple and on the whole effective manner. This standard of bolts and nuts was devised by the author for the S. & M. Simplex cars, July 15, 1904, and was revised and issued for the Ellsworth cars in the manner shown in Table D. The quality of material to use in bolts and nuts is not easy to fix upon, because much of the alloy steel tried for this purpose proved to be of no great value. The chrome-nickel steel, test No. LIII., would be thoroughly good and is used by the author for important bolts and nuts. The nickel-steel, test No. LXXXXV., would be a good second, but ordinary nickel-steel answering the United States Government specification is not recommended.

This product, No. LXXXXV., was tried out for bolts, nuts and small parts in the B. L. & M. 1906 racing car and proved to be most unworthy indeed; where the author found this product so uncertain for even moderate service it was decided to substitute chrome-nickel steel No. LII., and the trouble at once ceased. Instead of the product No. LII., the material No. LIII. is, of course, a good advance, but it would be ridiculous to double the cost of material if the lower-priced product is good for the purpose under consideration.

This question of cost is certainly a most complicated and on the whole serious matter, because the cost of a car seems to be an easy thing to increase, and good practise ceases when dividends "balk." The good resolves of the designer may far exceed the ideas of the managing director, and after all purchasers are only entitled to what they pay for. This does not imply a license to use material that will not serve a given purpose at all, but it does mean that exceeding the actual necessities will hardly do.

The question of allowable weight should receive some attention just at this time, because weight and speed are the factors that must settle all questions of material, as regards both quantity and quality, assuming, of course, that designs are in accord with correct principles. It is not always the case that the latter are satisfactory, but such mistaken notions will be narrowed down by the law of evolution. Figure 2 is an illustration of just such a case and represents the end of a crankshaft on which a planetary change-speed gear was stuck. A large number of cars were put out with this feature and a considerable percentage of them must have given trouble, for every one that came to the author's attention broke at the same place.

The law of evolution took care of this matter because subsequently the maker changed the design, but the law has not settled this case yet, for the material must be changed as well. The

so anxious to increase horsepower, as some of them are wont, although the purpose here is to state effect and not to advocate the illumination of causes. In a general way the effect of increasing the power is most disconcerting because it increases the impact without increasing the quality of the material. Before dropping this phase of the subject it may not be amiss to make a comparison on the basis of the change required in the quality of material if power be increased.

For the sake of comparison, assume a car of carbon steel with a gross weight of 3,000 pounds and an attainable speed of 40 miles an hour, which would be a reasonable expectation with a 25-horsepower motor. Such a car would, in all probability, be generally satisfactory in carbon steel, excepting the crankshaft and maybe the gears, which parts could be of alloy steel without materially increasing the cost of the car. Now put in a 50-horsepower motor, which, of course, would weigh 50 per cent. more than a 25-horsepower motor, and as a reasonable expectation the speed would go up 50 per cent. To keep the weight at 3,000 pounds alloy steel would have to be resorted to.

The result of such a change would be an increase in speed from 40 to 60 miles an hour and the stresses in the materials would go up enormously, as can be gleaned in a moment, because:

$$(1) \frac{58.66^2 \times 3,000}{2 \times 32.2} = 160,295 = E.$$

and

$$(2) \frac{88^2 \times 3,000}{2 \times 32.2} = 360,745 = E.$$

Taking into account the reduced sections of strain members to keep the weight constant at 3,000 pounds as before fixed, and the ratio of the impact (1) to the same moment (2), it would indicate a decided demand for alloy steel, because:

$$\frac{360,745}{160,295} = 2.25 \text{ ratio against carbon steel.}$$

Taking into account the necessary decrease in the alloy steel section to make allowance for the desired decrease in weight, it is reasonable to expect that the elastic limit of the alloy steel should be at least three times that of the carbon steel, taking into account an elongation common to the two grades of steel.

If carbon steel possesses an elastic limit of say 30,000 pounds per square inch, which is a fair average for the usual product, then an alloy steel with an elastic limit of 90,000 pounds would

satisfy the conditions of the example of the moment. But the alloy steel with the elastic limit so fixed should have an elongation substantially equal to that of the carbon steel displaced; moreover, the contraction should be from two to three times the elongation, preferably the latter.

It will be observed that the alloy steel, under the conditions set down, will have all it is capable of doing to hold out for a reasonable period of time, and this fact should prove very disconcerting to the users of inferior carbon steel products who are wont to claim that chrome-nickel steel is a wholly uncalled-for refinement.

It might be said, if car-

bon steel will do for a 3,000-pound car, powered to run at 40 miles an hour, why not be satisfied with carbon steel and 40 miles an hour? But the author does not hold that carbon steel, 3,000 pounds and 40 miles an hour will make as good a proposition as alloy steel; 3,000 pounds and 40 miles an hour. Moreover, it is plain to be seen that the carbon steel car would be comparatively an inferior product at any weight and speed. Thus far all attempts to fix upon the materials best for the purpose were based entirely upon the relation of stress to strain, but there is one reason alone that absolutely dictates not only low weight, but moderate speed, and that is tires.

There is no grade of material too good to use in automobiles, if it will reduce weight, provided power is reduced so as to maintain a constant speed and thereby reduce the cost of tire maintenance. It is impossible to say just what are the laws that hold for tires, but it is reasonable to assume that low speed and light weight are important factors in the life of the tire, although good roads must be taken into account as an equally important factor. Assuming a given size of tires, a good road and fair conditions of operation, and it will be possible to fix upon tire relations with a fair degree of accuracy about as follows:

AT A CONSTANT SPEED.

Weight of Car.	Life of Tires.	Speed of Car.
4,000	12.5	40
2,000	25	40
1,000	100	40

If the car be run until the tires wear out—in other words, tire “rot”—is a separate matter not taken into account here. The above relation is a strong argument for fine materials, provided the weight of the car is cut down by their use. If, on the other hand, the reduction in weight is attended by an increase in speed, the advantage is of the *minus order*, for the increase in speed is attended by an increase in tire depreciation, which is to be guarded against. In all probability speed affects tires in excess of a ratio represented by the velocity squared, and the life of the tire will be affected at least in proportion to the square of the velocity. Taking this as a basis, it will be possible to view the speed phase of the question in another light, assuming that a constant power, equal roads and a decrease in weight would result in an increase in speed.

AT A CONSTANT POWER.

Weight of Car.	Speed of Car.	Life of Tires.
4,000	40	12.5
3,000	53	9.25

ANGLE - WHEEL - BASE	WHEEL BASE													
	90	92	94	96	98	100	102	104	106	108	110	112	114	116
35	16'10"	17'2"	17'6"	17'9"	18'	18'3"	18'6"	18'10"	19'1"	19'4"	19'8"	20'	20'3"	20'6"
36	16'6"	16'10"	17'2"	17'5"	17'8"	17'2"	18'	18'5"	18'8"	19"	19'3"	19'6"	19'10"	20'1"
37	16'3"	16'6"	16'9"	17'1"	17'4"	17'7"	17'9"	18'	18'4"	18'7"	18'10"	19'2"	19'5"	19'8"
38	15'11"	16'3"	16'6"	16'9"	17'	17'3"	17'5"	17'8"	18'	18'3"	18'6"	18'9"	19'	19'2"
39	15'7"	15'10"	16'2"	16'5"	16'8"	16'11"	17'1"	17'4"	17'7"	17'10"	18'1"	18'5"	18'8"	18'11"
40	15'3"	15'7"	15'10"	16'1"	16'4"	16'7"	16'9"	17'	17'3"	17'6"	17'9"	18'	18'4"	18'7"
41	15'	15'3"	15'7"	15'10"	16'1"	16'4"	16'6"	16'9"	17'	17'3"	17'5"	17'8"	18'	18'3"
42	14'8"	15'	15'3"	15'7"	15'10"	16'	16'2"	16'5"	16'8"	16'11"	17'2"	17'5"	17'8"	17'11"
43	14'6"	14'9"	15'	15'3"	15'6"	15'9"	15'11"	16'2"	16'5"	16'8"	16'10"	17'1"	17'4"	17'7"
44	14'4"	14'6"	14'9"	15'	15'3"	15'6"	15'8"	15'11"	16'2"	16'4"	16'7"	16'10"	17'1"	17'4"
45	14'1"	14'4"	14'6"	14'9"	15'	15'3"	15'5"	15'7"	15'10"	16'1"	16'4"	16'7"	16'9"	17'

TABLE F.—Steering radii for various lengths of wheelbases. This table refers to a portion of the text of Chapter I which as been necessarily omitted owing to lack of space.

CHEMICAL COMPOSITION		
TOTAL	0.25	
COMBINED	0.25	
GRAPHITE		
FERRITE		
PEARLITE		
CEMENTITE		
Cr.	Ni.	0.50
V.	W.	
Mn.	Si.	0.20
Al.	Cu.	Trace
S.	P.	0.04
Sn.	Zn.	
Pb.	Sb.	
As.		Trace
PHYSICAL PROPERTIES		
T.S.	90000	
E.L.	60000	
EX.	PER CENT	25
CO.	55	
PROOF	DIAM. "	0.50
	LENGTH "	2.00
FRACTURE	D. 5-100	
RATING	U.	87.5
	H.	6
TREATMENT	NORMAL	

SUBJECT: NICKEL STEEL
 NUMBER: LXXXIV MARK: US Govt SPEC.
REGULAR PRODUCTION.
 NEW YORK 4-17-07

MUCH USED FOR CRANKSHAFTS AND OTHER PARTS OF RESPONSIBILITY.

THIS PRODUCT WHEN FREE FROM "PIPES" AND "SEAMS" WHICH IS BY NO MEANS A MAJORITY CONDITION, SERVES EXTREMELY WELL IN MEDIUM POWERED MODERATE SPEED CARS FOR PARTS OF RESPONSIBILITY.

UNDER SKILLED TREATMENT NICKEL STEEL RESPONDS TO GOOD ADVANTAGE, BUT IT IS A MOST UNCERTAIN PRODUCT IN UNSKILLED HANDS.

IT IS NOT IN ANY SENSE EQUAL IN QUALITY TO CHROME NICKEL STEEL SEE LXXXIII FOR THE RESULTS OF SKILLED TREATMENT.

CHEMICAL COMPOSITION		
TOTAL	0.204	
COMBINED	0.204	
GRAPHITE		
FERRITE		
PEARLITE		
CEMENTITE		
Cr.	Ni.	4.26
V.	W.	
Mn.	Si.	0.211
Al.	Cu.	Trace
S.	P.	0.012
Sn.	Zn.	
Pb.	Sb.	
As.		Trace
PHYSICAL PROPERTIES		
T.S.	125000	
E.L.	118000	
EX.	PER CENT	25
CO.	64	
PROOF	DIAM. "	0.50
	LENGTH "	2.00
FRACTURE	D. 5.0	
RATING	U.	60.75
	H.	9.72
TREATMENT	NORMAL	

SUBJECT: CHROME NICKEL STEEL
 NUMBER: LIII MARK: SPEC.
FROM: FELIX BISCHOFF DUIS-
BERG-RHINE NEW YORK 4-17-07

USED FOR EXTREMELY IMPORTANT PARTS, REQUIRING MUCH FORGING. WILL NOT HARDEN ON QUENCHING EVEN FROM A HIGH TEMPERATURE BUT CEMENTS WELL.

THIS SOFT GRADE OF CHROME NICKEL STEEL CAN BE EXPANDED INTO REAR SPROCKET WHEELS, UP TO SIXTEEN OR MORE INCHES IN DIAMETER, AND MAY BE FORGED AT 1050°C. WHICH IS A FAIRLY HIGH HEAT AT WHICH TO FORGE ANY ALLOY STEEL THE TOTAL OF THE METALLOIDS - 0.409% FOR SILICON, SULPHUR, PHOSPHOROUS AND MANGANESE IS VERY LOW.

Since the materials entering into the construction of automobiles are so dependent upon speed, to conclude this portion of the material question without fixing upon the attainable speeds would be an oversight. Table C will serve the purpose extremely well and gives other valuable data besides. This table was published in the *Horseless Age* last year to illustrate the fact that the extravagant claims of speed on the part of motorists are rarely borne out in fact. In concluding this part of the subject there is one thing that cannot be overlooked, and that is a speedy car on a level, hard road does very little damage to itself, but

the same car on a bad road, in the hands of a careless driver, can scarcely survive unless the materials are suitable. Speed, then, and good materials must go together, and if inferior materials must be used they belong in low-powered cars, in which event a little extra weight is a matter of no serious moment if the tires are big enough to carry it.

EDITOR'S NOTE.—Owing to space limitations much of the data referred to by numbered tests, to which a special chapter is entirely devoted in Mr. Fay's work on materials, has necessarily been omitted.

TABLE C.

SPEED TABLE—35 HORSEPOWER MERCEDES, 1906
 REVOLUTIONS OF THE MOTOR—1,100 PER MINUTE

No. of Teeth of Sprocket Wheel.	17	18	19	20	21	22						
Speed	M. P. H.	% Grade	M. P. H.	% Grade	M. P. H.	% Grade	M. P. H.	% Grade	M. P. H.	% Grade	M. P. H.	% Grade
One.....	11.14	22.5	42.1	21	12.7	19.6	13.4	18.6	14	17.7	14.6	17
Two.....	24.6	8.3	26.1	7.5	27.4	6.9	28.9	6.3	30.5	5.7	31.7	5
Three.....	32	5.2	34	4.5	35.8	3.8	37.6	3.25	39.5	2.9	41.4	2.5
Four.....	41.6	2.6	44.1	1.76	46.6	1.4	49.1	1	51.6	0.3	54.1	....
REVOLUTIONS OF THE MOTOR—1,200 PER MINUTE												
One.....	12.4	22.5	13.2	21	13.9	19.6	14.6	18.6	15.3	17.7	16	17
Two.....	26.8	8.3	28.3	21	29.9	6.9	31.4	6.2	33.3	5.6	34.5	4.9
Three.....	34.9	5	37	7.5	39.9	3.6	41	3.1	43	2.7	45.1	2.3
Four.....	45.4	2	48.1	4.3	51	1	53.5	0.5	56	.....	.....	....

In the calculations of this table the air resistance for the complete car, with touring coach work and four passengers, is taken into account, the total weight being 3,760 pounds. For cars with a heavy body or a canopy top the speeds are smaller, corresponding with the greater weight. The cars are usually furnished with sprocket wheels of 18, 20 and 22 teeth. Sprocket wheels of 17, 19 and 21 teeth are furnished instead of the standard wheels, if so desired.

SIMPLEX 30 HORSE POWER TOURING CAR
 Mileage Table

No. of Teeth in Driving Sprocket	23	25	27	29				
Speed	M. P. H.	% Grade	M. P. H.	% Grade	M. P. H.	% Grade	M. P. H.	% Grade
One.....	10	25.0	11.5	22.6	13.45	18.5	15.94	15.18
Two.....	13	19.5	18.5	12.65	22.10	9.8	20.25	7.35
Three.....	21	10.5	26	7.4	34.425	4.4	41.31	2.52
Four.....	37	3.65	41	2.62	47.18	1.25	54	Level
Reverse.....	8	29.6	8.7	29.1	9.39	27.1	11.25	22.3

This table of speeds and gradient is based upon the conditions of a maximum weight of the car and its burden of 3,760 pounds, a level, hard roadbed, no wind, and the car in good working order.

THE SELECTION OF A PROPER LUBRICANT

By ROGER B. WHITMAN.

IN the early days of the automobile industry a manufacturer was satisfied if his car could be depended on to cover fifty miles without a halt, and points that are now considered to be of paramount importance were entirely overlooked in comparison with the necessity for producing an engine that would run. With the advance in automobile construction has come a constant improvement of detail; until at the present time the designers are giving prominence to points hitherto passed over as too trivial to consider. Improvements in lubricating systems have been marked, for the proper oiling of the various bearing surfaces was early recognized as being essential to the life of the mechanism, but too little attention has been accorded to the selection of the lubricants to be used in them. The owner of a car is usually under the necessity of accepting the statements of the supply man, buying the oil that is most strongly recommended, and, knowing little of the subject himself, he takes for granted that what he gets is the best that the market offers.

As a matter of fact far more depends on the choice of an oil than is generally supposed, as a lubricant for use in the cylinder of an internal combustion engine must possess certain characteristics in order that the engine may deliver its full power with the least possible wear. To appreciate this it is necessary to understand something of the service that a lubricant is required to give and the way that it does its work. Primarily, the function of a lubricant is to interpose a film between the two surfaces of a bearing, separating them, and acting in a manner similar to a ball bearing. This similitude to a ball bearing is not so extreme as it may seem to be at first sight, for the particles of oil may be considered as balls rolling between the two surfaces. Without this film of oil the friction between the surfaces would generate heat, and as heat causes expansion the binding of the bearing would be the result. The first requisite of an oil is its ability to keep the two surfaces of a bearing separated; in other words, it must be of such a character that its particles will be capable of resisting the tendency to squeeze out, caused by the pressure on the bearing. This characteristic, which enables the oil to resist an attempt to separate its particles, is cohesiveness, or, technically, viscosity. The greater the viscosity of an oil the more its particles will cling together and resist the pressure of the bearing that tends to separate them and squeeze them out. The viscosity of gasoline and kerosene is almost nil as compared with that of heavy oil, and they would run out of a bearing as fast as they were poured in. It is this characteristic that determines the difference between the grades of light, medium and thick oils, and the selection of one of these depends on the service demanded, a bearing that supports a great weight requiring a heavy oil of high viscosity, in distinction to a bearing carrying a light load, that may be fed with a thin oil.

An oil that forms a film between the surfaces of a bearing operating at the ordinary temperature of the atmosphere is doing all that can be expected of it, but if the bearing is normally at a high temperature another element must be reckoned with. When any oil is heated it becomes thinner, and the first effect of this is the reduction of the viscosity; its particles will be rendered less cohesive. This need not be considered in the selection of a lubricant for the change speed gear, wheels and axles or similar parts of an automobile, for if these are properly designed their temperatures should not vary from that of the atmosphere to any great extent. A much more complex problem is presented in the proper lubrication of the pistons and cylinder walls of the engine.

The intense heat in the cylinder at the moment of combustion imposes a severer duty on the lubricant than can be duplicated elsewhere, and no oil can be made that will not eventually

be consumed, passing off with the exhaust. To lubricate the piston and cylinder is similar to supporting on ball bearings a load so heavy that the best balls will ultimately be crushed, and the necessity of constantly supplying new balls to take the place of those destroyed. The better the material of which the balls are made the longer they will resist the crushing action of the bearing, and, similarly, the higher the burning point of an oil the longer it will continue to perform its duties as a lubricant before the heat decomposes it. The processes of giving an oil a high burning point are well understood, and there are many brands on the market that in this respect offer all that can be desired.

A further and more important distinction, however, must be made regarding the oils that will burn and pass away, leaving the least possible residue. The carbon that enters largely into the composition of oils will, on the destruction of the oil in the cylinder by the heat, enter into combination with any oxygen that is present and pass off as CO_2 , but with a properly proportioned mixture the amount of free oxygen present in the cylinder is very small, and the carbon is therefore deposited on the walls of the combustion space. The automobilist knows the result of this only too well, and has had his experience with fouled spark plugs, gummed piston rings, stuck valves and the other effects of this heavy carbon deposit. The parallel of the ball bearing supporting the excessively heavy load may be again referred to. If the balls are such a material that when crushed they will be reduced to powder, there will be little interference with the operation of the bearing, but if they break into fragments these will remain in the races and bring the remaining balls to quick destruction. Obviously the lubricant that resists disintegration by the heat for as long a time as possible, and in decomposing leaves the least carbon deposit, will give the best result in thorough and efficient lubrication of the piston and cylinder walls of an internal combustion engine.

The ability to reduce the quantity of carbon contained in a lubricant is the result of a long series of tests and experiments that have been made to prove a theory, but before going into the effects it will be well to understand something of the processes of refining.

The crude oil, petroleum, is placed in a retort and heated gently to drive off the more volatile elements, and these when condensed are known as rhigolene and chimogene. A higher temperature volatilizes the various grades of gasoline and kerosene, an increased heat driving off the lightest grade of lubricating oil. A further increase of temperature will volatilize the heavier oils, but as the process continues more time is required to free them, and the expense of production becomes greater. For this reason the oil manufacturers prefer to treat the residue left in the retort by other methods that separate the various grades of heavy oils and greases. While the oils that are distilled contain carbon, it is in less proportion than is found in the oils procured from the residue, and therefore the distilled oil, if the process is continued sufficiently to obtain the necessary viscosity, will be preferable to the other.

Numerous tests and experiments have been conducted on samples of the distilled oils as well as those obtained from the residue, and consisted of extended processes of filtration, each filtration resulting in the production of an oil that was considerably lighter in color than it was previously. The viscosity and burning point, as well as the other characteristics, remained unchanged. These samples of oil, in which the process of filtering had been continued until nearly all of the color was removed, were burned in comparison with samples of the same oils unfiltered. The results were of great interest, for in each case the residue of carbon was decreased, the decrease being in proportion

to the loss of color. The samples filtered to such an extent that they were nearly colorless left a residue of carbon so slight as to be negligible.

A knowledge of the fact that carbon and color in an oil are practically synonymous is of advantage in the selection of an oil, but it should not be forgotten that a thin oil will be of lighter color than a thick. The first essential is the selection of an oil that has sufficient viscosity, and of the several brands that comply with this requirement, and have a sufficiently high burning point, that of the lightest color should be chosen. On test it will be found to contain a smaller proportion of carbon, and the results from its use will therefore be better than would be obtained with an oil of darker color.

The proper viscosity for the oil is determined by the grade of iron used in making the cylinders, and in the number, fit and location of the piston rings. A very close grain iron, which takes a smooth finish, requires a thinner oil than a rougher iron, for which an oil of higher viscosity is required to maintain a tight fit. The manufacturers' hand books furnish information as to the viscosity and this should be used until experience proves that a change will be beneficial.

RAPID INCREASE OF AMERICAN AUTO EXPORTS.

Not only are the exports of American automobiles increasing apace, the average gain being close to fifty per cent. annually, but the average price of the cars exported is also increasing. During the month of May, 1907, 281 cars of an aggregate value of \$618,018, together with \$47,432 worth of automobile parts, were sent abroad as compared with but \$484,541 in all in the same month a year ago. While the average increase does not reach fifty per cent., many of the individual items show a gain of almost 100 per cent., such as the figures in the case of the United Kingdom, which rose from \$138,109 a year ago to \$235,751, very favorable increases also being manifest in the case of France, Italy, Mexico and British North America. The extent of the gain may be better appreciated by a comparison of the totals for the period of eleven months ending with May in the past three years, which are \$2,167,744 for 1905, \$2,957,748 for 1906 and \$4,770,187 for 1907. The detailed report follows:

Automobiles and Parts of	May		Eleven Months Ending May	
	1906	1907	1906	1907
Automobiles...No.		281		
Parts of.....	\$484,541	\$618,018	\$2,957,748	\$4,221,316
Exported to—		47,432	2,567	548,871
United Kingdom...	138,109	235,751	754,286	1,210,672
France.....	55,221	85,084	225,822	444,632
Germany.....	22,366	16,580	79,625	119,136
Italy.....	17,770	37,500	245,358	243,019
Other Europe.....	35,397	10,879	158,630	227,797
Brit. North America	120,159	150,079	556,009	1,020,411
Mexico.....	48,690	69,998	341,692	762,650
West Indies and				
Bermuda.....	12,588	15,453	237,264	199,005
South America.....	15,495	14,300	77,275	184,570
British West Indies.	3,651	840	34,697	33,926
British Australasia.	7,467	13,287	155,591	202,741
Other Asia and				
Oceania.....	5,636	14,585	49,732	91,561
Africa.....	1,479	140	28,404	8,813
Other countries.....	513	74	13,363	12,254
Total automobiles and parts of...	\$484,541	\$665,450	\$2,957,748	\$4,770,187

A NEW COMBINATION BALLOON-AEROPLANE.

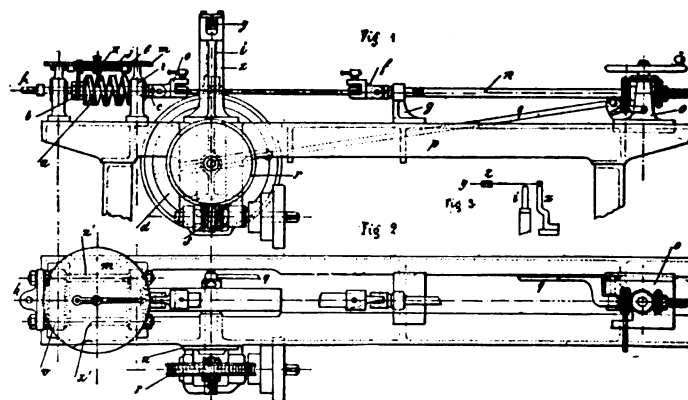
A flying machine which combines the principles of the dirigible balloon and the aeroplane is being experimented in New York City by Frutz H. Grawert, a German inventor. Only a small working model has made its appearance up to the present, but the inventor is convinced of the soundness of the principles of his aeronautomobile—as he has named it—and promises wonderful performances in the near future. In the model there are four cylindrical gas bags with pointed ends, the two center bags being placed side by side and the remaining pair in front and in the rear in the same plane. A light chassis is suspended under the gas bags and on the center of it is placed the motor, in the present case of clockwork, driving a propeller in the rear. The forward and rear gas bags being attached to pivoting frames, they may be moved to control the course of the machine.

FRENCH MACHINE FOR TESTING TIRE FABRICS.

Notwithstanding the enormous quantities of rubber, tissues and fibers of various kinds in daily use, mechanical appliances for testing them are singularly rare, a state of affairs in striking contrast to what pertains in other branches of the technical world. Chemical experiments have done good work in providing data for the pneumatic tire manufacturer, but good as they are in their own domain they are altogether insufficient in that they have no relationship with the mechanical oscillations which a tire fabric has to undergo in actual use. The only method of scientifically testing tire fabrics so as to reveal the actual working strains they are able to support is by means of a dynamometer.

A machine for this purpose has been constructed by a French engineer, consisting, as will be seen from the illustration, of a solid castiron table (*p*) with its upper surface planed smooth and standing on two stout legs. On the table are to be found the two principal organs of the dynamometer, the apparatus for producing the efforts and the apparatus for measuring them.

For the recording instruments the inventor has abandoned cumbersome balance levers in favor of a special steel spring, which is equally accurate. In the P. B. dynamometer the spring *a* is mounted on a shaft bearing at one end the jaws *e* for holding the material to be tested, and, secured between a couple of nuts, the finger *b* operating a rack *j* and meshing with a vertical



PLAN OF P. B. DYNAMOMETER FOR TESTING TIRE FABRICS.

pinion *k*. In the axis of this pinion is fixed a needle *l* moving in front of a graduated scale *m*. On the breakage of the material under test the spring recoils, but leaves the needle motionless, thus the charge at which rupture took place can always be read. The value of an instrument of this nature depending entirely on its accuracy, the inventor has incorporated a special apparatus by which its veracity can be tested, and which is the subject of a separate patent.

The oscillating portion of the apparatus consists of two pieces, *g* and *o*, which may be attached to or released from the table at pleasure. To the lower portion of *o* is attached a connecting rod *q*, operated by an eccentric. The two slides being free, and the machine put in motion, a series of tractional efforts can be brought to bear on the material under test. Power is applied by means of a motor connected to one of the three pulleys on the driving shaft operating the eccentric through a worm gear.

The material to be tested is secured by the two jaws *e* and *f*, as shown in Fig. 1. The jaw *f* is united to a slide *g*, which in turn is connected to *o* by means of the screw *n*. By means of a horizontal flywheel and bevel gears, a simple tractional effort is applied to the fabric. Tractional tests at various temperatures, plasticity tests, cutting tests and testing of fabrics under rapidly repeated pulling strains can be carried out on the P. B. dynamometer, data being recorded by the needle in each case. Though particular mention has been made of the use of the machine for rubber and tire fabrics, it is applicable to the whole range of tissues, cordage, paper, celluloid and other similar materials. A. D. Cillard Fils, 49 Rue des Vinaigriers, Paris, France, is the constructor of the P. B. dynamometer.

LETTERS INTERESTING AND INSTRUCTIVE

Why Are Two-cycle Crankcases So Small?

Editor THE AUTOMOBILE:

[812.]—I am an interested follower of developments in the automobile, and have often wondered why the two-cycle engine has not come in for more attention at the hands of automobile builders, if it is all that some of its ardent advocates claim for it. However, this is neither here nor there; I am more or less familiar with the principles on which both the four and two-cycle types of motor operate, though I have never had much opportunity to inspect models of the latter very closely. But I have noticed that the two-cycle motor is made with a very queer looking form of crankcase, as compared with the four-cycle, and would like to know the reason for this. I saw a four-cylinder, two-cycle recently, and it seemed as if each cylinder were provided with a separate crankcase of its own. I would like to ask if this is the case, and why?

INQUIRER.

Chillicothe, O.

Two-cycle motors as at present used are designed to use crankcase compression—that is, the charge is drawn directly into the crankcase on the upstroke of the piston, through a port in the case of what is known as the three-port type, and through a check valve in a two-port engine, now not very much used. On the downstroke of the piston the charge then in the crankcase is compressed to four or five pounds to the square inch, and just at the moment it reaches its maximum compression the inlet port in the side of the cylinder is uncovered by the descending piston and the charge rushes through a by-pass into the combustion chamber, being there again compressed by the next upward stroke, which forms the regular compression portion of the cycle in this type of motor.

It will be plain from this that in a multi-cylinder two-cycle engine, each cylinder is really an independent unit, except, of course, that the same carbureter supplies the mixture for all. And it will also be evident that in order to obtain the necessary compression the size of the crankcase must be restricted in order that its volume may not greatly exceed that of the combustion chamber of its cylinder. The necessity for making the crankcase small as well as for maintaining the section of it corresponding to each cylinder, air tight, accounts for the peculiar shape of this essential you have noticed on two-cycle motors, as compared with four-cycle motors in which no such special conditions exist.

Has an Original Idea for a Change Speed Gear.

Editor THE AUTOMOBILE:

[813.]—I am a reader of "The Automobile" and would like a little information on transmission. I have an idea of a transmission where the gears always stay in mesh and do not need to be shifted, as it works automatically. I am a mechanic and have followed automobiles for the past five years, and have never seen or heard of anything like mine. Can you give me any information about this? If my idea is original, I would like to have it patented.

Pittsburg, Pa.

G. C. P. M.

Without having further particulars as to the details of your invention we can naturally not give you a very definite reply regarding its originality or its value for use on automobiles. Under the circumstances, the only information that we can give you is that quite a number of change speed mechanisms, usually termed "transmissions," though somewhat erroneously, as the transmission includes a number of other essentials, in which the gears are constantly in mesh, have been invented and patented and some of them are in successful use on American automobiles today. With a few exceptions they have not proved entirely successful and the type most generally used not only calls for the sliding of the pinions, but also their shifting by hand. However, an automatically operating device of this kind was recently brought out in England, where it created quite a stir. For full particulars write the *Autocar*, London, requesting that one of the back numbers containing this description be forwarded to you. This is the only automatic type we know of.

Who Was Right—Motorman or Motorcyclist?

Editor THE AUTOMOBILE:

[814.]—I have noticed in a recent issue of "The Automobile" a discussion of trolley car and automobile accidents illustrated with a number of diagrams. Enclosed you will find a sketch depicting the circumstances connected with an accident that happened to me on the 22d ult. in Rye, New York. As will be plain from this the situation was that of an intersecting cross street on which there was a trolley road running at right angles to the street that I was on, but making a curve into it at the corner I had to pass. I was riding along at an ordinary rate of speed and when I reached the spot indicated by the cross in the lower left-hand corner, I saw the trolley car, which was then in the position marked by the cross in the upper right-hand corner, and traveling in the direction shown by the arrow, or directly across my path. I blew my horn several times and attracted the attention of the motorman, and seeing that he was looking at me I continued on, thinking that he would stop at the corner before taking the curve in order to let me pass, or else swing completely round the curve so that I could pass on the right-hand side of the car, but instead of doing either he came to a dead stop right on the curve, as

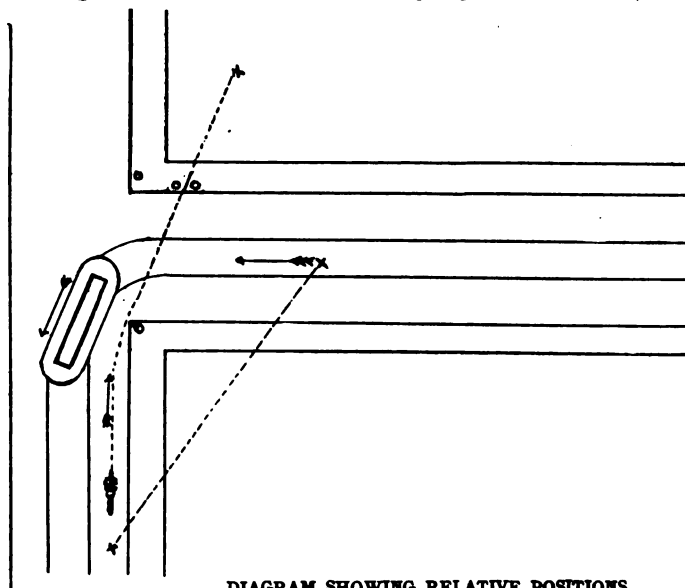


DIAGRAM SHOWING RELATIVE POSITIONS.

shown by the drawing, thus completely blocking my path. I was then going too fast to be able to take the turn at the right into the cross street, and was compelled to run straight into the curb on the opposite side, barely managing to go between the telegraph pole and tree marked by the two small circles—a space scarcely three feet in width, completely wrecking my machine, but fortunately escaping with a few bruises. I owe my escape to the good material in my machine, which is an Indian, for had the front wheel or the forks buckled when I struck the curb I would have been crushed against either the pole or the tree. I hope this may interest some of the readers of your valuable paper, and would like to ask you, was the motorman or myself to blame under the circumstances? An answer published through your "Letters Interesting and Instructive" department will be appreciated.

Rye, New York.

E. H. GALLAWAY.

There can be no doubt in the mind of anyone who reads your account of the accident from which you were so fortunate as to escape with nothing more serious than a few bruises that you were clearly to blame. While you state that you were riding at an ordinary rate of speed when you first discerned the trolley car, this hardly corresponds with your later statement that you were going too fast to make the turn into the side street when you found the road ahead blocked by the unexpected stopping of the car on the curve. In other words, your machine was certainly not within control, considering the circumstances, as otherwise you would doubtless have been able to choose a somewhat less risky spot than the one you managed to squeeze between on striking the curb. If it was impossible for you to turn the machine at any greater angle than that indicated by the dotted

line which describes your course from the time you steered to the right slightly to avoid the car until you landed up in the field, your rate of travel must clearly have been such as to be characterized as highly dangerous under such conditions. Of course, it is far easier to analyze such situations when they are presented in black and white and time is not pressing; in reality quick action is absolutely necessary and what proves to have been poor judgment on mature thought did not appear so when an immediate decision was necessary. Under the circumstances we should think it natural to cross the tracks at the left to avoid the car before it reached the curve unless other traffic interfered, or if the speed were not highly excessive it would seem as if the easiest road to safety would have been a turn to the left after passing the tail end of the car, as shown by your sketch. There is always a great element of uncertainty about every situation of this kind, in that you can never depend upon what the other fellow is going to do, so that prudence and common sense would naturally dictate a rate of speed at which the machine could instantly be brought to a halt without damage either to it or its rider. The verdict must be against you and the lesson should prove one not easily forgotten.

An Expedient to Save Lubricating Oil.

Editor THE AUTOMOBILE:

[816.]—I have noticed in an article which recently appeared in "The Automobile" a reference to the waste of lubricating oil by the average automobilist, and particularly by the professional chauffeur. As stated therein, most of this waste takes the form of leakage from the crankcase as well as the gear-set housing, and the extent to which it takes place may readily be learned by looking at the pavement or road wherever automobiles have been standing for any length of time.

It seems strange that this practise, or rather neglect, should be so general and still be noticed by so few people, for I must admit that though I have been an autolst for four years past, I never observed it particularly. Recently, however, I found that the motor of my old car seemed to be taking an excessive amount of lubricating oil, and I asked a local machinist the reason, but the only satisfaction I got was that the "motor was old," and consequently needed more oil. It has always been my impression that a motor once well worn in reality needs less oil than one that is comparatively new. I continued to throw lubricating oil away in rather generous quantities until the article referred to came to my attention, and I found that, as mentioned therein, most of the oil was being thrown out through the crankcase joints. I presume I would have noticed this sooner had I made a habit of cleaning the motor myself. I want to remedy this as well as a similar defect in the transmission case, and would like to know if any special material is necessary as a packing, and what the method of procedure is.

LUBRICANT.

Springfield, O.

There is a wide range of materials from which to cut suitable gaskets for this purpose, such as asbestos, sheet rubber, felt and the like, even manila or heavy wrapping paper having been employed for the purpose. It is easiest to make a tight joint in an old crankcase with a special rubber gasket, but the life of the rubber is cut short by its being constantly wet with lubricating oil, at the same time being subjected to the heat of the motor, which is very destructive of this material. However, a good rubber gasket would last a season out with little trouble unless the motor runs very warm. Sheet asbestos or mineral wool felted together are better materials so far as durability is concerned. Whatever the material employed, a gasket the width of the faces of the joint should be cut, making careful allowance for any bolt holes or other obstructions so that the gasket fits perfectly and lies flat in place without stretching or puckering. The only point on which care is necessary in its application is to have the remains of the old gasket entirely removed and to put the new one in place without tearing, especially if it be of asbestos.

Some Queries Concerning Dry Cells.

Editor THE AUTOMOBILE:

[814.]—I would like to ask a few questions in regard to the use of dry cell batteries. I have a Ford runabout, on which I use dry cells exclusively. I use six cells to the set, battery box holding two sets. After running on these until they are a little over half

exhausted, or say 6 to 8 amperes remaining to each cell, I find that my engine will not run up to satisfactory speed, and also mis-fires very often. Is it in any way detrimental to change my wiring so as to throw all the 12 batteries on one set?

I have been doing this, and find that I get very good ignition service from the 12 cells.

On a new set of six dry cells I find that there is a total of about 12 amperes on an average. To wire up enough partly used cells to bring the total amperage up to the same amount, would I get as good service from these as I would from the new ones? If wiring these partly used cells should be discontinued, at what amperage should the cells be discarded for new ones? Any information on this subject will be appreciated.

W. A. GRAY.

Coleman, Tex.

It will do no harm to connect the two sets of six cells each in series-multiple—that is, so that the voltage of the twelve-cell battery still remains the same but the amperage or current is doubled. With your present arrangement the coil receives the amperage of one cell and the voltage of six, regardless of which set is being used; by altering the connections as mentioned after the cells have become partly exhausted, the amperage would be that of two cells, but as their output has already been practically halved by usage the result would be practically the same as using one fresh set. In fact, it is quite customary to wire up two sets of dry cells so that either may be used separately or both in series-multiple, the necessary connections being explained and illustrated in an article entitled "The Essential Elements of Electric Ignition," which appeared in THE AUTOMOBILE of the issue of February 21 last.

The service obtained from two sets of partly used cells wired up as mentioned will probably be found to be superior to that from a single set of new cells, in that the former will continue to give a uniform current output for a longer period, as they will not deteriorate quite so rapidly, due to the fact that the demand upon them for current is distributed over a larger number. Dry cells should be discarded when they no longer give satisfactory service, *i. e.*, the motor cannot be run steadily for any length of time without missing and cannot be speeded up, though it is always well to investigate other causes of ignition trouble before deciding that the battery is at fault. It is poor practise to frequently use an ammeter on dry cells, as it simply wastes their energy to no purpose; if more attention were given to testing the amount of current being consumed by the coils and the efficiency of the contacts of the timer, there would be less so-called battery trouble and dry cells would be found to last a great deal longer.

ANOTHER TIP FOR THE BENEFIT OF No. 779.

Editor THE AUTOMOBILE:

[817.]—If you will kindly allow me the space, would like to give my experience with the same trouble as No. 779. In all the engines, both automobile and marine, that have given this trouble, that have come under my notice, it has been from the same cause, *i. e.* too weak inlet valve springs; which allow the valve to chatter on its seat upon closing, instead of going shut and staying shut—a condition that obtains a great deal more frequently than is likely to be believed unless one starts to investigate.

In my own little machine with automatic inlet valve, the back-firing through the carbureter got so bad on one occasion that the engine stopped. I removed the spring and simply stretched it a little, put it back, and the engine started off O. K., and has been running ever since without any sign of back-firing.

Horizontal valves are much more prone to this trouble, whether automatic or mechanical, than vertical ones, especially after the stems have become worn a little through use.

Hoping that this will give Mr. J. C. Moore a "tip" as to a remedy for his trouble,

H. W. CYRUS.

Astoria, Ore.

HOW CAN THESE LAMPS BE KEPT LIGHTED?

Editor THE AUTOMOBILE:

[818.]—I have been running a 1907 Oldsmobile for some time, equipped with No. 626 Solar lamps. These lamps I find impossible to keep lighted, as the slightest jar puts them out, and I have found nobody as yet who can tell me a remedy. I keep them thoroughly cleaned, but still they go out. I never have trouble with the tall lamp, nor the gas lamps. Will you be so kind as to suggest a remedy, through your query department, and oblige one in the dark?

Berkeley, Cal.

W. G. WOOD.

WREAKING REVENGE ON THE AUTOMOBILE

By W. F. BRADLEY.

ONE may be as devoid of horsemanship as John Gilpin or as innocent on matters of equine anatomy as the average deep-sea sailor and yet be fully aware that the ways of the horse dealer are wonderful and fearful. With a few centuries of experience behind him, the art of transforming in a few seconds a noble beast into a wretched hack, or of temporarily rejuvenating him so skilfully that only the expert can find traces of the operation has had time to reach its highest development.

But the horse world is not the only one in which tricks play an important part. Specialists in every branch of sport can relate similar stories of cunning and knavery. The automobile, young as it is, has not escaped the evil. Visit the headquarters of any racing team on the eve of an important contest and note with what care the machines are guarded. Watched by keen eyes all day and guarded through the darkness as tenderly as a sick child, it is evident that some terror by night or pestilence that goeth forth at noonday is feared. The terrors are not imaginary, but have a strong personality in the unscrupulous rival who would stay at nothing to enhance his own chance of victory.

Knavery in the Cross-country Race Days.

In the early days in Europe, when races were held across country from town to town, attempts to cripple a rival's machine were comparatively easy of execution and consequently of frequent occurrence. Five minutes alone with the machine in the shed where it was stored for the night and a trained hand could so weaken a powerful speed monster that it would collapse a few hours later. One of the most skilled European drivers discovered on taking over his machine on the morning of the third day that his brakes had been tampered with and that the clutch was no longer performing its accustomed duties. An hour's vigorous work and all was put in order again and the race finally won. Had the evildoer had more time or the driver been less skilled another tale might have been told. Under present conditions with races on guarded courses, begun and finished the same day, such practices are almost impossible. Before the race only picked men in whom every confidence can be placed are allowed to handle the machines, and during the event attempts at fraud are utterly out of the question. The manner in which the racers engaged in the French Grand Prix last year were guarded between the first and second day's event shows that unscrupulousness was believed to still exist. Locked in the center of a large field, with guardians watching over them and troops patrolling the entire enclosure, the precautions resembled those observed in connection with a royal palace.

When the Private Automobilist Is the Victim.

Racing is not the only domain in which the upscrupulous automobilist will display his mischievous qualities. Your private chauffeur may have angry feelings because of a sudden dismissal, and before leaving administers a dose of medicine to your valuable machine, the effects of which will only be felt when the man is out of your reach. Only a few months ago a prominent British constructor was loud in his accusations of French workmen, who, he declared, had tampered with the gear box of a machine sent across the Channel to receive a French body. How much truth and how much international jealousy existed in the matter has never been determined.

Pouring water in the gasoline is but a crude method of wreaking vengeance on a rival and one that is now abandoned to the greenhorn. A little sulphuric acid put into the cylinders through the pet cock is one of the simplest and at the same time most certain methods of placing a car out of service. In a few minutes the acid has done its deadly work and the owner may spend hours in vain conjectures as to the cause of a sudden loss of

compression. Motorcycles with exhaust at the end of the strokes are an easy prey of the unscrupulous rival with a syringe loaded with sulphuric acid. A handful of emery powder dropped in the lubricating oil has apparently no ill effects on the health of the machine, but in an hour or two there will be play in every part and damage done which can only be remedied by a thorough overhauling of the machine.

Not Dangerous, but Exceedingly Annoying Fakes.

There are a score of methods by which a revengeful chauffeur can immobilize an automobile with little fear of detection and with still less danger of criminal prosecution; without doing any material injury to the machine he can give to his rival hours of weary searching. A small wooden plug pushed into the gasoline supply pipe will cause a breakdown which will disgust a driver with Job-like patience. Even more annoying is a short circuit caused by carefully cutting the insulation, severing the wire and closing all up again so as to avoid detection. An experienced driver, victim of such a scheme, knows immediately that he has a short circuit, but long experience will not remove the necessity of examining every inch of the wiring and searching with minute patience for hours before the fatal spot is discovered. Another easy one is to slacken the clutch; at first no ill effects are experienced, but immediately a grade of any difficulty is attempted trouble begins. A dozen balls or a couple of bolts dropped into the gear box reduce the most magnificent set of gears to a ragged condition before the operator of the car has time to realize that he is the victim of an evildoer.

Procedures of the Deep-Dyed Villain.

More to be feared is the revengeful fiend who, not content with disabling a machine, will place the lives of the occupants in danger. With a chisel and a hammer the cables operating the brakes will be partly severed. The first time it is necessary to use them, perhaps at a critical moment, they snap like a violin cord. More dangerous still are attacks on the steering gear; the withdrawal of a cotter pin, the slackening of a nut and the villainous deed is done. One case at least is on record of the steering gear having been filed. After the accident, which, fortunately, had no serious results, the traces of the criminal tool were readily discovered. In the same category may be classed attentions to the road wheels which transform these organs into veritable death traps.

Fortunately there is a large amount of amour propre among the corporation of chauffeurs, and for one unkind action a thousand helpful deeds could be recorded. The average man hates to injure a machine as much as he dislikes to inflict injury on an animal. Where, however, it is feared that the knave has been at work an acquaintance with the methods he is most likely to adopt is exceedingly useful and may be the cause of preventing much annoyance, costly repairs, or even of preserving human life.

A. A. A. NATIONAL LAW WOULD PREVENT THIS.

ATLANTA, GA., July 8.—The Chattanooga autoists who have been made defendants in the suits for alleged violations of the automobile laws of Catoosa County, Ga., will probably require requisition papers before they will go to Ringgold and make bond for their appearance in the superior court of Catoosa County next August. It is understood that Sheriff Pendleton's mission to Chattanooga was futile. He tried to persuade the defendants to go to Ringgold and make bond, but they are said to have told him they would do nothing of the kind. They insisted that they have violated no law and that the Georgia officers have been doing a land-office business in a fee-grabbing crusade. It is understood that the autoists will employ counsel and test the validity of the action of the officers.



CANADA has taken up the automobile in earnest and shortly is to make a determined bid for her share of the world's trade in cars, the recent show held in Montreal having demonstrated that makers over the border are waking up to the possibilities of automobile manufacture. One of the exhibits that attracted a great deal of favorable attention was that of the Comet Company, Ltd., which has been incorporated to make automobiles with a capital of \$250,000. A factory has already been erected in Montreal and actual production commenced, so that for 1908 the Comet cars will be a strong factor in the Canadian market. The plant consists of a two-story building affording 75,000 square feet of floor space, and it is the intention of the company to expand considerably in the near future.

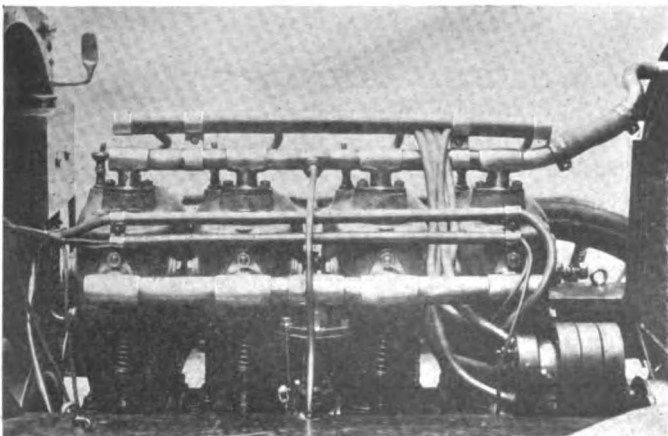
The Comet car, of which there will be two models—a 24-horsepower four-cylinder car and a 40-horsepower six-cylinder car for 1908—is the work of Berne Nadall, who has been identified with automobiling for the past decade, having been one of the charter

members of the now Royal Automobile Club, and who is also known as the inventor of the Nadall detachable tire. For the present most of the material is being imported from the Continent and is of the grade used in some of the best known European makes of cars, but it is the intention to eventually make practically everything that goes into the car, even including such parts as frames, springs, wheels and the like, generally considered the work of the specialist by even the largest builders here.

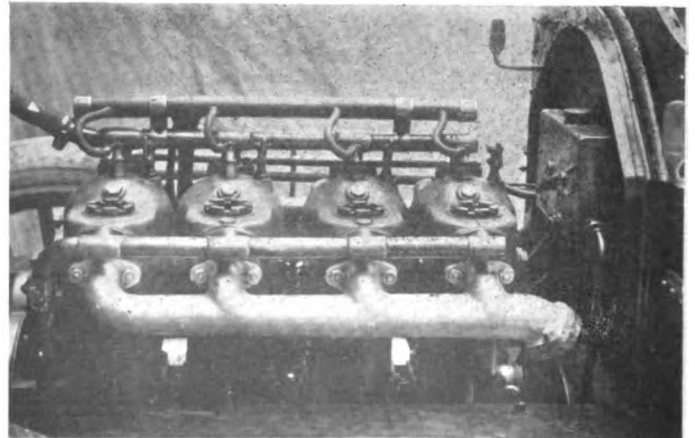
The leading model for 1908 will naturally be the 40-horsepower six-cylinder car, the cylinders of which are to have a bore of 100 mm. and a stroke of 120 mm. The cylinders are independent and the castings are imported from France in the rough. The valves are oppositely disposed and mechanically operated and the motor is designed to give its normal output at a speed of 1,000 r. p. m. Chrome-nickel steel is employed for the crankshaft, which is cut from a solid billet and is supported on large French phosphor bronze bearings. The continuous circulating system of lubrication, using the crankshaft as a well and with a single sight feed on the dash, is employed, due to its simplicity and great efficiency, while the ignition is of the high tension type, employing a Bassé-Michel magneto on one side and a synchronous system, using a single non-vibrating coil on the other, fed by a set of accumulators. A gear-driven pump feeding a tubular fin type of radiator, with honeycomb front and supplemented by a belt-driven fan running on ball bearings, constitutes the cooling system, fan-shaped spokes also being cast in the flywheel. The carbureter is patterned after French standards and is water-jacketed.

The Hele-Shaw multiple disc clutch, formed of alternate bronze and steel members, is the first step in the transmission of the power, while the change-speed gear is of the sliding type and selective operation, providing four speeds forward and the usual *marche arrière*, the direct being on the third speed, while the fourth is geared about 15 per cent. higher. All the pinions are of chrome-nickel steel, as are the gear shafts, which are supported on Hoffman annular type ball bearings. Final drive is by propeller shaft. The foundation of the chassis consists of a pressed steel frame of the standard channel section and of the latest French type; chrome-nickel steel is the material used and the frame as a whole is thoroughly reinforced. It is supported on the standard type of semi-elliptic springs, measuring 40 inches front and about 50 inches rear, supplied by Prunelle et Cie., while the rear axle is from Malicet et Blin, all bearings in the latter being of the M. & B. annular ball type. Thirty-six-inch wheels are fitted and are equipped with 920 by 120 mm. tires rear and 105 mm. front, corresponding to 4 3-4 by 4 1-4 inches. An innovation is to be found in the fuel tank, which in addition to being divided into two compartments, one of which carries 15 gallons of gasoline and the other a two-gallon reserve supply, also has compartments for a gallon of lubricating oil and a gallon of kerosene.

From the foregoing it is evident that the makers in planning their car have sought to come as near to the production of a high-class standard design of car as it is possible to make.



INLET SIDE OF COMET FOUR-CYLINDER CAR SHOWING MAGNETO.



VIEW FROM EXHAUST SIDE OF MOTOR SHOWING OIL RESERVOIR.



known makers. They are all mechanically operated from two separate camshafts. The pistons are cast from the same material as the cylinders; they are fitted with three compression rings and an oil ring placed at the bottom, and in finishing are ground parallel with the bottom ring, with a slight taper at the head to compensate for the greater expansion at this point due to the fact that it comes in direct contact with the heat of the explosion. The heads of the pistons are made dome-shaped. Connecting rods are of drop-forged nickel steel and at the big ends are fitted with split bushings and babbitt bearings made adjustable and firmly held by studs and castellated nuts. The crankshaft is turned from a solid billet of chrome-nickel steel and its journals are ground to .003 inch in finishing; it is supported on five babbitt bearings of generous size. An automatic self-compensating carbureter of ample size and modern design constitutes the gas-producing device. In order to provide against the results of carelessness in winter, the sides of the water jackets of each cylinder are enclosed by thin aluminum plates, thus forming an effective provision against damage through freezing. Starting is usually accomplished from the seat on the Atwater-Kent system, but to facilitate the operation of cranking a compression release is provided, the lever of which is placed on the dash in an accessible position.

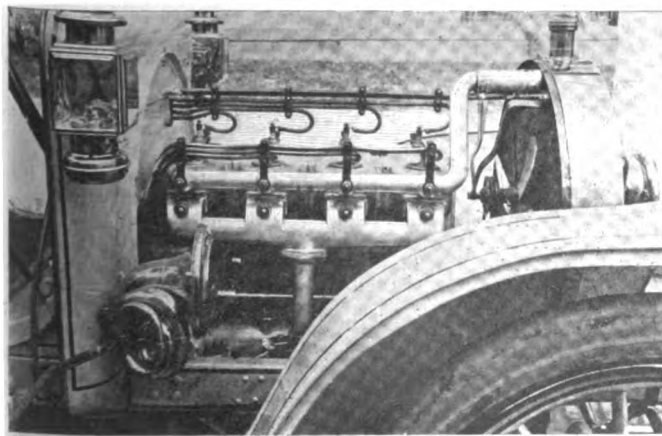
The same painstaking attention that has been paid to motor design and constructional detail has likewise been devoted to making the equipment of the power plant as fine as can be procured, which means a great deal in the service rendered by a car, as more than 90 per cent. of the trouble experienced with an automobile arises from petty defections that could be avoided at the outset by the maker. This is particularly noticeable in the case of the ignition; a duplicate set has been provided throughout, one side consisting of an Atwater-Kent single coil and distributor system to be used in connection with a set of accumulators, while the other is an entirely self-contained and independent set in the shape of a Simms-Bosch high-tension magneto. There are two sets of plugs, so that both systems are independent, those for the former being mounted in the center of the cylinder head, while those used with the magneto are mounted directly over the inlet valves, as this system generally comes in for the greatest amount of use.

A noticeable feature of merit about the power plant of the Meteor is the manner of its suspension; the motor itself and the change-speed gear and clutch really form an integral unit, which is held in the frame as such by what is termed a diamond suspension, giving six points of support—in other words, a double three-point suspension, which on account of the perfect division and distribution of the weight gives great flexibility, and this in connection with the integral feature of the combined power plant and transmission makes disalignment of any of the components of these parts a practical impossibility.

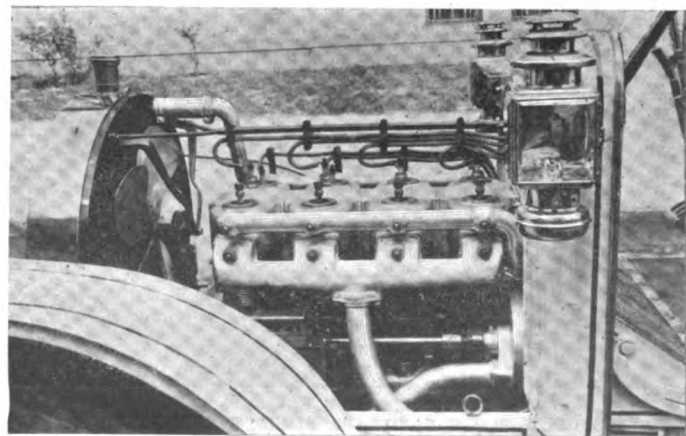
One of the special features of the Meteor is to be found in the change-speed gear of the car. It is a matter of common knowledge that the practise of sliding moving gears into mesh

"WISDOM seldom comes except by experience, and it is the possession of that experience that leads us to thus preface our catalogue," say the makers of the Meteor, the Meteor Automobile Works, Bettendorf, Ia., so that while the Meteor is a new bidder for favor in the American market, it is not an experiment in any sense of the word, but an example of good standard design that is the result of ripe experience in building automobiles as well as knowing how not to build them, gleaned by close observation of the trend of construction in the past half decade or more in this country and abroad.

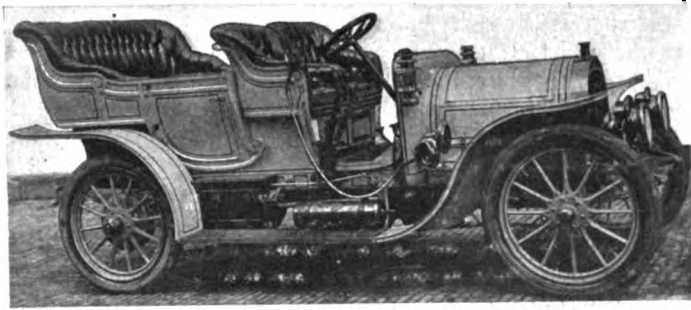
For the present but one chassis is being built, though three models are listed, a regulation touring car, a runabout with rumble seat and a runabout with turtle deck. The motor cylinders are cast from a special grade of close-grained iron imported from England for the purpose and each is an independent unit. The valves are oppositely disposed and are located in outboard valve chambers in accordance with the practise of several well-



SIMPLE TYPE OF INLET MANIFOLD EMPLOYED ON THE METEOR.



EXHAUST SIDE SHOWING LOCATION OF CIRCULATING PIPE.



VIEW OF THE METEOR CAR FROM THE OPERATOR'S SIDE.

goes counter to all principles of mechanics, both practical and theoretical, but, like many another thing, usage has demonstrated that theory was not more than half right and the gear set of this type has survived and been greatly improved. The makers of the Meteor, however, claim that their change-speed gear is built on absolutely correct mechanical principles and is, moreover, the only one of its kind. It provides four speeds forward, with two reverse, and is of the positive clutch, selective type, all pinions of the entire set being constantly in mesh and when on the direct drive all are idle. Both the main and jackshaft are supported on imported Hess-Bright ball bearings of generous dimensions to transmit the power. Though not intended to be shifted into and out of mesh, the same materials and the same care have been employed in the making of the pinions of the gear-set, as if they were to be used for this strenuous service, so that the makers absolutely guarantee the life of the pinions for a year and will replace them should they break under any conditions of driving, short of a wreck. The clutch is also a special design consisting of a single aluminum friction disc, which when fully engaged is designed to be locked positively at four points to the flywheel itself.

The foundation of the chassis consists of the usual pressed steel frame, carried, in this instance, on Timken roller-bearing front and rear axles, drive being by propeller shaft. Thirty-six-inch wheels are fitted and are equipped with four-inch tires on the front and four and a half on the rear, Continentals forming the regular equipment of the car. Two sets of brakes are fitted, centered in special drums on the rear wheels, in accordance with the highest standard practise where this essential is concerned, but a *départure* has been made by constituting the external contracting set as the running brake and also by interconnecting it with the clutch. The internal expanding set forms the emergency brake and is operated by the usual hand lever at the side. The bodies fitted are of an attractive straight-line type and are built under the supervision of a bodymaker formerly connected with one of the large Continental works.



HAYNES GLIDDEN CAR, AND APPERSON "JACKRABBIT" ENJOYING A FRIENDLY BRUSH ON THE ROAD.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Oct. 31-Nov. 7.—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
 Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
 Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon, C. R. Mabley, secretary and manager.

Races, Hill-Climbs, etc.

- July 13—Rochester, N. Y., Gymkhana Sports, Genesee Valley Park, Rochester Automobile Club.
 July 13—Chicago, Race Meet for the Entertainment of the Glidden Tourists, Chicago Automobile Club.
 July 25-28—Providence, R. I., Annual Meet of the Federation of American Motorcyclists.
 July 27—Schooley Mountain Hill Climb, near German Valley, N. J. W. J. Morgan, manager, Bretton Hall, New York City.
 Aug. 1.....—Algonquin, Ill., Hill Climb, Chicago Motor Club and Chicago Automobile Trade Association.
 Aug. 5-10.....—Atlantic City, N. J., Automobile Carnival, Atlantic City Automobile Club.
 Aug. 9-10.....—New York City, Brighton Beach Track, 24-hour Automobile Race, United States Motor Racing Association.
 Sept. 2.....—Bridgeport, Conn., Labor Day Hill Climb, Sport Hill, Bridgeport Automobile Club.
 Sept. 5.....—Chicago, Cedar Lake Economy Run, Chicago Motor Club and Chicago Automobile Trade Ass'n.
 Sept. 14.....—Albany, N. Y., 95-mile Road Race, under the auspices of the Albany Automobile Club.
 Oct. 19—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

Motor Boat Races.

- July 20—New York to Marblehead, Mass., 270-mile Motor Boat Race, New Rochelle Yacht Club.
 Aug. 13-15.....—Chippewa Bay, St. Lawrence River, Gold Challenge Cup Race, American Power Boat Ass'n.
 Aug. 22.....—New York to Jamestown (Va.), Annual Cruise, American Power Boat Association.
 Sept. 2-6.....—Jamestown (Va.) Exposition Motor Boat Races.

FOREIGN.

Shows.

- Sept. 28-Oct. 7.—Denmark, Copenhagen International Automobile Show.
 Nov. 11-23.....—London, Olympia Motor Show.
 Nov. 12-Dec. 1.—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.

Races, Hill-Climbs, etc.

- July 15-18—Ostend Week, Record Trials, Automobile Club of Belgium.
 July 25—Ardennes Circuit, Belgium (German rules).
 July 26—Ardennes Circuit, Belgium (Tourists).
 July 27—Ardennes Circuit, Belgium (Grand Prix rules).
 July 31-Aug. 8...—Belgium Regularity Contest for Touring Cars, A. C. of Belgium.
 Aug. 1-7.....—Criterium of France, 1,750 Miles Touring Competition and 250-mile Race for the Press Cup, A. C. of France.
 Aug. 3.....—Isle of Wight, British International Cup, Motor Boat Race.
 Aug. 11-29.....—France, Coupe de Auvergne.
 Sept. 1-2—Italy, Brescia Circuit, Florio Cup, A. C. of Italy.
 Sept. 15—Austria, Semmering Hill Climb, Austrian Automobile Club.
 Oct. 1-15—Paris, Electric Vehicle Competition, Automobile Club of France.
 Oct. 13.....—France, near Paris, Dourdan Kilometer Speed Tests.
 Oct. 20—France, Gaillon Hill Climb.
 Nov. 1-15.....—France, Volturette Contest near Paris.
 July 14, 1908....—Paris to London, Aerial Race.

CALIFORNIA'S WIDESPREAD INTEREST IN THE AUTO

By FREDERICK PABST.

LOS ANGELES, CAL., July 6.—Eleven thousand automobiles are now whirling over the roads of California, and each day the Secretary of State at Sacramento receives a bunch of new applications for numbers. Before the summer is over there will be over 15,000 machines in this State. Several months ago San Francisco and Los Angeles had about 3,000 cars each, but during the last couple of months the "City of the Angels" has fallen behind to a slight extent and now has about 4,000 cars to 4,500 in the northern city. This is due to the terrific condition of the streets in the earthquake town, which has caused the cars to be hammered to pieces. These conditions are such that a person must see and experience to fully realize them. But as the situation there makes it almost a necessity for a business man to have an automobile the business should continue good.

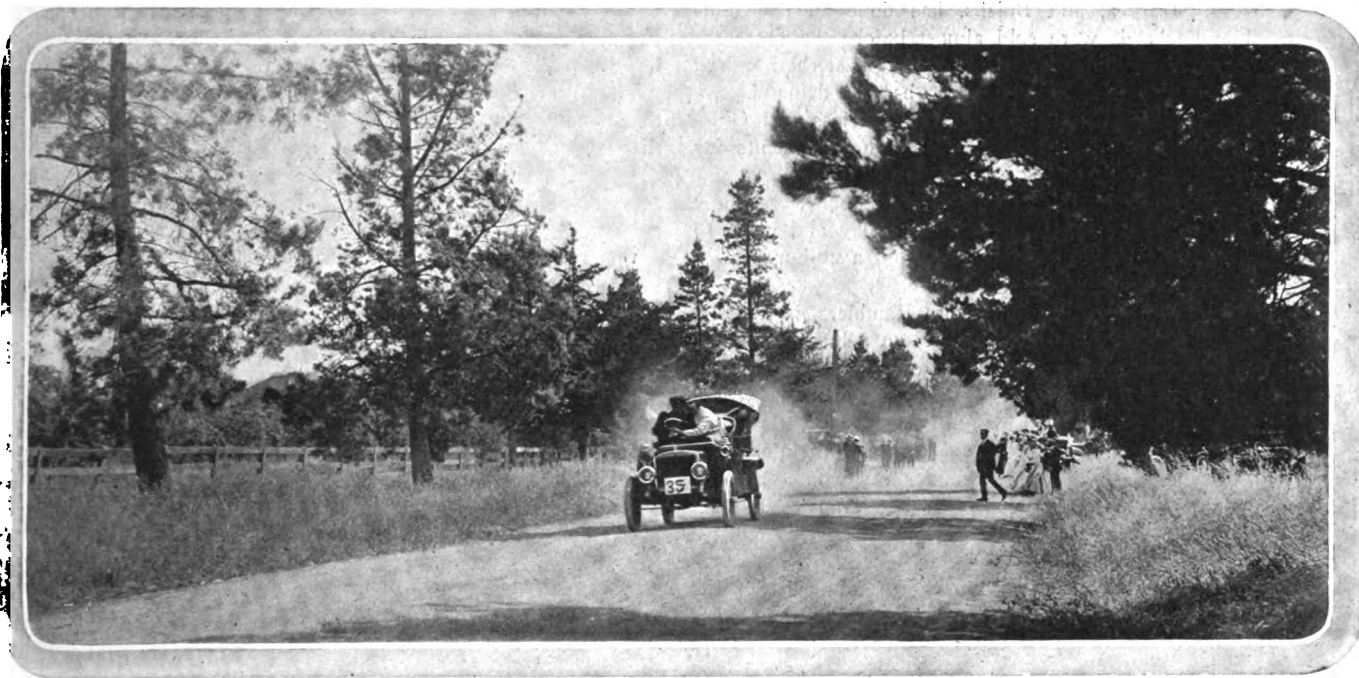
Business has been unusually healthy in Los Angeles, and, despite the fact that already seventy-six different makes are repre-

autos will be found to greatly outnumber any other transportation vehicle. Not only are there more machines owned here than in any other city in proportion to its population, but there are more cars in rental and all are making good money.

Los Angeles Has a Strong Trade Organization.

The dealers of Los Angeles have one of the best organized and most successful dealers' associations in the country. It is in its third year and has accomplished many things of benefit to the autoists of the entire State. Nothing but the efforts of this organization prevented the passage of two very foolish bills by the State Legislature. One was to force the owners to equip machines with straps in the tonneau. Another closed certain mountain roads to autos. A red-hot protest from the local dealers was followed by the killing of both of these bills.

The organization has also pulled off many successful hill



MRS. J. C. BROADIE, OF OAKLAND, COMPETING IN THE MITCHELL MOTOR CAR COMPANY'S CONTEST AT SAN JOSE, JUNE 7

sented in this city, others are entering the field constantly, and this season should see practically every car of any standing in the Southern California field.

Importance of California Field Now Recognized.

It has not been until lately that the manufacturers have come to recognize the importance of the California field. Anything seemed to have first call over California in the matter of deliveries, and as a result the companies which saw the opening and shot cars into this field disposed of many times as many as those on which shipments were slow. The automobile business in every branch is not only in a healthy condition now, but it should continue so. The city is growing to a remarkable extent, and a majority of the people who come to Los Angeles to live come with some money. And once here the spirit is in the air and the person who never dreamed of owning an automobile will soon be reading the automobile papers and haunting auto row.

California is blessed with autoing the year round, and when one person in about every sixty owns an automobile unpopular indeed is the man or woman who doesn't number an owner among his or her friends. Los Angeles can truly be said to be automobile mad. At any hour of the day or night on the streets

climbs, race meets and endurance runs. Its first was a couple of years ago to Santa Barbara. Over fifty cars competed, and, considering the hardships of the road and the fact that this was the first event of the kind, the run was highly successful. Two years ago the Pasadena-Altadena hill climb was inaugurated for February 22 and was one of the best events of the kind held in the country.

One year ago the endurance run "Round the Kite" was held and took rank at that time as the largest event in this country. One hundred and six cars entered and 101 started. The first day's trip was through the beautiful valley east of Los Angeles, passing through the towns of Pasadena, Monrovia, Pomona, Claremont, Ontario, San Bernardino and Redlands to Riverside, where the night was spent. The next day's run was through the Santa Ana canyon to Los Angeles. This was followed by a second Altadena hill climb, and a few weeks ago a successful race meet was pulled off at Agricultural Park. Last January this Association gave an automobile show which was voted one of the most artistic in the country.

W. K. Cowan was the first president. He is the local Rambler agent. A. J. Smith, representing the Elmore, was the next president, and at a recent meeting J. W. Willcox, of the Maxwell-

Briscoe-Willcox Company, was elected. Leon T. Shettler, the Reo representative, has been secretary for two terms. He is a hustler and has been a leader in all the Association's successful undertakings.

An Air of Prosperity Exists on the Row.

There is an air of prosperity through automobile row. The old dealers are doing well and the new firms are selling an unusually large number of machines. Among the tire and supply men business is phenomenal.

The electrics have had a boom here during the last year. The Electrical Construction Company is doing most of this business, having the agency for the Waverly, Baker and Columbus. B. L. Brown, formerly of Pittsburg and St. Louis, is responsible for the big electric business. He took hold when this branch of the business was not being pushed and has done wonders.

L. T. Shettler has had a big year with the Reo. He has the best organized selling force in the State, having made the boast that practically every live sub-agent in the State was selling Reos as fast as he could get them.

The Western Motor Car Company, with a big line, Packard, Thomas, Stevens-Duryea, and Buicks, has done an enormous business. The Packards were sold almost before the first cars reached here, and the number of Buicks sold is past the hundred mark. The two Thomas models have also been in demand.

The H. O. Harrison Company, with the Peerless and Oldsmobile, has placed fifty cars on the market. The allotments for both makes are almost exhausted.

The Auto Vehicle Company, makers of the Tourist, are many orders behind now, with the factory working day and night to catch up. This company is building a 22 and a 40-horsepower touring car of modern construction.

W. K. Cowan, who handles nothing but Ramblers, is the veteran of all dealers. He has been building up a business which sticks to the Rambler and can see nothing else.

D. M. Lee, with the Cadillac, has been handicapped by late arrival of cars, but he has placed many of the sturdy little single cylinder machines and has orders booked three months ahead for the G and H models. The single cylinder car won a host of friends by making a non-stop run from Los Angeles to San Francisco and return. The 30-horsepower car also won a fifty-mile race in good time recently.

A. J. Smith has sold his entire allotment of four-cylinder Elmore's and has but few of the three-cylinder variety remaining. His car recently won a fifty-mile track race here.

The Greer-Robbins Company, agents for the Mitchell, has recently moved into a large new garage and salesroom. The company has twenty-one orders unfilled.

Captain H. D. Ryus had orders taken for fifteen White steamers before a single car reached Los Angeles. The week of the arrival of the first steamer of the new type six additional cars were sold. The White Garage Company has also done well with the Pope-Hartford and Pope-Toledo.

The Success Automobile Company has the Locomobile and Winton, and has suffered by late shipments. This company is now offering the Panhard, Simplex, Mercedes, Renault and the Italian Isotta Fraschini car.

E. J. Bennett has made the Wayne popular in Southern California.

The Maxwell Company has been unable to keep up with the demand, and all other makes report flourishing business.

Supply Business Has Been Phenomenal.

With all these automobiles being sold, the supply business has naturally been phenomenal. W. D. Newerf, who has the Good-year tire for the Coast, has just placed an order for \$60,000 worth of tires and will establish agencies in Portland, Seattle, Fresno, San Diego, San Francisco, Honolulu and other towns large enough to support the business.

The Western Rubber Company, with Guy West at the head of the management, is doing more with the popular G and J tire than any Western company has ever done before.

The Chanslor-Lyon Company is probably doing the largest accessory business in the city. This firm has the sole agency for a large line and also handles the Diamond tires.

The E. A. Featherstone Company has the largest supply house in the city and has a large following. E. A. Featherstone is the head of a company which recently purchased the interests of Heineman and Pearson.

John T. Bill has the motorcycle business all but cornered. He has sold over 100 machines during the last three months and to care for his retail and wholesale business it has been necessary to double the store room.

Eddie Helm, the manager for the Gorham Rubber Company, has had the best year the company has known. Mr. Helm has placed the Goodrich tires in an enviable position in Southern California.

The general opinion among the local dealers is that business will continue to improve from month to month. The summer may be a bit quiet, but by September things will be humming.

WITHOUT FOOD AND GASOLINE ON GOBI DESERT

PARIS, July 2.—Adventures are coming thick and fast to contestants in the Pekin-Paris automobile race—which is no race at all, but a go-as-you-please help-one-another tour. Cormier, who cables when he can find a telegraph station, states that they are on the Gobi Desert, with Prince Borghese, on an Itala, ahead and the remainder, consisting of two De Dion Boutons, a Spyker and a Contal tricar, following on as best they can. The Tartans are the finest fellows in the world. They supply all kinds of food and furnish camels' milk—the most detestable stuff imaginable—with the agility of a bartender. When the Spyker was stranded with an empty gasoline tank they came to the rescue. Twice on the Gobi Desert the Itala sank in the morasses, and was only rescued after terrible exertions by wild Mongolians, with oxen.

On another occasion, when the Spyker had taken over a large portion of the baggage of the Contal tricar, the gasoline supply became exhausted. Cormier lent four liters, all he could spare, and when this was exhausted the party pitched their tent with one chicken, an army biscuit and a quart of water as total rations.

After twenty-four hours a Mongolian woman appeared on a camel and supplied a few drops of muddy water. By signs and by showing a rope she was made to understand that a tow was needed. Her camel, however, was insufficient to the task, dragging the car forty yards, then leaving it still deeper in the sand. The second night the party had not courage to erect the tent, and were further disheartened by a party of Mongols refusing to give help. Godard, the Spyker driver, went out alone to search for help, and after an absence of two hours came back with a troop of horsemen, who, after being paid in advance, carried a message to the nearest telegraph station and caused help to be brought. The record travel for one day across the Gobi Desert was 160 miles.

Later despatches from Cormier announce that they have crossed the Gobi and are now waiting at Ourga for the Spyker and the Contal tricar, left behind on the desert, to join them, when the complete party will commence the passage across Siberia. The last day on the desert they were able to travel 150 miles, which, over rough country without a semblance of a road, is excellent.



MACHINE USED BY THE EMULSIFIX TAR SPREADING SYSTEM.

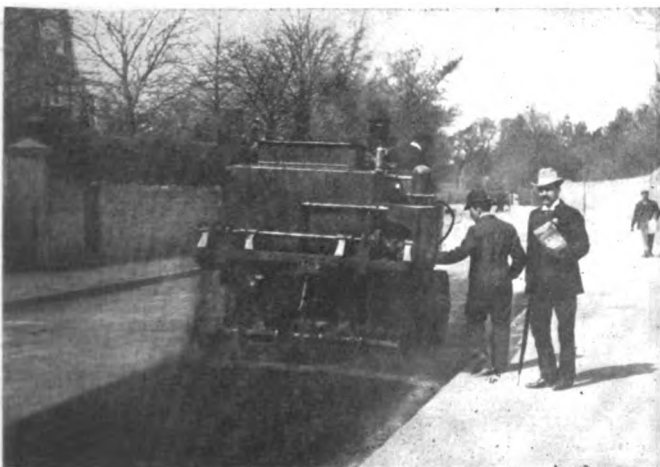
TAR-SPREADING EXPERIMENTS IN ENGLAND.

LONDON, July 1.—Some experiments of great interest and importance have been carried out by the Roads Improvement Association in conjunction with the Motor Union and the R. A. C. After investigation with various deliquescent chemicals, the general opinion of road surveyors and other responsible judges inclines towards tar coating as the most satisfactory and economical preventative of dust raising. Resulting from this feeling the present competition was set on foot to test the respective merits of various machines designed to supersede the old method of tar painting the road surface by manual labor.

Seven machines were assembled on the Hownslow-Staines road near London, and before an interested crowd of officials and spectators each apparatus was set to work on separate quarter-mile sections, half the road being covered in the morning and the other portion later in the day, so as to cause no interference with the road traffic. Crude coal tar was supplied by the association to the competitors at cost price, and the general use of this material rendered subsequent observation of the results far more easy and facilitated comparison.

The first machine, Aitken's pneumatic tar sprayer, consisted of an attachment capable of being fitted to any steam wagon. The tar is heated in its tank by steam pipes and an air pump compresses air into a receiver up to a pressure of 150 pounds per square inch. When normal pressure has been reached a separate tar pump forces the heated material into the receiver until the pressure reaches 250 lbs. per square inch; the machine is then ready for use. The distributing pipes are fitted with four discharge nozzles which spray the tar in a finely diffused condition into the top layers of the road surface.

The Emulsifix machine consists mainly of a large mixing chamber into which water and tar are fed. Revolving paddles spray the mixture into an emulsified compound which is sprayed



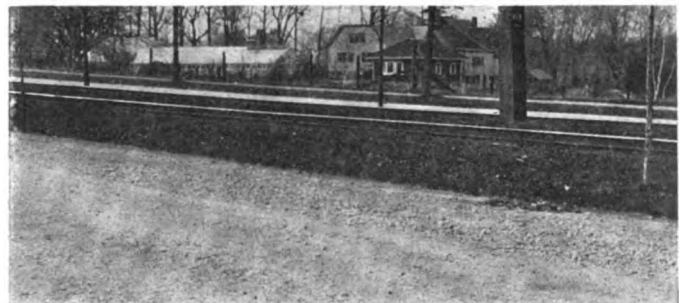
TARSPRA MACHINE, WHICH SPREADS THE TAR UNDER PRESSURE.]

by gravity on to the road surface. When the water has evaporated it is claimed that the finely divided tar oil will bind the surface materials together. The Laissaily system requires two separate machines, one to heat up the tar and a second or more machines to spread the heated compound. Steam generated on the heating machine warms the tar by coiled pipes to a temperature of about 212 degrees F. At this stage the delivery carts are supplied by steam pressure and the tar is afterwards sprayed by gravity onto the road in front of heavily weighted brushes which spread the tar in a thin and uniform coating. In similar manner the Tarmaciser machine brushes the heated tar into the road surface and with an additional set of brushes in front, the loose dust is removed from the track. Unfortunately this vehicle met with an accident on its way to the scene of the competition and so its performance could not be witnessed. Three Tarspra machines were tried, differing only in size. A mechanically driven pump forces the tar at 200 pounds pressure through spraying nozzles by two opposing jets which impinge to-



SECTION OF NEWTON BOULEVARD TREATED WITH TARVIA.

gether and spray the tar in finely divided state. Thwaite's machine, which completed the list, sprayed the tar in conjunction with superheated steam, the temperature of the issuing material being over 300 degrees F.



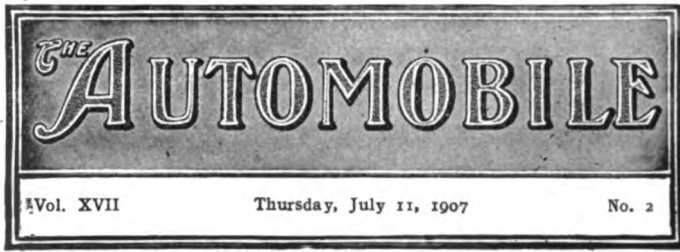
ANOTHER SECTION OF SAME ROAD NOT TREATED WITH TARVIA.

All these machines were tried later on a gravel-surfaced road and, as before, careful observation was made of the amount of tar consumed and the time taken. When a sufficient period has elapsed to indicate the relative wearing qualities of the various sections of the road, the awards of the judges will be made, first prize consisting of \$550 and a gold medal, with \$250 and silver medal for next place.

On two following days tests were made of some nine tar preparations which had been entered. The majority of these consisted of an emulsion of tar, oil and water, with the addition of caustic soda in some cases to retain moisture.

HOW TARVIATED ROADS ARE STANDING UP.

In the fall of 1906 numerous stretches of the famous Newton boulevard near Boston were covered with Tarvia to see the comparative effect of the winter and spring months on the surfaces treated and those not treated. The two illustrations above shown, from photographs made this spring, tell their own story of the advantages of tar treatment.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor
R. Z. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
L. R. SMITH FRANK B. BARNETT
W. I. RALPH, 1025 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union (including Canada) - - - - - One Year, 3.00

To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hilfe & Sons, Limited, 20, Tudor Street, London, E. C
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second class matter.
The Automobile is a consolidation of The Automobile (monthly) and the
Motor Review (weekly).

Copies printed in 1905, - - - - -	730,000
" " in 1906, - - - - -	791,000
" " This Issue - - - - -	16,000
" " Since January 1, - - - - -	455,150

Greatest Prosperity of the American Auto Industry. Scarcely a week passes without the recording of the fact that some builder, well known through his standing in the American industry, has found expansion imperative in order to keep pace with the demand made upon his manufacturing departments. Not that this condition is either temporary or unusual; last year saw the erection of a very large number of new buildings to already extensive plants, and the first half of the present year has been productive of a far greater number. But the most significant fact to be observed in this general process of expansion is that the firms that found it necessary to greatly increase their facilities but a twelvemonth ago are, in very many instances, the same builders who are again reporting the erection of new buildings that mean a tremendous increase in next year's total output of American cars.

It is, moreover, a matter for congratulation that this is the case rather than that new capital seeking wholly unwarranted and totally disproportionate returns for the outlay, should be attracted to this field, thus giving it an artificial as well as dangerous air of prosperity. In short, there is not the faintest suspicion of boom conditions in the American industry to-day despite the fact that it has more than doubled in the past two years. Practically 90 per cent. of this phenomenal growth does not represent an influx of small capitalists into a promised El Dorado such as that which threatened to retard the prospects of the industry in 1903, but consists of the addition of new facilities to plants already the largest of their kind, and the names of whose sponsors are associated with cars that form the backbone of American automobile production.

Considered statistically, the increase in the capital invested—that is, money actually spent for the erection of buildings and the purchase of machinery, will doubtless run up into many millions, while the greater facilities at hand mean an increase in the annual production—already the greatest of the world's automobile producing countries—of many thousands of cars.

Is there an outlet for such a huge number? And can they be produced and placed on the market without precipitating the very condition of affairs that every conservative maker is most anxious to avoid. Trade conditions in the past two seasons supply an answer that could hardly be more satisfactory to all concerned; though it is the lustiest infant that the world has ever seen, the automobile industry is yet in its infancy, and it would be idle to attempt to prophesy its future. Its growth has been characterized by legitimate expansion in accordance with the demand for its products in a manner that has seldom, if ever, been witnessed before, and a continuance of the same policy means long-continued prosperity.



Vogue of the Twenty-four Hour Automobile Race.

In the present great popularity of what has come to be familiarly known as "chasing round the clock" is to be seen but one manifestation of the demand for a more strenuous form of contest than has hitherto been commonly looked upon as sufficient to try the merits of the up-to-date automobile. Record after record has gone down—literally annihilated, so great has the margin been by which it has been beaten, finally culminating in the truly phenomenal performance of S. F. Edge on the new Brooklands autodrome in England, whose feat of having averaged considerably better than a mile a minute for twenty-four hours, including all stops for refreshment, tires, fuel, and the like, must go down into history as the first of a line of startling feats of the same character that will doubtless follow, now that their achievement has been made possible by the provision of a proper course upon which to attempt them.

Henceforward long distance races of this character cannot possibly be other than a question of human endurance. It has been amply demonstrated time and again that the limit of the machine is still far from being a known quantity, while that of the driver is well recognized and must always be taken into consideration. But to revert to that phase of the subject dwelt upon first, it is evident that the form of testing for endurance and other qualities, familiarly known to the vernacular as "joy riding," is no more the measure of a car's capacity in any particular than the same distance covered over well-paved streets would be. There is still a large part of the non-autoing public that is waiting to be shown, and the ease with which the up-to-date car can make clockwork records on most of the tests hitherto in vogue has been responsible for the general demand for something a bit more strenuous. At present the answer to the call appears to have taken the shape of the twenty-four hour race, and, judging from some of the performances, this must soon lose its keen edge of interest, and then there will be a demand for something harder. Following in the footsteps of the bicycle, this would doubtless be the six-day "go-as-you-please."



Fourth Annual A. A. A. Tour Promises Good Results.

Of undoubted good to the automobile industry will be the Fourth Annual Tour of the A. A. A., which started from Cleveland yesterday morning and will conclude in New York City on July 24. Nearly a hundred motor-driven vehicles, the greater part of them engaged in competing for the Glidden and Hower trophies, will travel some 1,500 miles, over all kinds of roads, and it is safe to prophesy that there will be few to fall by the wayside, and that the tour as a whole will reflect unmistakably the stanchness and reliability of the American automobile, which is now the equal of any built.

INDEPENDENTS TO SUPPORT CHICAGO SHOW.

After considerable deliberation on the part of the executive committee of the American Motor Car Manufacturers' Association, the conservative element dominated the situation and the Association as a whole has decided to bow to superior force and support the show of the National Association of Automobile Manufacturers at Chicago this fall. It was realized that the latter is so strongly entrenched where the Chicago show is concerned that it would be useless to attempt to make an independent effort this year. But it is said that there will be a different story to be told in 1908. The following announcement issued by the publicity bureau of the A. M. C. M. A. on Monday last explains the situation fully:

"Although the American Motor Car Manufacturers' Association did not receive the recognition which it considered fair to its members in exhibiting at the Chicago show, the committee having the matter in charge felt that rather than disturb the trade conditions at the present time by making a move which might not be beneficial to the industry the present conditions should be supported. Besides, there was a decided lack of interest on the part of manufacturers in connection with the Chicago show, only twenty-three out of forty-five members of the American Association taking space. Big manufacturers like Ford, Buick, Pennsylvania and American Mors did not apply.

"Moreover, the goddess of chance seemed to favor American Association members in the drawing, for, with few exceptions, they all secured excellent space. This, combined with the feeling that an independent show at Chicago this year might not be best for the automobile trade as a whole, has resulted in the announcement that the A. M. C. M. A. would work in harmony with the N. A. A. M. in the promotion of the affair in Chicago this December.

"Working with the Chicago Automobile Club, arrangements for an independent show in Chicago for 1908 are now under way."

N. A. A. M. TEST CASE GOES HIGHER UP.

As was anticipated would be the case, the New Jersey Court of Errors and Appeals, which is the court of last resort in that State, has decided adversely to the defendant in the case of the State of New Jersey vs. Harry Unwin, under which title the action brought by the National Association of Automobile Manufacturers to test the validity of State laws has been parading. The opinion is to come later. It will be recalled that the action was begun by the prearranged arrest of Harry Unwin, then of the Harrolds Motor Car Company and since with the White Company in New York, for driving a car in Jersey without a license issued by the authorities of that State. The defendant was taken before Justice Higgins in the First District Criminal Court in Jersey City and sentenced to pay a fine of \$10—all of which had been prearranged by counsel to the Association, Charles T. Terry. An appeal was taken and the action has since been slowly making its way up through the Court of Common Pleas and other steps intervening. This adverse decision means that it will be carried to the United States Supreme Court, in accordance with the intention of the sponsors of the action. The latter was originally brought before the obnoxious Freylinghuyesen law, now in force, came into existence, but this does not alter matters, as the principle remains the same—that of a State compelling residents of another State to pay for the privilege of traveling within her borders, as well as test the constitutionality of State registration laws generally.

GERMANY REFUSES THE WRIGHTS' INVENTION.

BERLIN, July 1.—It is commonly reported in well-informed circles here that the German Government has refused to buy the Wright brothers' aeroplane, giving as a reason that the machine is not suited for military purposes. It can only carry one man, who would be too occupied with the control of the machine to be able to perform any other duties.

A. M. C. M. A. ADOPTS STANDARD WARRANTY.

While each member of the American Motor Car Manufacturers' Association, usually known as the independents, has made a practice of guaranteeing his cars, no official action has hitherto been taken on the subject by the Association as a whole. The matter came up for discussion before the committee of management at its last meeting on June 27 and a warranty, to be known as the A. M. C. M. A. guarantee, was formally adopted.

We warrant the motor vehicles manufactured by us for ninety days after the date of shipment, this warranty being limited to the furnishing by our factory of such parts of the motor vehicle as shall, under normal use and service, appear to us to have been defective in material or workmanship.

This warranty is limited to the shipment to the purchaser, without charge, except for transportation, of the part or parts intended to replace the part or parts claimed to have been defective, and which, upon their return to us at our factory for inspection, we shall have determined were defective, and provided the transportation charges for the parts so returned have been prepaid.

We make no warranty whatever in respect of tires, rims, and batteries.

The condition of this warranty is such that if the motor vehicle to which it applies is altered, or repaired, outside of our factory, our liability under this warranty shall cease.

The purchaser understands and agrees that no warranty of the motor vehicle is made, or authorized to be made, by this company, other than that hereinabove set forth.

Dated.....

W. F. FULLER HEADS CONNECTICUT ASSOCIATION.

HARTFORD, CONN., July 8.—President William F. Fuller, of the Hartford Automobile Club, was recently elected president of the Connecticut State Association of the American Automobile Association. Major George M. Landers, of New Britain, insisted upon the acceptance of his resignation as president of the State body, of which he will still remain a director, stating that his time was too much occupied at present to permit him to give proper attention to the office. Frank T. Staples, of the Automobile Club of Bridgeport, is vice-president of the Connecticut Association; Guy K. Dustin, of the Hartford Club, secretary, and B. R. Hertzberg, of the Stamford Club, treasurer. The State Association is now composed of clubs in Hartford, New Britain, Bridgeport, Stamford and Yale. The Automobile Club of Stamford and the Yale Automobile Club were admitted at the last meeting.

CHANGED DATE FOR ST. LOUIS BALLOON RACE.

A cable from Courtlandt Field Bishop, now in Paris, announces that the Gordon Bennett international balloon race will be held on Monday, October 21, and not on Saturday, October 19, as at first intended. To comply with the rules requiring competitors' names to be made known sixty days before the event, they should be sent in by August 21. As is well known, Italy will not be a contestant in the race, owing to entries not having been sent in at the proper time. The Spanish club having failed to forward its entrance fee for three balloons entered, negotiations will have to be begun in order to regularize their participation.

Secretary A. B. Lambert of the St. Louis Aero Club, who is visiting Paris for the second time this year, says that the citizens of St. Louis are subscribing money for prizes of \$5,000 and \$3,000 for an aeroplane and steerable balloon demonstration to take place after the Gordon Bennett contest.

DATES SET FOR A. C. A. PALACE SHOW.

Speculation as to the date of the combined eighth annual show of the Automobile Club of America and the American Motor Car Manufacturers' Association has been set at rest by the announcement that it will be held in the Grand Central Palace from October 24 to 31, ending just two days before the opening of the Garden show. Arrangements have been made for an increased amount of space and a new scheme of decoration is being prepared. The club will probably hold its annual banquet on the closing day of the show.

HEINZE FURNISHES LOWELL EXCITING SPORT.

LOWELL, MASS., July 8.—Exceedingly fast times and an accident that came near proving fatal to A. E. Morrison, of Boston, marked the race meet promoted by J. O. Heinze, of the Heinze Electric Company of this city, and held here on the Fourth before a crowd of more than 20,000 people. The races were held on the Boulevard and the course for miles was lined with people many deep. It was impossible to properly police the long stretch and the spectators interfered more or less with the competitors, otherwise faster times might have been made. In other respects the program furnished excellent sport and the arrangement was carried out without a hitch other than a slight delay due to the accident to Morrison, who lost control of his Stearns near the upper end of Tyng's Island. It is thought he attempted to turn at too high a speed and the car turned turtle, breaking his left leg. It was at first reported that Morrison had been killed and the races were ordered stopped. George M. Brown, who brought the injured man back to the line in his Apperson car soon proved the report to be false and the program was resumed.

In the races that followed some excellent times were made, particularly in the five-mile event for high-speed runabouts, which was won by the American, driven by W. A. Frederick, in 5:10. Other events that brought forth considerable applause were the exhibition spurts against time in which Robinson in a Stevens-Duryea covered the course in 46 1-2 seconds, this again being lowered by Fred Marriott in the Stanley steamer, who did the distance in :45 1-4. The final was a free-for-all and was won by the American, W. Frederick up, who did the mile in 45 seconds, making the best time of the day, the Corbin, driven by Wilson, being second in 1:03 1-2. J. O. Heinze had general charge of the arrangements, being assisted by Harry J. Noyes and J. Fred Walsh. The summaries of the event follow:

FIVE MILES, FOR GASOLINE TOURING CARS, 24-H.P. OR LESS.

1. Corbin, 24-horsepower; driver, Wilson..... 6:28

FIVE MILES, FOR GASOLINE TOURING CARS, 24-H.P. OR OVER.

1. Stevens-Duryea, 50-horsepower; driver, Hancock..... 5:00

FIVE MILES, FOR HIGH-POWERED GASOLINE RUNABOUTS.

1. American, 45-horsepower; driver, W. A. Fredericks..... 5:10

ONE-MILE STRAIGHTAWAY, FREE-FOR-ALL; FLYING START.

1. Stanley steamer; driver, Fred Marriott..... 0:45 1-4

ONE-MILE EXHIBITION RACE.

- Stevens-Duryea, 50-horsepower; driver, Hancock..... 0:46 1-2

READING MEET BRIMFUL OF EXCITEMENT.

READING, PA., July 8.—Events not on the program afforded considerable added interest to the meet of the Berkshire Association here last Thursday. To lead off with, Robert Morton, driving a 30-horsepower Pullman in the first automobile event on the program, left the track on a curve at full speed and crashed through the fence. Morton saw what was coming, however, and jumped in the nick of time, so that he drove in the following events. He could not explain the cause of the accident and it was thought to be due to an excess of patriotism on the part of a small boy in throwing firecrackers. The latter also contributed more excitement later in the day, when someone threw firecrackers under George McFarland's Stanley steamer, setting both the car and his clothing ablaze. He was painfully but not seriously hurt.

In the races the showing of the York Motor Car Company's Pullman cars and the Jackson from the garage of the Motor Vehicle Company was the feature of the day. The first event on the program was a motorcycle race, which was followed by a two-mile race for the Rambler Cup, open to stock gasoline runabouts costing \$3,000 and under. The first heat was between a 30-horsepower Oldsmobile and a 30-horsepower Pullman, the latter winning in 2:41 2-5, while the second heat was between a 30-horsepower Haynes and a 40-horsepower Pullman, the latter win-

ning in 3:09 and also taking the final. The winning car was protested by the Haynes as not being a stock car, but the protest was overruled. The star feature of the meet was the two-mile race from a flying start, open to stock cars costing \$1,200 to \$2,500 for the E. S. Youse Cup. It was competed for by the 30-horsepower Jackson and the 35-horsepower Rambler, driven by Zimmerman and Herbert Bitner respectively. The race was nip and tuck for every foot of the eight laps of the half-mile track, both drivers showing considerable skill in taking the pole away from one another at the turns, the Jackson winning by a final spurt in 3:05 1-5.

The success of the meet was largely contributed to by the attendance of the members of the Motor Club of Harrisburg, which held a run to this city for the occasion and were hospitably entertained by the Berkshire Association.

ST. LOUIS HAS A TWENTY-FOUR HOUR RACE.

ST. LOUIS, Mo., July 8.—Out of a field composed of a 50-horsepower Haynes driven by Wagner and Willard, a 60-horsepower Stearns driven by Alvin and Gorham, a 35-horsepower Matheson driven by Smith and Bane, a 35-horsepower Oldsmobile driven by Corkhill and Bagnell, a 30-horsepower Cadillac driven by Suttlers, and a 15-horsepower Elmore alternately piloted by Richter and O'Neill, a 35-horsepower Jackson with Burman at the wheel took the honors in the twenty-four-hour chase round the clock, which was started at the old Fair Ground race track here at 10 P.M. on July 3, by reeling off 833 miles, the Matheson finishing second with 752 miles to its credit. A Pope-Toledo, a Maxwell and a single-cylinder Cadillac were to have started, but were withdrawn. About 5,000 people were in the grand stand at the start and when the flag dropped the Haynes and Cadillac jumped into the lead and stayed neck and neck for the first thirty miles. At the end of the first hour the Cadillac was four miles ahead, the score standing: Cadillac, 43 miles; Haynes, 39 1-2 miles; Jackson, 39 1-4 miles; Stearns, 37 1-2 miles; Elmore, 36 miles; Matheson, 35 miles, and Oldsmobile 32 1-2 miles. The Haynes had trouble during the early morning and finally dropped out at the twenty-second hour, with 642 miles to its credit; the Elmore quit four hours earlier, or at the eighteenth hour, after having covered 502 miles. The Matheson maintained a comparatively slow but consistent pace and lost little time in adjustments. The summaries of the races which preceded the twenty-four-hour event, on the first day, are as follows:

FIVE MILES, STOCK TOURING CARS, \$2,000 OR UNDER.

1. Cadillac, 20-horsepower; driver, W. Bagnall..... 7:34 1-5

FIVE MILES, STOCK TOURING CARS, \$3,000 AND UNDER.

1. Jackson, 40-horsepower; driver, R. Burman..... 7:01
2. Corbin, 24-horsepower; driver, A. B. Cull.
3. Wayne, 35-horsepower; driver, Will Smythe.

TEN MILES FOR RUNABOUTS, \$3,000 OR UNDER.

1. Thomas, 40-horsepower; driver, Robbins.....13:28
2. Wayne, 30-horsepower; driver, Will Smythe.

TWENTY MILES FOR HIGH-POWERED RUNABOUTS.

1. Packard, 30-horsepower; driver, Fred Grinham.....23:32 1-2
2. American, 45-horsepower; driver, Tone.

TEN MILES FOR MOTORCYCLES.

1. Thoroughbred; rider, F. N. Maynard..... 7:25
2. Indian.

SPECIAL TEN-MILE EVENT.

1. Packard, 30-horsepower; driver, Fred Grinham.

BARNEY OLDFIELD ATTEMPTS SUICIDE.

PORTLAND, ORE., July 6.—As the result of his arrest on the technical charge of having obtained money under false pretenses, by using the name of the local automobile club in order to obtain prestige for the race meet held here a few days ago, without the sanction of the club, Barney Oldfield to-day attempted to jump from the window of his room in the hotel. He smashed the glass with his bare hands, which were badly cut, but he was restrained from jumping by his wife and a hotel detective, who responded to her calls for help.

21 CLEAN SCORES IN BAY STATE RUN.

BOSTON, July 8.—The touring committee of the Bay State Automobile Association, under whose auspices the endurance run from this city to Keene, N. H., and return, a distance of 207 miles, was held on Saturday, held a meeting to-day and announced that twenty-one cars had made perfect scores, while twelve were penalized. Of the cars with perfect scores, four are runabouts and the remainder touring cars. The perfect-score cars will be given handsomely engraved certificates. The results are as follows:

Car	Driver	Penalties
*Oldsmobile	A. A. Knights	0
*Peerless	H. H. Brown	0
Pope-Hartford	E. E. Dodge	0
Columbia	H. Woodaver	0
Rambler	V. A. Charles	0
Peerless	R. R. Ross	0
Marmon	F. F. Wing	0
Berliet	H. Grant	0
*Shawmut	H. Church	0
Cadillac	H. Kroh	0
Grout	L. W. Grout	0
Winton	L. B. Harris	0
Stoddard-Dayton	G. Todd	0
*Craig-Toledo	W. H. Latham	0
Studebaker	W. G. Jones	0
Corbin	J. Corbett	0
Knox	F. S. Crockett	0
Knox	W. E. Wright	0
Lozier	R. Mulford	0
Elmore	G. W. Turner	0
American Mors	F. L. Townsend	0
Dragon	C. J. Lewis	1
Aerocar	F. Page	2
*Jackson	E. P. Blake	3
Maxwell	R. Coburn	3
Rambler	J. E. Brennan	4
*Corbin	J. Matson	6
American	W. R. Kelley	32
*Cadillac	H. Murch	33
*Ford	Partridge	43
Grout	H. H. Hawkins	50
Rainier	C. D. Price	174
Bay State Forty	R. Drisko	Dropped out
Ross	A. H. Walitt	Did not start

*Runabouts.

A. C. OF ST. PAUL MAKES A STATEMENT.

Editor THE AUTOMOBILE:

Inasmuch as mention has been made in your paper of the race meet scheduled for June 28 and 29 at our State Fair Grounds, by the United States Racing Association, under the auspices of the St. Paul Automobile Club, I desire to inform you of some of the facts in respect to said meet, in order that the same may be properly written up in your magazine. The United States Racing Association, under the management of H. W. Pickens, agreed to run the meet, furnish its cars and drivers, and advertise the same. Among the drivers it agreed to furnish and which through its advertisements it promised the public would take part in the meet, were Eddie Bald, with his American car; Mongini, with his Matheson; Coey, with his Thomas; Herbert Lytle, Kulick, and Kid McCoy. The meet was to consist of a \$3,000 sweepstakes race in which the professional drivers were to take part Friday afternoon, a 24-hour endurance race in which they were to take part, and a preliminary program of local events.

Upon arriving in St. Paul a few days before the meet Mr. Pickens informed us that the racing cars had been shipped and the drivers would be here. When they actually pulled off the meet it developed that the only drivers brought were Bald and Mongini; that they had not brought a single car, and we had to secure from our club members the loan of cars for Bald and Mongini to drive. The \$3,000 sweepstakes race scheduled to be the event for Friday afternoon and to be participated in by the professional drivers with their own cars was not run, but was postponed until Saturday, at the end of the meet, and then run by Bald and Mongini with two local cars. The result was that the public on Friday afternoon considered itself the victims of a bunco game on the part of the United States Racing Association, and the attendance on Saturday afternoon was naturally extremely small.

As secretary of the Automobile Club I have been deluged since the meet with complaints on the part of the spectators on account of the misrepresentation made by the United States Racing Association. Mr. Pickens has presented to us no reasonable excuse for not having furnished drivers and their cars outside of Coey, and the matter would seem to be clearly one for a protest to the A. A. A. Racing Board. What action the club will take I cannot say, as the matter has not been formally acted upon, but I write this information to you in order that the meet may be written up as it should be in your magazine.

H. S. JOHNSON,
St. Paul, Minn. Secretary, Automobile Club of St. Paul.

GROWTH OF AUTO ROUTE INFORMATION.

Probably there are a few copies yet in existence of the Official Automobile Blue Books for 1901 and 1903, the result of the first attempts to map out routes especially for automobile touring in this country. If those who still have the 1901 edition will place it alongside the set of three volumes comprising "The Automobile Official A. A. A. Blue Book," No. 3 of which has recently been issued, the growth of six years will be shown in a very striking manner.

The outside cover of the original volume reached exactly to the top of the gold-leaf imprint on the latest volume. A still greater contrast is shown by the inside pages on which the routes are listed, the dimensions being 5¾ inches by 3¾ inches in the 1901 edition, as against 8½ by 4½ inches in the 1907 edition. Expressed in type area, there are only 21.56 square inches on the smaller page to 38.25 square inches on the larger page.

There are exactly 68 net pages of route matter in the original Blue Book, with more than half of these pages partly blank. Nearly twice as much type is used for the New York City section alone of the New York State volume as the aggregate of route matter in the initial volume. In 1901 there were no maps; in the present editions there are about 700 route maps and city and town diagrams. As a piece of publishing the 1907 Blue Books are equal to about 40 of the first edition bulked together.

VERMONT ADOPTS RECIPROCAL POLICY.

In perusing the "Official Automobile Blue Book" many autoists have been struck by the fact that in the chart of automobile laws printed therein no reference was made to the Vermont law. Good and sufficient reason is to be found for this apparent omission in the fact that there is no Vermont law, for up to the present the legislature of that State has not seen fit to pass any specific legislation on this subject. The Vermont Secretary of State has, however, informed the editor of the Blue Book that "non-residents who are duly licensed in the State of their residence and whose cars are registered therein need not take out another license.

CHICAGO DRIVERS TAKE HONORS AT PEORIA.

PEORIA, ILL., July 6.—There was a race meet held here on the fourth, but one might have thought himself in Chicago, for drivers from the latter city took firsts in all the events except the initial one on the program in which Price, driving a 16-horsepower Maxwell, was pitted against Bald in a 40-horsepower Glide, who naturally had an easy time of it, making the ten miles in 14:56. The event of the day was termed a six-hour Endurance Derby, in which C. A. Coey, in a 60-horsepower Thomas, carried everything before him, making 269 miles, thus beating the former record of 238 miles made by Charles Soules in a Pope-Toledo at Columbus in 1905 by a comfortable margin. Following is the summary of events:

TEN MILES FOR TOURING CARS UNDER \$2,500.

1. Glide, 40 horsepower; driver, Eddie Bald.....14:56
2. Maxwell, 16 horsepower; driver, C. W. Price.

FIVE-MILE MATCH RACE, STANDING START.

1. Thomas, 60 horsepower (four cylinder); driver, C. A. Coey..7:38
2. Glide, 60 horsepower (six cylinder); driver, R. Mongini.

SIX-HOUR ENDURANCE RACE.

1. Thomas, 60 horsepower; driver, C. A. Coey.....269 miles.
2. Glide, 60 horsepower; driver, A. Mongini.....231 miles.
3. Glide, 40 horsepower; driver, Eddie Bald.....216 miles.
4. Maxwell, 16 horsepower; driver, C. W. Price.....186 miles.

INCREASED TAXATION FOR NEW JERSEYITES.

TRENTON, N. J., July 9.—Additional taxation for New Jersey automobilists is proposed in a bill to be presented at the present session of the State Legislature by Assemblyman Simon Hahn, of Essex County. The measure, which is in the nature of an amendment to the Frelinghuysen automobile law, proposes that the fee of \$3 for vehicles under 30-horsepower should be increased to \$10, and that cars over 30 horsepower should pay \$15. The proceeds of this increased taxation are to go toward the abolition of the dust nuisance.



ENGLAND'S SEA-WASHED COAST AT SALTBURN, WHERE THE YORKSHIRE AUTOMOBILE CLUB HOLDS ITS ANNUAL MEET.

RACING ON SALTBURN SANDS IN YORKSHIRE.

SALTBURN-BY-THE-SEA, ENGLAND, June 30.—A. Lee Guinness' flight of 1,100 yards across Yorkshire's rain and sea-sodden sands at the terrific rate of 111.84 miles an hour was the outstanding feature of the third annual Yorkshire Automobile Club meet in this usually quiet Northern seaside resort. Guinness drove the eight-cylinder 200-horsepower Darracq with which Hemery first broke records in the south of France and on Florida beach and had the glory of beating hollow last year's figures of 96.5 miles an hour established by Warwick Wright, also on a Darracq. The performance is not a world's record, for last July at Ostend, with the same machine, the young Englishman covered the kilometer in 19 seconds, equal to 117.5 miles an hour. Very heavy showers fell throughout the day and the sea invaded the track, making what would have been an excellent course into a moderate one. The Darracq's only competitor was a Dietrich driven by Suison, who failed to make a good showing.

Owing to the wet condition of the starting boards considerable difficulty was experienced by many competitors in making a start. When dry sand had not been put under the wheels they frequently revolved two or three seconds without the machine advancing an inch. In Event G, for touring cars costing not more than \$2,000 and carrying the full load of four passengers, two 15-horsepower Fords competed together, the victor covering the course at the rate of 30.98 miles an hour. Another good race was witnessed between J. E. Hutton's Berliet and F. A. Bolton's Daimler, won by the French machine at the rate of 48.63 miles an hour. A strong force of police kept the crowd of spectators on the grassy cliffs, which formed a natural grand stand, and signalers from the royal navy rendered valuable service in transmitting messages from one end of the course to the other. As an indication of the thoroughness of the organization, it is interesting to note that the managing committee insured the whole of the crowd of spectators with Lloyd's against all risks.

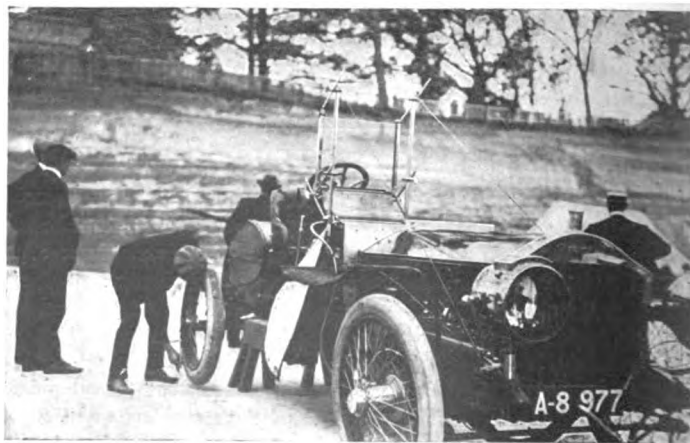
50-MILE AUTO RACE TRACK FOR GERMANY.

BERLIN, July 6.—After England and America, Germany is to have a special race track for automobiles, provisional approval for which has just been granted by Emperor William. The course proposed by the Imperial Automobile Club will be fifty miles long and thirty feet in width, laid out through valleys, over hills and bridges and around sharp curves. Its location is near Eilfel, in Rhenish Prussia. The capital required for the construction of the track is estimated at several million of dollars, which will be sought from leading automobilists and automobile manufacturers. As the matter has the royal approval, it is thought that the plans for its completion will be rushed through without any delay.

LONDONERS SEE FAST RACING AT BROOKLANDS

LONDON, July 6.—Huge crowds gathered at the Brooklands track to-day on the occasion of the first public races and waxed enthusiastic over a mediocre performance. The meeting, however, had the advantage of novelty and gave Londoners an exhibition of automobile speed to which they have previously been entire strangers. A number of Continental drivers came over to compete in the races, which were planned on the same lines as horse races, the vehicles starting simultaneously and the only criterion of success being priority in passing the winning post. Each driver wore a colored jacket, as is done by jockeys in horse races. J. E. Hutton, driving a French Berliet, won the Montagu cup, valued at \$9,500, besides a trophy worth \$1,000, in a keen competition uniting eleven starters. The stakes in the half dozen races aggregated \$22,500. No official times were taken, but in several cases a speed of ninety miles an hour was attained and the excitement ran high.

In his recent twenty-four-hour track performance, when, on a six-cylinder Napier he covered 1,581 3-4 miles, S. F. Edge had his machine fitted with a special seat and was protected by a glass wind shield of the smallest possible dimensions to reduce resistance. The machine was a standard model stripped for the occasion and fitted with wire wheels. Instead of changing tires, the wheels were taken off and replaced by others with the inflated tires in position. For several weeks before the event Edge had undergone a rigorous training in swimming, cycling, walking, Sandow exercises, and long rides on the car he was to drive in the race. He declares that the physical feature of the race was more important than the mechanical one, as the question was entirely one of human endurance in which the machine played no part.



EDGE'S RECORD BREAKING NAPIER ON BROOKLANDS TRACK.

CLUB DOINGS IN THE MIDSUMMER SEASON

Grand Rapids Club Agrees with Park Commissioners.

GRAND RAPIDS, MICH., July 8.—The question of excluding automobiles from the parks has been settled by a compromise, to which the Automobile Club of Grand Rapids agreed. At the last meeting of the Park Commissioners it was decided that it would be unnecessary to exclude automobiles from all parks, but owing to the danger on the principal street in John Ball Park, called Glenwood road, which is very narrow and crowded in the afternoons, automobiles will not be allowed the use of this road after 2 P.M. each day. With this exception automobiles will be allowed anywhere in the parks.

The automobile club has called the attention of one of the aldermen to the State law requiring drivers to keep to the right in passing another rig, with the result that the aldermen will introduce a resolution into the council the purpose of which will be the enforcement of the State law in this regard. It is the desire that vehicles shall not only keep to the right, but if they desire to stop on the opposite side of the street that they shall turn completely around before stopping to avoid the confusion that would otherwise result.

Many complaints have come to the Sheriff's office lately from farmers whose rigs have been capsized or other damage done by their horses being frightened at speeding autos. The complaints were so frequent that he caused an investigation to be made. The limit of twenty-five miles is set by the State law, which also requires that drivers of autos shall not go faster than ten miles an hour when passing other conveyances.

The club at its last meeting resolved to support the sheriff in this action, the same as it has always done in cases of a similar nature. The club has taken a stand especially against the driving of autos by irresponsible youngsters, as it has been found that practically all of the accidents that have occurred have been due to the fact that young people were running the machines.

Members of the club are taking full advantage of their new country clubhouse. Every afternoon the Cascade Springs road is alive with autoists, who are going and coming from dinner parties held at the clubhouse. The city is full of visitors at the furniture exposition, and parties of these are being entertained every evening at the clubhouse.

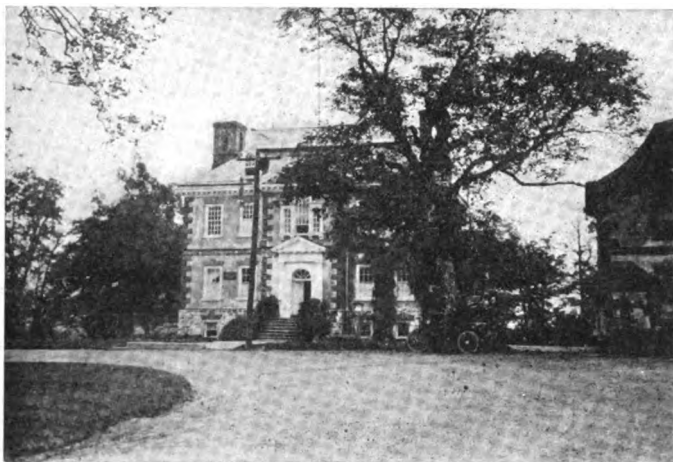
Seattle's New Club Purchases a Country House.

SEATTLE, WASH., July 3.—Appropriate quarters for the recently organized Auto and Driving Club of this city have been secured by the purchase of the W. J. Bernard residence at Alki Point. The latter is a typical log house on the exterior and has long been a point of interest for visitors; its interior is finished in modern fashion, however, and it is, moreover, elaborately furnished. The house is being remodeled inside for club purposes, while the club stables are also being done over to accommodate a number of automobiles, and the whole has been placed in charge of Charles Borngesser as manager, who has been long and favorably known here for his ability in this line. The acquisition of such attractive quarters and all the advantages they afford will doubtless do a great deal to rapidly swell the club's membership.

Philadelphia Club Nearing the 500 Membership Mark.

PHILADELPHIA, July 8.—Judging from the present rate at which its membership list is growing, the Automobile Club of Philadelphia is in a fair way to accomplish the object outlined at its last annual meeting, the increase of its roster to the half-thousand mark. At the last monthly meeting held a few days ago, 31 new names were added, bringing the total to 436, prominent among the additions being President McCrea, of the Pennsylvania Railroad; James Elverson, owner of the Philadelphia *Inquirer*; Bert Lippincott, William H. Wanamaker, Jr., Dr. John Denver and others. Chairman Powell Evans, of the routes and signpost committee, announces that the work of posting the Trenton and Harrisburg routes will be immediately undertaken, and the board of directors in recognition of the good work being done by this committee has agreed to double its appropriation, so that all roads leading into the city may eventually be marked for the benefit of tourists.

S. Boyer Davis, secretary and counsel for the club, reports that the State ruling in reference to "tooting" the horn at all cross-roads is again being very strictly enforced, and, in order to avoid arrest and the subsequent fine, it is suggested that every automobilist blow his horn at every cross-road throughout the eastern section of the State.



NEW CLUB HOUSE OF "LA MOVEGANZA KLUBO."

The home of the society women's new automobile club of Philadelphia. The mansion antedates the Revolution, and was at one time the residence of Benedict Arnold. It is located in Fairmount Park, one of the Quaker City's beauty spots.

Minnesota Club to Work for Improved Roads.

WADENA, MINN., July 6.—There are twelve autoists in this town, and they have decided to get together to form an automobile club. While the principal objects of the organi-

zation will not differ from those of other clubs, the chief motive of automobilists in this part of the country in getting together is to see what can be done by concerted effort to improve the local highways. It is thought that autoists from the surrounding territory will be induced to join in the movement, so that the club will be able to boast of a membership of at least fifty before long, when a fund for the improvement of the main highways will be raised.

Chicago Autoists' Race Meet for Glidden Tourists.

CHICAGO, ILL., July 8.—The Chicago Automobile Club has prepared most elaborate plans for the entertainment of the Gliddenites during their two-day stay here, probably the greatest feature of interest being the auto race meet to be held at the Harlem track on July 12 and 13. In the way of novelties the star performance in this will probably consist of what has been dubbed the Cupid race, three miles, open to stock touring cars carrying four women passengers, one of which is to be dropped at each quarter of the first mile, and who will again be picked up in the same order on the second mile, the finish being with all on board. No provision has been made for mistakes in picking up the passengers, and it is thought that the attempt of two or three cars to pick up its passengers at once will result in considerable amusement and excitement. A twenty-four hour chase round the clock, to be known as the International Endurance Derby, is also a feature of the program. The tourists are also to be entertained in other ways, special attention being paid to the fair members.



Copyright, 1907, by Cinesat.

CHINESE MINISTER'S CHILDREN IN A WINTON TYPE X-I-V.

The minister's daughter and little son are in the rear seat with the wife of the first secretary of the legation, Mr. Chow, who is at the wheel, and alongside is his baby, who was born in Washington, at the Chinese legation.

TO DRIVE POPE-TOLEDO IN ALASKA.

"Make-a-dam, but the roads in Norway are great," says Carl Lilliesterna, the Swedish auto globe trotter, who has just arrived on this side, making his fourth trip here in six years. In addition to being the only automobile hobo, Carl is an accomplished linguist, though his pronunciation is not always of the best, and it is never possible to guess what language he is thinking in at the moment. For instance, he did not intend to be profane regarding Norway's highways—it is only his way of saying macadam. Carl has driven an automobile all over the world, with the exception of Africa and Alaska, and it is the latter part of the terrestrial crust that he is now bound for, where he will take charge of the wheel of the Pope-Toledo which is to form the rolling stock of the most northerly stage line in the world.

Captain J. B. Hubrick, who made a reputation by successfully installing and operating a cable ferry across the Yukon at Dawson where so many others failed, is again going to attempt something that many others have been unable to accomplish—the running of a stage between Dawson and Granville. To do it with he has ordered a regular 40-horsepower Pope-Toledo touring car with accommodation for seven passengers and it is interesting to note the extended trip the car must take before it reaches



CARL LILLIESTERNA IN FAR NORTH POPE-TOLEDO.

the scene of its duties. From Toledo it will go to Seattle by fast freight to the coast, from there to Skagway by boat, then to the White Pass by rail, from which it will be carried on a flat-boat to Dawson. The car is painted a bright red in order to contrast with the snow, and its only special equipment consists of five-inch tires, extra tanks for gasoline, oil, water and anti-freezing liquids, as well as additional carrying cases for tires, batteries and spare coils, and it is equipped with enough accessories for a year's tour, though the route from Dawson to Granville can be covered in half a day. The success of the Pope-Toledo on the Tonopah, Goldfield and Death Valley stage lines suggested the idea and negotiations were immediately undertaken by wire. The fares have not been announced as yet, but there is not much chance of their being in accordance with the provisions of any two-cent-a-mile legislation.

GEORGIA LEGISLATOR LEARNS TO SELL AUTOS.

ATLANTA, GA., July 8.—After an absence of two years from the State, the Hon. John A. Sibley, a former member of the House of Representatives from Cobb county, has returned to Atlanta as representative of the Cadillac Motor Car Co. of Detroit. Mr. Sibley will have one of the largest territories in the United States, extending from the Potomac and Ohio rivers on the north to the Rio Grande on the southwest.

Mr. Sibley was only recently married to Miss Susie Cunningham, of Detroit, and he and his bride will be at the Majestic Hotel. In speaking of the future of automobiles and the agency at Atlanta, Mr. Sibley says: "The automobile has come to stay. I thought a business of that kind was the very thing for a hustler and I determined to learn it from the bottom. I went to Detroit, applied for a position and started as a machinist at 20 cents an hour. I worked in the Cadillac plant for nearly a year, engaging in every detail of construction. After some months of service I was transferred from construction work to the sales department of the Chicago dealers and the next step was my appointment as Southern representative."

ACME TO JOIN SIX-CYLINDER CONTINGENT.

While it will still continue to manufacture the four-cylinder cars that have long been known under this name, the Acme Motor Company, of Reading, Pa., announces that it will bring out a six-cylinder car for the season of 1908. The new car will be largely patterned along the same lines as its smaller predecessors, except that it will be equipped with drop axles and will have both the motor and transmission placed slightly lower. It will have a wheelbase of 122 inches and will embody numerous detailed refinements. The designer of the company, R. E. Graham, has made an exhaustive investigation into the matter of the popularity of the six-cylinder car with the result that he has come to the conclusion that it is here to stay and is not merely a fad. A six-cylinder high-powered runabout will also be placed on the market, using the same chassis as a foundation.

BARTHOLOMEW COMPANY PLANS ADDITION.

PEORIA, ILL., July 8.—Unless present plans miscarry, by the end of the year the Bartholomew Company of this city, builders of the Glide cars, will have one of the largest and most complete automobile factories in the country. Plans for an addition to cost \$150,000 have been completed and it is expected that construction will begin this fall, the new buildings to be erected on the company's property at West Bluff. Sometime ago plans were drawn for a large addition to the company's facilities, but before carrying them out it was decided to expand on a much more comprehensive scale. The new building will be about the same size as the present erecting shop on Fredonia avenue and will greatly increase the plant's capacity for turning out both four and six-cylinder cars during the season of 1906.

A SUCCESSFUL POPULAR-PRICED CAR.

"Power carriage" is the latest title for the variously styled "buggyabout," "buggymobile" and other similar designations of the real horseless carriage which is destined to form a most potent factor of the American automobile industry in the near future. Minus the power plant, the scale on which this truly American type of vehicle—the top buggy—is turned out by the large factories of the West is something almost inconceivable. Automobile plants usually rate their output as "so many a week," but many large buggy factories say "so many an hour," and the annual total is something stupendous, for every country dweller owns a buggy, even if he can boast of no other means of transport. It is a firm that has long catered to the wants of the rural resident in this field—the Columbus Buggy Company, Columbus, O.—that has now undertaken the task of building popular-priced automobiles on a similar scale. And that it can "deliver the goods" with its buggymobile, to make use of a bit of vernacular, was amply demonstrated by the test run of one of these cars, as here illustrated, from Independence to Columbus, a distance of 200 miles, which was made at a total cost of slightly less than \$1.60 for two passengers, or way below railway rates.

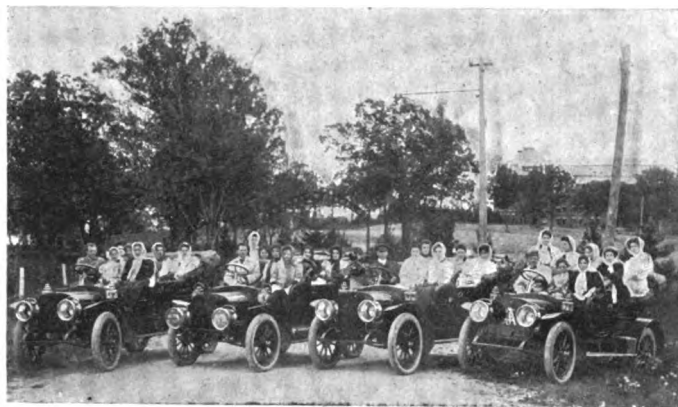
Simplicity is naturally the keynote of any such vehicle, but economy in operation is nevertheless paramount. In fact, it is



COLUMBUS BUGGY COMPANY'S LATEST PRODUCTION.

the matter of economy of maintenance that counts highest in the estimation of the average user of this class of vehicle, but that both these highly important essentials have been achieved by Designer C. C. Bramwell in a manner hitherto unapproached is the opinion of President C. D. Firestone of the company, as well as of all who watched the car's record-breaking performance under most adverse weather and road conditions. With a rather important exception, that of the power plant, the details of the entire vehicle can be taken in at a glance. The motor, located under the body, but readily accessible by lifting the footboards, is of the two-cylinder horizontal type, air-cooled, and is rated at 10 horsepower. High tension ignition using dry batteries is fitted, the twin-coil being placed on the dash, this and other accessories such as the carbureter being of a high grade. The motor drives to a countershaft by single chain and the latter in turn is connected to the driving wheels by ropes. Both axles are single pieces of solid steel of square section, full elliptic springs constituting the suspension, the rear springs being of the scroll type. Steering is by tiller mounted on a vertical standard at the left-hand side, while the gasoline tank is located under a short bonnet forward of the dash and holds a liberal supply.

Lake Geneva, Wis.—Work has been commenced on a new building to be occupied by Samuel T. Hutchinson, on the north end of Lake House, facing Broad street. The building is to be used as a garage and repair shop.



ADAMS FARWELL CARS TAKE GRADUATING CLASS RIDING.

At the close of the college commencement season, the Adams Company of Dubuque, Ia., placed at the disposal of the graduating class of Mount St Joseph's Academy, a number of Adams-Farwell cars for an outing. The picture was taken on leaving the academy grounds.

ON TIRE BLOWOUTS AND THEIR CAUSES.

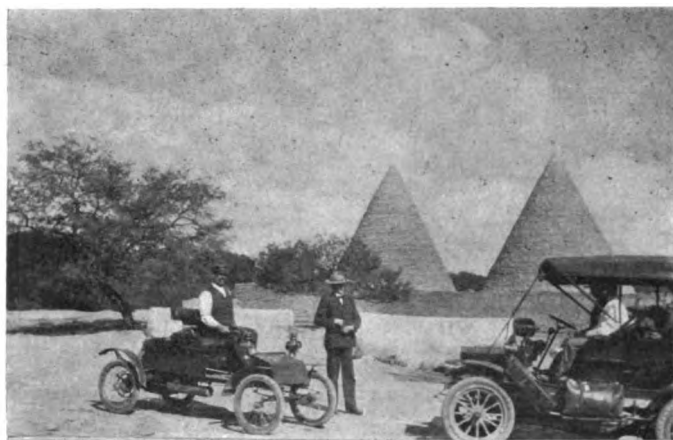
Generally, when an automobile tire bursts on the road, the driver searches round for the sharp stone or other cutting object and fails to find it. As a matter of fact, says Michelin, the tire expert, a tire rarely bursts immediately after coming in contact with a sharp stone and the victim of a blow-out should not search around him on the road, but go back twenty or thirty miles if he wishes to make acquaintance with the cause of his disaster. After some heavy strain on its fabric, a tire may noisily depart this present life on the lonely highway. The decrease may be legitimate, arriving after long loyal service. Or it may be that a strong constitution is undermined, after a short life, through excesses of the lord and master. It should never be forgotten that weight is a deadly enemy.

Insufficient pressure causes rapid deterioration of an automobile tire. If an accident happens when the car is loaded and the pressure in the tires is lower than it ought to be, the driver frankly takes the blame on himself. Sometimes the blowout will occur when the driver is alone in the car and when his tires have been inflated to the exact degree. Or it may be, though the case is rare, that the disquieting report is heard when the machine is in the garage. In such a case the manufacturer is blamed for supplying an inferior article, blamed vigorously and with apparent justice. The automobilist should consider, however, that he may, after all, be responsible. His tires are properly inflated to-day, but in what condition were they used yesterday and the day before is another question.



WHERE THE BIG AND LITTLE FORDS ARE TRIED OUT.

That Ford Sixes are subjected to severe high-speed tests is shown by the above picture taken on the Highland race course, Detroit, the one-mile track which the Ford Motor Company recently purchased with 60 acres of ground, on which the new Ford plant is to be erected.



A CHANCE MEETING NEAR AGUAS CALIENTES, MEXICO.

Reo touring car and an Orient Buckboard exchanging greetings many miles from home in the interior of Mexico. The cones in the background are corn storehouses built of adobe—sun-baked brick—familiar Mexican landmarks.

PREMIER CAR ROLLS UP PHENOMENAL MILEAGE.

With the accidental breaking of a wire while changing batteries there was brought to an end, through a mere technicality, one of the longest non-stop motor runs ever made. At 10 o'clock on the night of June 3 a regular stock Premier 24-horsepower car was cranked by Frank P. Miller, president of the Bridgeport Automobile Club, in a drenching rain, which continued for the greater part of the first week, keeping the roads in a heavy and continually slippery state. The run was conducted by the Fairfield Automobile Company, of Bridgeport, Conn., under the auspices of the Bridgeport club, the official record of the mileage of the car being 4,906, though the motor evidently traveled the equivalent of several hundred miles more owing to the number of stops required for replenishing the gasoline supply, changing crews and passengers and the like. No particular route was followed, the car being taken all over the State of Connecticut wherever the driver wished to go, no less than twenty round trips having been completed between Bridgeport and New York. During all this time at least two passengers were carried, and on one occasion no less than ten were taken along. Unlike the usual affair of the kind little or no attempt was made to make capital out of it, the makers of the car not being apprised of the test nor of the number of the car. The best previous non-stop record falls short of this performance by some 1,300 miles, and it seems unfortunate that the motor should have been stopped by such a trivial accident, though it must be added that the previous record of 3,600 miles was made under exceedingly strenuous weather conditions in midwinter, which is in its favor.

MORA FINISHES 3,000 MILE SEALED BONNET.]

With its return to New York late last Thursday night, the Mora Racytype car completed one of the longest runs that has ever been made under sealed bonnet conditions. It will be recalled that this was one of the cars that competed successfully in the recent contest of the Automobile Club of America, and not satisfied that 600 miles represented anything like the end of endurance in this respect, the car was immediately despatched to Chicago to take part in the endurance run of the Chicago Automobile Club which was held under sealed bonnet conditions. Having successfully accomplished this also the car was again turned homeward to retrace the route to New York, rolling up a mileage of 3,219 miles when it finally got back to "automobile row." During all this time the car was run with the same seals on the bonnet, coil box, battery, change-speed gear case, rear axle and the like. The car was driven in both contests by W. H. Birdsall, and from the factory at Newark, N. Y., to Chicago and return by J. H. Stickney and J. David, while on the round trip to the factory it was piloted by F. Cimiotti, the New York agent.

PERLMAN ACQUIRES THE AEROCAR AGENCY.

An interesting development in the selling end of New York's automobile row came to light in the announcement that C. A. Benjamin, vice-president and general manager of the Aerocar Company, Detroit, Mich., has just closed a contract with L. H. Perlman, of the Welch Motor Company, of New York, to also handle the Aerocar in this territory. The negotiations were carried on without the slightest hint leaking out, and the deal, which is of considerable importance, was quietly consummated before the trade had an inkling of it. Credit for the successful carrying out of the transaction is due in no small measure to A. M. Robbins, manager of the Aerocar Company's New York branch, to whom the matter of securing proper metropolitan representation for the 1908 Aerocars was entrusted. Knowing both the car and trade thoroughly, Mr. Robbins had no difficulty in settling upon Mr. Perlman as best adapted to carry on an aggressive campaign, while the latter had also been looking about for a medium-priced American car of established reputation and ability to handle for the season of 1908. Mr. Robbins has already made the car well-known in New York, while the car itself has made its ability a matter of common knowledge, so that in adding the Aerocar to the Welch Mr. Perlman found just what he had been looking for since the opening of the year.

MOTZ CO. ELECTS OFFICERS FOR THE YEAR.

AKRON, O., July 8.—At its annual meeting of the stockholders of the Motz Cushion Clincher Tire Company the following directors were chosen: Charles Motz, Gus Burkhardt, Nick Seil, Dr. H. J. Saunders, William Wolf, N. C. Stone and Paul E. Bertsch. The directors then held an election of officers, Charles Motz being chosen president, Gus Burkhardt vice-president, Nick Seil secretary and treasurer. The company has completed preparations to make the new Motz non-skid cushion tire which has been perfected. In the immediate future particular attention will be devoted to foreign business, as the company owns patents covering the rights on its tire in Great Britain, Canada, France and Germany.

AKRON TO HAVE FINE GARAGE BUILDING.

AKRON, O., July 8.—The Akron Automobile Garage Company, of this city, has just consummated the purchase of a site in the center of the business district and will immediately undertake the erection of what will be one of the finest garages in the State. The building is to measure 165 feet in length by 70 feet wide, and it will be of modern construction and fireproof.



AEROCAR BASEBALL NINE STARTING OUT FOR A GAME.

In Detroit an unusual amount of baseball playing material has been discovered in the automobile factories, and it now boasts of an Automobile Manufacturers' Baseball League, games being played every Saturday afternoon. C. A. Benjamin, vice-president and general manager of the Aerocar Company, is an enthusiastic promoter of the League and has organized the lively team shown in the picture among the Aerocar factory employees.

DEATH OF A WELL-KNOWN TRADESMAN.

DETROIT, MICH., July 8.—Roger J. Sullivan, secretary of the Wayne Automobile Company, died at the Colonial Hotel, Mt. Clemens, Mich., Tuesday, July 2. Mr. Sullivan had been suffering from uremia for some months and had been a frequent visitor to Mt. Clemens in the hope of getting relief. His condition was not considered grave until a few days before his death, and he had been able to devote a portion of his time to business matters.



ROGER J. SULLIVAN.

Although but 39 years of age, Mr. Sullivan had accomplished much in his lifetime. Entering the employ of a dry goods house when 14 years old, he studied telegraphy nights and was soon able to take a position as operator in the old Board of Trade office. From here he was called to a similar position in Chicago, telegraphers' paralysis, which developed two years later, necessitating his retirement from the key. Returning to Detroit, he entered the employ of a house-furnishing establishment, thirteen years ago starting in business for himself and at the time of his death having one of the largest furniture stores in the city. He organized the Wayne Automobile Company and was secretary of the concern from its inception. Mr. Sullivan's business interests did not occupy all his time, however, and he was identified with numerous fraternal and social bodies. The funeral was held Friday morning.

MAXIM TO RESIGN FROM ELECTRIC VEHICLE CO.

On August 1 Hiram Percy Maxim, who has held the position of chief engineer to the Electric Vehicle Company, Hartford, Conn., ever since the inception of the latter company, will sever his connections with it in order to devote his attention to some new developments, details of which are not forthcoming at the moment, but which will be made public later. Mr. Maxim is to remain in Hartford, and will open an office of his own there immediately his resignation takes effect.

His career in connection with the development of the automobile in this country is of considerable interest, as he was one of the first to devote serious attention to the subject. In 1895 he built a three-cylinder air-cooled engine, which was placed on a tricycle with a planetary change-speed gear. This machine attracted the attention of Colonel Pope, who purchased it in July, 1895, and engaged its builder at the same time, this event marking the genesis of the present Columbia car. The Columbia electric were also undertaken at the same time, and it is of interest to add that a number of the original Columbia electric phaetons are still in active service, which is a tribute to their design.

RECEIVER FOR THE CRAIG-TOLEDO COMPANY.

TOLEDO, O., July 8.—Granting the request of the involuntary petition in bankruptcy recently filed against the Craig-Toledo Motor Car Company by three of its creditors, the Carpenter Steel Company, the Harris Manufacturing Company, Reading, Pa., and Charles E. Miller, New York, E. J. Marshall has been appointed receiver by Referee in Bankruptcy Belford. The claims of the three petitioning creditors are said to amount to \$3,486.26, and it is reported that the alleged bankrupt has admitted its inability in writing to pay them. The liabilities are thought to total close to \$60,000. The Craig-Toledo Company is a comparatively new concern which has been assembling a limited number of cars at Dundee, Mich. It was the declared intention of the company to establish a plant at Monroe, Mich., the latter town having voted a bonus of \$10,000.

CORBIN SPRINGS SURPRISE ON ITS AGENTS.

During the past week the Corbin Motor Vehicle Corporation has been sending out a circular letter to its agents informing them of the plans of the house for 1908, and not the least startling assertion contained therein is the fact that they have decided to bring out a water-cooled car for next season. It is to be a 35-horsepower machine of the light touring type, seating five people and in every respect a modern and well-designed car. This does not mean that the Corbin air-cooled car is to be discontinued—quite the contrary. It has demonstrated its fitness in no uncertain manner in every contest that it has entered, and with a few minor improvements will be the subject of a greater amount of attention on the part of its builders during next season than ever. The new car has simply been designed to meet the very evident and general demand that exists for a medium-priced water-cooled car. The figure at which the new machine is to sell has not been determined as yet, but it is expected to have demonstrating cars of this model ready for delivery by October 1. The greatest surprise, however, is being held in reserve and will not be announced until later.

IMPORTERS' SALON TO BE AN EXCLUSIVE SHOW.

While the rules for the holding of the Importers' Automobile Salon, which is to fill Madison Square Garden with imported cars from December 28 to January 4 next, are practically a replica of those in force at previous shows, attention does not appear to have been directed to an apparently innocuous clause forming the end of paragraph III under Allotment of Space:

"No exhibitor shall be allowed to exhibit, who has, either directly or indirectly, through dealers or agents, exhibited automobiles in any show in Greater New York, between February 1, 1907, and December 28, 1907," a provision that is evidently aimed at importers who take part in either the independent or the licensed shows here this fall, as both occur within these dates.

AMERICAN AUTOMOBILES FOR EUROPE.

Fifteen hundred Dragon automobiles for southern Europe indicate that the American machine has made good in the Old World. Negotiations for the supply of this number of machines to Messrs. Perretti & Company, of Florence, Italy, have been completed by the Dragon Automobile Company, proving a distinct demand for a moderate-priced American machine capable of competing with the European product. Three hundred cars a year, for a period of five years, are to be supplied, to be distributed, according to the contract, throughout Europe, comprising Russia and Turkey and European States near the Mediterranean.

SLIGHT CHANGES TO MARK ELMORES FOR 1908.

CLYDE, O., July 8.—Details of the changes to be made in the 1908 models of the Elmore cars have been made public, from which it is learned that the only radical innovation to be made consists of the equipment with an improved form of rear-axle driving unit. Other modifications consist of refinement in the motor, giving it a capacity of six horsepower over its present rating, which, however, will remain the same, a reduction in the gross weight of the car by 200 pounds, the introduction of an improved pressure type of oiler, and the location of both sets of brakes on special drums in the rear wheel hubs.

SPRINGFIELD, O., TO GET FRAYER-MILLER PLANT.

SPRINGFIELD, O., July 8.—It is confidently expected here that the Oscar Lear Automobile Company, builders of the Frayer-Miller cars at Columbus, will remove its entire plant to this city within the next sixty days. The capital stock of the company is \$200,000, and half of this amount has been subscribed by local capitalists, while the local stockholders will also have a majority representation on the board of directors.



INDIANA'S FINEST GARAGE AT SOUTH BEND, IND.

THE FAST GROWING GARAGE LIST.

A Fine Automobile Installation at South Bend.

SOUTH BEND, IND., July 1.—Located one block from the Oliver Hotel, at 121-125 South Lafayette street, the Twentieth Century Motor Car Company has now one of the finest garages in the State of Indiana. The building is 65 by 160 feet, constructed of brick and concrete, without a post, the roof being supported by a steel frame. Ample light is obtained by large windows in the roof. A complete machine shop is fitted within the garage, equipped with all modern machinery, each piece being driven by an individual motor. There is a commodious waiting room for ladies, and the entire building is fireproof. Horace E. Kizer and M. L. Williams are at the head of the company, the latter gentleman being also chairman of the Touring Committee of the South Bend Automobile Club.

Springfield's Latest Automobile Home.

SPRINGFIELD, MASS., July 1.—A new automobile garage has been opened at 22 Taylor street by the Geisel Automobile Company. The frontage on Taylor street is 56 feet, of plate and prismatic glass, with a 14-foot door in the center and an office on the right. Particularly roomy and well equipped, the garage has, among other conveniences, six 16-inch ventilators to remove exhaust fumes, three steel receptacles for oily waste, six drop lights with 20-foot cords for inspection of cars, and three long brackets, with ball-and-socket joints, to throw light on any part of a machine. A large skylight gives illumination from overhead.

NORWALK'S MODERN AUTOMOBILE STATION.

NORWALK, CONN., July 8.—This city, which is situated on the direct route from New York to Boston—probably the most traveled automobile route in the country—can boast of station and repair facilities that are quite in keeping with its prominence as a



NORWALK AUTO STATION ON THE BOSTON-NEW YORK ROUTE.

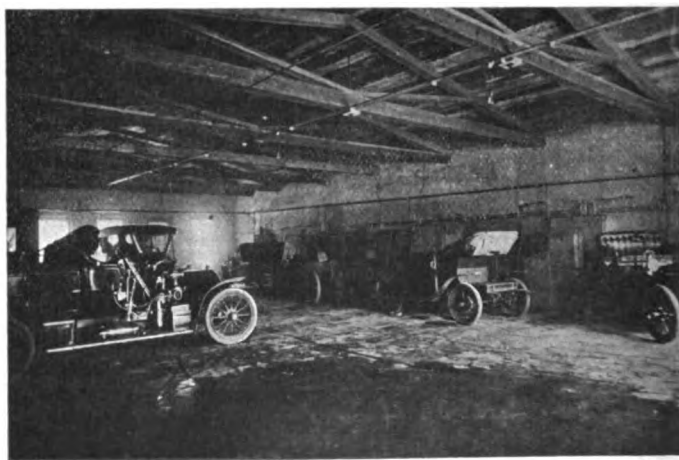
stopping place on a main automobile route. The photographs illustrate the exterior and interior of the new garage of F. W. Lockwood & Company, which is located at 39 Wall street. The building is constructed of ornamental pressed concrete blocks, with a concrete floor, and is in every other respect both fireproof and of modern design, besides being equipped with every facility for the maintenance and repair of a large number of cars.

NOTES OF THE GARAGES.

Wheeling, W. Va.—At Sixteenth and Chaplaine streets Jason Stamp has built a large garage, which, when complete, promises to be one of the best automobile establishments in the Central West.

Sturgis, Mich.—A two-story automobile garage, with a floor space of 30x110 feet, has been commenced here for J. R. Kirkpatrick. A well-fitted machine shop is comprised, and a full supply of accessories will be carried. It is contemplated handling the Matheson and other agencies.

Portsmouth, N. H.—Negotiations have been concluded for the lease of August Hett's property, at the foot of Brewster street, for an automobile garage and repair shop. Wharf room has also been obtained at the South End, where a large gasoline tank will be erected from which to supply motor boats.



INTERIOR OF F. W. LOCKWOOD & CO.'S NORWALK GARAGE.

Ligonier, Ind.—A new two-story garage, 44 feet by 60 feet, provided with a first-class repair shop, has been opened here by T. A. Graves. In view of the passage of the Glidden tourists, the proprietor is preparing to carry an extra large supply of gasoline, and will make regular rates on all materials.

La Grange, Ind.—Two of the strongest points of interest in this town are at the La Grange Machine Works, where H. W. Lampman, an old Chicagoite, has a first-class repair installation, and the new garage (60x60 feet) which is now being run up for C. W. Timmes, and which promises to be thoroughly up-to-date.

Reading, Pa.—At the Berks Auto Garage Company on Cherry street, Reading now possesses one of the best equipped garages in the State. Its installation comprises large storage room, machine shop, handsome office, with private room attached, together with bathroom for the benefit of employees. The company has the Jackson, Stoddard-Dayton and Maxwell cars.

Pittsburg, Pa.—The downtown garages of Pittsburg are doing such a business this year that it is freely predicted that in 1908 many of the East End garages will be abandoned. The latest concern to move downtown is the Standard Automobile Company, which has taken an entire floor in the new Century Building, in Seventh street. Other firms which have felt the downtown boom are the Banker Brothers Company, in Diamond street, and E. D. Nevin, who is selling Darracqs at 507 Wood street.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

At the last meeting of the American Motor Car Manufacturers' Association the Gearless Transmission Company of Rochester, N. Y., was admitted to membership by the committee on management.

The Carter Motor Car Corporation, of Detroit and Washington, and which has branch offices in various cities of the country, is now building a factory at Hyattsville, Md., to supply the demand for their cars in the East and South. This concern holds patents on the Carter two-engine car which is being exhibited at the Jamestown Exposition.

Harry E. Dey, who drove the big six-cylinder Pierce Pathfinder on the mapping out run for the three A's tour, started to go over the same route at the wheel of the same car again on Wednesday when the tourists left Cleveland. The car, which was the first six-cylinder turned out by the Pierce company, had already covered 31,000 miles before starting on the pathfinding trip.

At a meeting of the creditors of the Four Wheel Drive Wagon Company, of Milwaukee, Wis., a dividend of eight per cent. was declared, and it is thought that a second dividend of the same amount will be paid before the affairs of the defunct company are settled. The proved claims now on file amount to \$190,000, and the Fidelity Trust Company, the trustee in bankruptcy, has about \$30,000 on hand for distribution.

Since the unusually successful completion of the contest held by the Automobile Club of America, a number of cars have developed the "sealed bonnet habit." The Haynes runabout, which scored a victory in the New York to Albany run and which later competed successfully in the sealed bonnet contest, is one of them, and is still running with the original seals intact. The car is being driven by C. B. Warren, who piloted it in both of the contests.

It is reported here that the Light Inspection Company, of Hagerstown, Ind., has just received an order from an Indianapolis concern for \$80,000 worth of a new type of four-cylinder automobile engines, which are the invention of C. N. Teeter. The company is preparing to enlarge its plant and greatly increase its facilities in order to take care of the extra work involved, the building of gasoline automobile engines being a new departure.

It is interesting to note that out of the seventy-one entries for the A. A. A. tour now under way thirty-seven of the cars are equipped with Diamond tires. In order to facilitate tire repairs en route, the Diamond Rubber Company has accordingly made arrangements to send along a traveling stock of tires so that the contestants will be relieved of the necessity of carrying a number of extras. These are being carried in a touring car fitted with a special body to accommodate them and which will be in charge of H. G. Smith, of the Cleveland Diamond branch. About one-half of the cars are equipped with quick detachable rims among which the Marsh figures prominently.

Under the title of "Route Book No. 4," the White Company has just issued detailed road directions for reaching the Jamestown Exposition via the "air line" route by way of Philadelphia, Wilmington, Dover and Cape Charles. Supplementing the instruc-

tions for reaching the exposition is an illustrated article replete with useful hints for tourists contemplating a trip in that direction. Road directions are also given for a tour from Baltimore, over the national highway to Frederick, and then by way of Harper's Ferry to Halltown, W. Va., where connection is made with routes north and south, described in the White Route Book No. 2. A feature of the book that will be appreciated is a fine double-page map. Copies will be sent gratis on application to the White Company, 300 Rose building, Cleveland, O.

RECENT TRADE REMOVALS.

The Randall-Faichney Company, maker of the well-known B-line oil and grease guns, has moved from the Sudbury Building to 251 Causeway street, where it has secured new quarters, affording 16,000 square feet of floor space. This increase in facilities will enable the company to take care of the increased demand for its products that has been manifest for some time past.

The Automobile Sales Corporation of New York, with quarters at 1662 Broadway, near Fifty-second street, is now selling the 1907 product of the Daimler Manufacturing Company, of Steinway, N. Y. The company has recently removed to large new showrooms at this address and is making immediate deliveries of the American Mercedes cars, which are still being handled by J. J. Evans.

NEW AGENCIES ESTABLISHED.

The Brown-Friend Motor Company, a newly formed concern, of which the members are G. W. Brown and Otis C. Friend, both well known in Chicago's motor colony, have opened for business at 230 Wisconsin street, Milwaukee, Wis., and will handle the Mitchell agency for that and neighboring territory.

Under the management of William C. Chambers, formerly of the Hamilton Auto Company, and with J. M. Hannick as a partner, the Universal Auto Exchange was recently opened at 1352 Wood street. A full line of automobile accessories of every kind will be carried, including a complete stock of tires, Mr. Hannick being conversant with this line through his former connection with the Michelin tire agency in this city.

PERSONAL TRADE MENTION.

W. Wayne Davis, formerly with the Keystone Motor Car Company of Philadelphia, has taken charge of the Peerless department of the Quaker City Automobile Company. Mr. Davis is one of Philadelphia's pioneer automobile salesmen.

Frank H. Burmester, of the Burmester Rubber Company of Boston, has severed his connection with that concern and gone with the Firestone Tire and Rubber Company of Akron, O., in the capacity of New England traveling representative.

J. B. Kavanaugh, formerly with the Hartford Rubber Works, Hartford, Conn., has severed his connection with that house in order to assume the management of the Cleveland branch of the Fisk Rubber Company and will immediately enter upon his new duties.

R. E. Olds, president of the Reo Motor Car Company of this city, and chairman of the legislative committee of the American Motor Car Manufacturers' Association, sailed for the other side with his family on the Fraf-Waldersee. He will remain abroad for two months, most of the time being spent on the Continent in the dual pursuit of pleasure and business, automobile conditions being studied with a view to arranging for the placing of Reo agencies.

Ezra E. Kirk, formerly general sales manager of the E. R. Thomas Motor Company, Buffalo, who recently resigned to go into the garage business at Toledo, O., under the name of the Kirk Bros. Automobile Company, has just sold his interest in the latter concern and has retired as president and director of the company, H. W. Fraser having been elected to the office in his place. Mr. Kirk has been such an active participant in automobile trade affairs for some time past that it is hardly likely he will remain long out of business, and he will doubtless be heard from soon.

M. J. BUDLONG RETIRES.

Milton J. Budlong, for four years president of the Electric Vehicle Company of Hartford, Conn., has resigned, to take effect September 1. He will take a long and much needed rest before announcing his future plans. His successor has not yet been named.

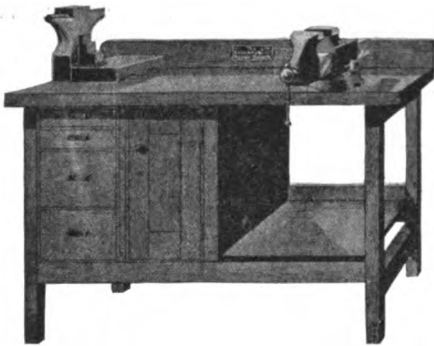
Mr. Budlong is one of the best known men in the automobile business in this country. For nine years he has been connected with the Electric Vehicle Co. in various capacities. He was treasurer, vice-president and general manager and latterly president, succeeding George H. Day when the latter became manager of the Association of Licensed Automobile Manufacturers. Mr. Budlong was connected with the Pope interests in their early days, and he later became secretary and treasurer of the Siemens Halske Electric Company, of Chicago. When Mr. Day became head of the Electric Vehicle Company Mr. Budlong became the western manager, in which position he remained until he was called to Hartford to take the position of vice-president of the company. He was subsequently elected president of the National Association of Automobile Manufacturers, and for four years has been one of the most active and successful of the younger men in the American automobile industry.

LARGE STEARNS CONTRACT.

F. B. Stearns, of the Stearns Automobile Company, Cleveland, O., has just closed a contract with Wyckoff, Church & Partridge, of New York City, for the sale of the Stearns in the metropolis for the next three years. The minimum value of the cars to be sold in that time is \$3,000,000, thus making the contract one of the largest agency deals ever consummated. Wyckoff, Church & Partridge are not new to the Stearns, as they have been handling it for the past year and know what they can do with it in the way of sales, which accounts for the large guarantee.

INFORMATION FOR AUTO USERS.

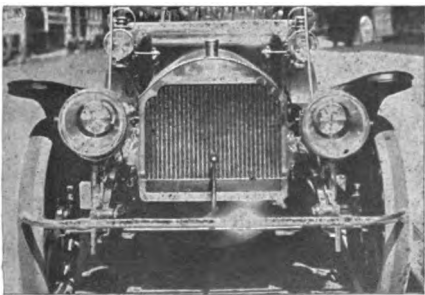
The Universal Repair Bench.—The greatest need of every autoist who takes care of his own car, and the number that do so is constantly on the increase, is an appropriate place to work, together with a convenient place to store his tools. These are provided in an up-to-date manner in the Universal Repair Bench, a photograph of which is shown herewith. It is manufactured and marketed by the Universal Repair Bench Company, Rochester, N. Y.,



UNIVERSAL REPAIR BENCH AND FITTINGS.

and is fitted with a high-grade swiveling vise and a bench block of special design, which will be found useful in a hundred and one different ways when making small or even serious repairs to an automobile. The bench itself is built of the best seasoned lumber, with a hardwood top, mortised and glued, and measures two feet wide by five feet long and three feet high. It is provided with four drawers, a cupboard and plenty of shelf room for the accommodation of tools.

The Automatic Searchlight.—Autoists have long felt the need of some device to cast the light of one of the headlights in the same direction as the car turns when rounding a curve, and use of such an aid to night driving would be general. O. E. Halderman of Marion, Ind., has given considerable study to the matter and as a result is now marketing what he calls an "automatic searchlight." The device consists of a vertical bracket supported on a two-point bearing, forming a support for the light, with an adjustable spring between



HALDERMAN'S AUTOMATIC SEARCHLIGHT.

the two points. It is attached to the frame or body of the car and is operated by means of a rod extending downward from the bracket, which connection causes the right-hand lamp to turn only when the car turns to the right, or to the left in the case of the left-hand lamp, thus leaving one lamp heading in the same direction as that in which the body of the car is pointing, while the other follows the line of the steer-

ing wheel and shows exactly where the latter is going when rounding a curve. When the car resumes a straight course the adjustable spring mentioned causes them to return to their normal straight-ahead position, as shown by the accompanying photograph of a car fitted with these brackets.

Safety Relief and Cut-out.—The Gray-Hawley Manufacturing Company, Detroit, Mich., are placing on the market, as an addition to their extensive line of specialties of this kind, an advanced type of muffler cut-out and safety relief, which is practical and durable as well as readily attached to any car. The safety relief feature consists of an opening governed by a nut and oil-tempered spring, the latter being placed outside, so that it is not affected by the heat. When installing it the spring is adjusted so as to keep the opening closed under normal conditions, so that when a charge is exploded in the muffler it instantly releases the pressure and prevents imposing undue strain on the latter. The valve body, lever and brackets are made of malleable iron. The valve runs in three guides, and is



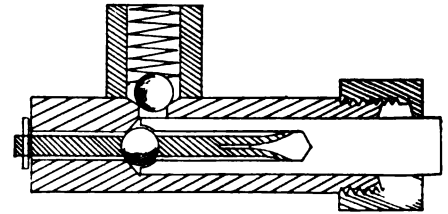
GRAY-HAWLEY MUFFLER CUT-OUT.

ground into its seat, thus insuring a good fit. The bracket swivels on a lock nut and may be turned to any position desired, while the lever is also reversible, thus making it easy to install the cut-out without the necessity of using bell crank levers or other complicated means for its operation. The appearance and simplicity of the device may be judged from the accompanying illustration of it, showing it complete.

Automobile Comfort.—Under this title the makers of the Rough Rider Ventilated Spring Cushions, the Ventilated Spring and Cushion Company, Fisher Building, Chicago, Ill., have issued a neat booklet showing in a telling manner by means of text and appropriate illustrations the great advantages of their system of ventilated cushions over the ordinary kind, and also giving a partial list of American automobile builders who have adopted their springs as a part of the regular equipment of their cars. As the names include some of the most prominent builders in this country this is not the least valuable part of the booklet to the maker who is seeking goods of this character, for the average man usually wants to know who else is making use of a thing before he decides to try it for himself. Rough Rider springs are not the ordinary kind—just coils of wire between two braces

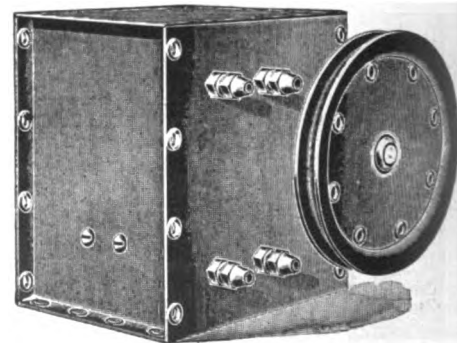
—they are special springs in many ways, but in addition, the spring cushions made by this firm embody a unique provision in the shape of an auxiliary set of springs, to take care of those unexpectedly hard bumps that bring the ordinary cushions down to their foundations when passing over them.

Schoelkopf Lubricators.—Probably not one autoist in a hundred could mention off-hand the various styles of lubricators that are used on the automobile, nor, for that matter, can the average driver tell an inquirer just how the particular device that is on his own car operates. For this reason



SECTION SHOWING PLUNGER AND VALVES.

the pamphlet issued by the Schoelkopf Manufacturing Company, Madison, Wis., under the title of "A Treatise on Mechanical Lubrication," is of more than passing interest to those who are not as familiar as they might be with this most important essential. It reviews all the standard types of force-feed lubricators on the market, with an explanation of the principle on which they work, and shows, moreover, how they differ from the Schoelkopf lubricator, sectional illustrations of which serve to show its simplicity. It also sums up the ideal lubricator as follows: "An exceedingly simple and positive method of conveying oil to the various parts of the motor and car, from a large container, and means for showing at a glance the amount of oil passing through each lead, with force sufficient to be unaffected by temperature variation or particles of foreign matter in the lubricant."



SCHOELKOPF LUBRICATOR NO. 26.

The Schoelkopf lubricator is the result of five years' study of the problem, and its pump embodies all the simplicity of the regular check-valve type, with its great objections eliminated, as will be seen from the illustrations depicting a sectional view of the barrel, showing the plunger and valves.

NEW TRADE PUBLICATIONS.

From the Morgan & Wright factory at Detroit a couple of neat folders have come forth in praise of the firm's well known products. The subject of good tires is handled, convincing arguments being put forth to prove this quality in the Morgan & Wright article.

THE AUTOMOBILE

BIG TOUR IS PROVING THE ENDURANCE
OF THE AMERICAN AUTOMOBILE

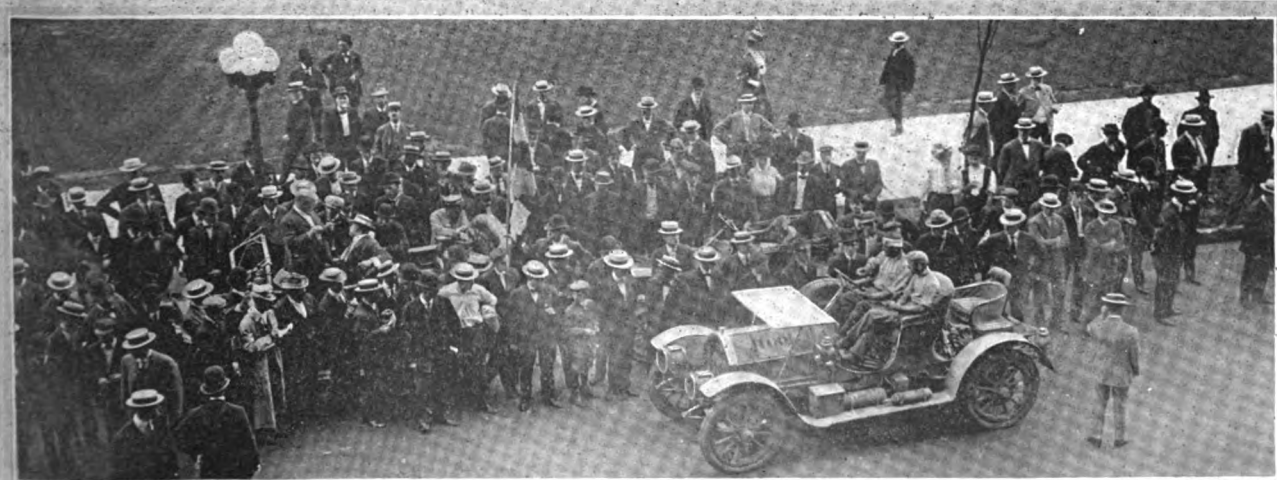


BY A. G. BATCHELDER

CHICAGO, July 15.—Somewhat impatient from its two-day inings of idleness, the autoing cavalcade this morning resumed its strenuous—the word fits exactly—tour, for a tour can be an endurance contest even though a contest is not necessarily a tour. It might be said right here, and said unmistakably, that any American automobile—the importers ignored the opportunity—which survives this A. A. A. 1907 tour, either with a clean score or with minor penalizations, will have just cause to declaim from the housetops its staunchness and reliability in meeting extraordinary touring conditions. And in this country, compared with the general run of European highways, our roads when traveled for any great distance usually require these extraordinary conditions. They cannot be escaped.

Pleasure is incidental to this fourth annual event of the Three A's, and while there may be several who looked upon the affair as a jaunt rather than in the light of a contest, the greater part of the participants had no false notions as to the nature of the 1,570-mile ride that began in Cleveland and will end in New York City. It is not a mere struggle for the possession of the Glidden and Hower trophies, but the real prizes sought are the commendation and patronage of the automobile-buying public.

Forty-two of sixty-one automobiles faultlessly survived the hard Cleveland-Toledo section, the more difficult Toledo-South Bend run, and the South Bend-Chicago trip, which had its greatest task in the plowing of the quagmires of the city's squalid South Side. A dozen non-contestants, unfettered by rules and



WHERE THE OFFICIAL CLOCKERS CHECKED THE CARS ON THEIR ARRIVAL AT THE AUDITORIUM ANNEX, CHICAGO.



PART OF THE LINE SNAKING ITS WAY THROUGH THE SAND.



HELD UP AT THE DRAWBRIDGE OUTSIDE SOUTH CHICAGO.

controls, extracted considerable enjoyment during the three days. When this endurance tour—that is the proper designation—is over and its results are summed up, it will be recognized as having been beneficial to the industry and pastime, for the more perfect the automobile of the maker the more perfect is the pleasure of the user. From these long runs—no matter if the rules have been uneven, the rulings of the officials subject to criticism, and the roads good, bad and indifferent—every participant has learned something. If a manufacturer, he discovered weaknesses of construction which he quickly corrected; if a user, it may have caused him to discard what he owned for something which he had observed contained greater reliability.

The interest of the public is keen in the automobile, and through Ohio and Indiana the 1907 touring brigade has become aware of the fact that many a farmer met with along the road no longer regards the motor-driven vehicle as an interloper, but, his horses now seldom scared, he has in mind the buying of a car himself, and is looking about to find the one which best will suit his needs. Now and then there was to be seen the thrifty agriculturist who already had invested in a car, over which he betrayed the pride of ownership.

There have been courtesy and greetings all along the way, in the country as well as in the city, and an occasional banner has accentuated the welcome. It is as hard as usual to disabuse the average onlooker at the flying procession of the idea that there is no race, and he will persist in urging one to "hit her up," trying to lend encouragement by saying that the car in front has just passed. Occasionally there is a brush on the road, despite the rules, but as a whole the entire caravan, including the free lances, are considerate of other users of the highway.

It was not to be expected that Chairman Hower would find approval from all quarters, and his desire to shoulder the entire

burdens of direction aroused some antagonism even in his own committee, so much that L. E. Myers, the Chicago member, handed his tour badge to the chairman at South Bend. But the chairman is a worker, and the summary of the tour will have to tell whether he has accomplished his somewhat self-imposed wholesale task in a manner satisfactory to the A. A. A.

Since the tourists with few exceptions have trade affiliations of some character, a great many hiked for the places of their Chicago representatives soon after their arrival here, and as a result the entertaining was scattered in many directions. But there were, and will be during the remainder of the tour, those who prefer long hours of sleep instead of the well-meant attentions of the entertainers in the various cities. Rest is a fine form of enjoyment after one has swallowed dust galore and bumped the bumps for many painful hours. No, this is not a pleasure tour, and 'tis fortunate that a few gained a false impression of what the thing is and was meant to be.

Back to South Bend will be easy, from there to Indianapolis is good going; the roadway to Columbus should be satisfactory, and on to Canton there will be average traveling. But to Pittsburg strenuousness will be apparent, and from Smoketown to Shady Bedford there'll be a ride which will make the Springs a blessed spot to reach on Saturday night for a stop over Sunday.

Yes, the tour is worth while at this time. About next year—that is a different matter. Many are already agreed that there should be a next year—that the tour is of decided benefit to the industry as a whole, and not a few are keenly observing conditions and the working of the present set of rules and regulations, with a view to their improvement when the opportunity comes. There is little doubt that if these wise ones get together and air their views there will be considerable to be said—but then, of course, that's too long a story.



FORD AND THOMAS LOST IN THE SOUTH CHICAGO MORASS.



MRS. J. N. CUNEO'S RAINIER CHECKS IN ON TIME.



DONOR GLIDDEN HALTS WITH CHAIRMAN HOWER UNDER THE BANNER FLUNG TO THE BREEZE IN HIS HONOR.

No.	Entrant	Car	H.P.	Club
3	R. D. Garden	Pierce	40-45	New York Motor Club.
14	Phil S. Flynn	Pierce	40-45	Pittsburg Automobile Club.
17	F. S. Day	Pierce	40-45	Buffalo Automobile Club.
21	T. P. Jones	Pierce	40-45	Pittsburg Automobile Club.
27	A. Kumpf	Pierce	40-45	Buffalo Automobile Club.
9	G. S. Salzman	Thomas Flyer	60	Buffalo Automobile Club.
11	M. Hallowell	Thomas Flyer	60	Buffalo Automobile Club.
22	H. H. Perkins	Packard	30	Pittsburg Automobile Club.
44	Gus G. Buse	Packard	25	Buffalo Automobile Club.
33	R. M. Owen	Reo	16	Automobile Club of America.
45	A. M. Robbins	Aerocar	40	New York Motor Club.
47	Walter C. White	White	30	Cleveland Automobile Club.
48	A. J. Scaife	White	30	New York Motor Club.
49	Chas. H. Burman	Peerless	30	Cleveland Automobile Club.
50	W. C. Straub	Peerless	30	Cleveland Automobile Club.
54	Edward Noble	Haynes	50	Chicago Automobile Club.
55	F. N. Nutt	Haynes	50	Chicago Automobile Club.
24	W. M. Lewis	Mitchell	30	Chicago Automobile Club.
25	S. Black	Lozier	40	Cleveland Automobile Club.
28	P. Gaeth	Gaeth	35	Cleveland Automobile Club.
29	G. P. Moore	Welch	50	Pittsburg Automobile Club.
31	E. S. Lea	Walter	40	New York Motor Club.
32	W. J. Howard	Oldsmobile	40	New York Motor Club.
38	H. C. Tillotson	Stoddard-Dayton	35	Chicago Automobile Club.
39	A. N. Jervis	Berliet	40	New York Motor Club.
41	I. C. Kirkham	Maxwell	16-20	Westchester Motor Club.
42	R. H. Tucker	Royal Tourist	45	Cleveland Automobile Club.
19	J. W. Moore	Premier	24	Automobile Club of America.
10	F. J. Pardee	American Mors	45	St. Louis Automobile Club.
15	G. Cabanne	American Mors	25-30	St. Louis Automobile Club.

SCORES WHICH ARE MORE OR LESS DAMAGED.

No.	Entrant	Car	H. P.	Club	First Day	Second Day	Third Day	Fourth Day	Fifth Day	Total
56	A. Cuneo	Rainier	30-35	New York Motor Club	0	4	0	0	...	...
7	A. R. Welch	Welch	50	Automobile Club of Detroit	12	0	0	0	...	...
23	H. C. Shoemaker	Shoemaker	35-40	Cleveland Automobile Club	0	0	26	111 1/2*	...	...
34	R. L. Lockwood	Reo	16	New York Motor Club	0	22	0	212	...	...
12	R. D. Chapin	Thomas Forty	40	Automobile Club of Detroit	0	1	53	*	...	...
2	K. R. Otis	Pierce	60-65	Cleveland Automobile Club	0	out	...	...	...	...
1	N. H. Van Sicklen	Apperson	40-45	Chicago Automobile Club	0	23	142 6-7	out	...	...
16	Orrel A. Parker	Royal Tourist	45	Automobile Club of America	0	6	0	...	...	...
36	E. P. Finch	Pungs-Finch	40	Automobile Club of Detroit	0	out	...	...	...	...
37	A. L. Peterson	Meteor	50	Cleveland Automobile Club	0	117	160	0	...	...
43	J. W. Mears	Acme	40	New York Motor Club	0	106	0	0	...	...
6	T. J. Clark	Packard	30	Chicago Automobile Club	0	154	142 6-7	out	...	...
56	F. E. Dayton	Columbia	40-45	Chicago Automobile Club	0	0	224	0	...	...
58	L. S. Tyler	Maxwell	16-20	Westchester Motor Club	0	0	8	...	...	...
59	Chas A. Fleming	Maxwell	16-20	Westchester Motor Club	0	0	333 1-3*	...	...	...
30	H. M. Coale	Autocar	30	New York Motor Club	0	0	0	0	?	...
51	J. H. Becker	Elmore	30-35	Cleveland Automobile Club	0	0	0	0	?	...
46	Geo. F. Barr	Aerocar	40	Automobile Club of Detroit	0	0	0	104	...	...
35	H. A. Rainey	Reo	16	Automobile Club of America	0	0	0	1000	out	...

* Joined non-contestants.

THE TEAM CONTEST FOR THE GLIDDEN TROPHY

NEW YORK MOTOR CLUB	CLEVELAND AUTOMOBILE CLUB	CHICAGO AUTOMOBILE CLUB	AUTOMOBILE CLUB OF BUFFALO
3 Pierce	2 Pierce	1 Apperson	9 Thomas Flyer
26 Rainier	25 Lozier	6 Packard	11 Thomas Flyer
31 Walter	28 Gaeth	24 Mitchell	17 Pierce
39 Berliet	37 Meteor	38 Stoddard-Dayton	27 Pierce
43 Acme	42 Royal Tourist	54 Haynes	44 Packard
45 Aerocar	49 Peerless	55 Haynes	
48 White	50 Peerless	56 Columbia	
30 Autocar	23 Shoemaker		
32 Oldsmobile	47 White		
34 Reo			
PITTSBURG AUTOMOBILE CLUB	DETROIT AUTOMOBILE CLUB	AUTOMOBILE CLUB OF AMERICA	WESTCHESTER MOTOR CLUB
14 Pierce	7 Welch	16 Royal Tourist	41 Maxwell
21 Pierce	12 Thomas Forty	33 Reo	38 Maxwell
22 Packard	36 Pungs-Finch	35 Reo	59 Maxwell
29 Welch	46 Aerocar	19 Premier	

CLUB	First Day	Second Day	Third Day	Fourth Day	Fifth Day	Total
Buffalo Automobile Club.....	0	0	0	0	.....	.....
Pittsburg Automobile Club.....	0	0	0	0	.....	.....
New York Motor Club.....	0	13 1-5	0	21 1/2	.....	.....
Cleveland Automobile Club.....	0	124 1-0	20 2-3	111 1/2	.....	.....
Automobile Club of America.....	0	1 1-2	250	250	.....	.....
Detroit Automobile Club.....	3	250 1-4	13 1-4	276	.....	.....
Chicago Automobile Club.....	0	25 2-7	317 5-7	0	.....	.....
Westchester Motor Club.....	0	0	336	0	.....	.....

THE RUNABOUT CONTENDERS FOR THE HOWER TROPHY

No.	Entrant	Car	H. P.	Club
100	A. E. Hughes.....	Pierce.....	40-45	Rhode Island Automobile Club.
102	H. E. Coffin.....	Thomas Forty.....	40	Automobile Club of Detroit.
103	H. O. Smith.....	Premier.....	24	Indianapolis Automobile Club.
104	G. S. Smith.....	Stoddard-Dayton.....	35	Quaker City Motor Club.
108	H. K. Sheridan.....	White.....	30	Cleveland Automobile Club.
111	Wallace Owen.....	Pennsylvania.....	35	Cleveland Automobile Club.
115	W. A. Badger*.....	Cleveland.....	40	Cleveland Automobile Club.

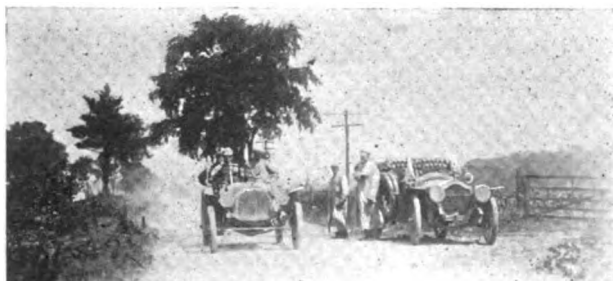
* Retired at Chicago for personal reasons.

THOSE WHICH FALTERED BY THE WAY.

No.	Entrant	Car	H. P.	Club	First Day	Second Day	Third Day	Fourth Day	Fifth Day	Total
112	J. W. Haynes.....	Dragon.....	24	Chicago Automobile Club.....	0	12	0	0	.....	.....
113	H. P. Branstetter.....	Dragon.....	24	Chicago Motor Club.....	0	out	.....	.....	.....	.....
106	R. G. Kelsey.....	Matheson.....	40-45	Long Island Automobile Club	0	56	0	944	out	.....
109	C. S. Johnston.....	Continental.....	35	American Automobile Asso... 24	35	0	0	0	.....	.....
107	H. C. Stutz.....	Marion.....	24	American Automobile Asso... 0	0	0	0	0	out	.....

NON-CONTESTANTS ACCOMPANYING TOUR.

No.	Entrant	Car	H. P.	Service
4	H. A. Grant.....	Maxwell.....	36-40	Official.
13	G. M. Davis.....	Thomas Flyer.....	60	Press.
90	Packard Company.....	Packard.....	30	Press.
91	Aerocar Company.....	Aerocar.....	40	THE AUTOMOBILE.
92	F. E. Spooner.....	Haynes.....	50	Press.
98	G. A. Weidely.....	Premier.....	50	Official.
99	F. B. Hower.....	Pierce.....	50	Chairman.
40	R. H. Johnston.....	White.....	18	Press.
60	Wm. Turner.....	Thomas Flyer.....	60	Goodrich Tires.
61	H. G. Smith.....	White.....	24	Diamond Tires.
52	W. G. Houck.....	Deere.....	40	Pleasure.
57	A. D. Cressler.....	Thomas Flyer.....	60	Pleasure.
12	R. D. Chapin.....	Thomas Forty.....	40	Pleasure.
105	J. E. Zimmerman.....	Locomobile.....	35	Pleasure.
114	J. C. Barclay.....	Thomas Forty.....	..	Warner.
16	Orl A. Parker.....	Royal Tourist.....	45	Pleasure
59	Charles A. Fleming.....	Maxwell.....	16-20	Pleasure
12	R. D. Chapin.....	Thomas Forty.....	.....	Pleasure



SOMETIMES THE ROADS WERE EXCELLENT, LIKE THIS.



BUT MORE FREQUENTLY THEY WERE BAD, LIKE THIS.



PARTICIPANTS in the A. A. A. tour are agreed that the affair now in progress is the greatest from every point of view that has ever been held in this country. While, in my opinion, some changes in the rules can profitably be made for 1908, it must be admitted that the present ones have worked out much better than many expected. While it is true there is some complaint about fast schedules over execrable roads, there was a general understanding that the affair was not to be of the lawn tennis order, but rather a tour that would test cars and drivers. Nevertheless the nine-hour schedule for the 166 miles from Toledo to South Bend, announced the night before and not lengthened after a five-hour rain, was too fast for safety, to say nothing of comfort, and was an injustice to the cars of 24-horsepower or less. That distance over such roads in nine hours endangered everyone and cheered the hearts only of those driving road locomotives of the 60-horsepower type.

That this schedule was wrong is now admitted, and although each day will see a timetable fast enough to test cars, yet it will always be within the bounds of safety and within the speed limits of the various localities. Anything to the contrary would injure the pastime in every town through which the tour passes and tend to bring about legislation of the unfair sort that will affect the industry; and as 95 per cent. of all cars entered in the tour are from the trade with factory experts furnished for the others, the maker is entitled to some consideration.

It is absurd to believe that any great number of amateurs can be found who will slam their own cars over the roads on a time schedule, eating the proverbial "peck of dust" daily simply to participate in the Glidden contest.

After participating in these tours from their inception I have reached the conclusion that a pleasure jaunt and a test of cars cannot be combined. Moreover, I am convinced that no satisfactory set of rules or schedule of running can be promulgated unless it involves the factor of price. Primarily these contests are for the benefit of the public, and who will deny that possible buyers are most interested in knowing the best car they can get for a certain sum of money? Yet when a 16-horsepower car of \$1,250 is required to make the same time and comply with the same rules as a 60-horsepower machine costing \$6,500 it is unfair to the small car at the time, and unfair at the finish to the large car, which can boast of no

better performance than that supplied by the lower-priced one, albeit it was capable of accomplishing more where the smaller machine had been at its limit.

After giving the matter a little thought and noting the performances of cars on the run, it would appear as though cars selling for less than \$2,000 should be required to average fifteen miles an hour; those selling from \$2,000 to \$3,000 to make seventeen miles an hour, with nineteen miles for cars selling for \$3,000 or more, and a slight increase for the runabouts. In case of severe rains a slower schedule commensurate with road conditions could be enforced.

When one sees cars disqualified for replacing small parts, instead of allowing them to continue with a penalty, it would seem as though future tests should permit of small repairs such as might be done by an owner on an ordinary tour, charging some by a deduction of points. This involves the matter of observers, and I am free to say that observers are the most satisfactory where an award of any sort is to be made.

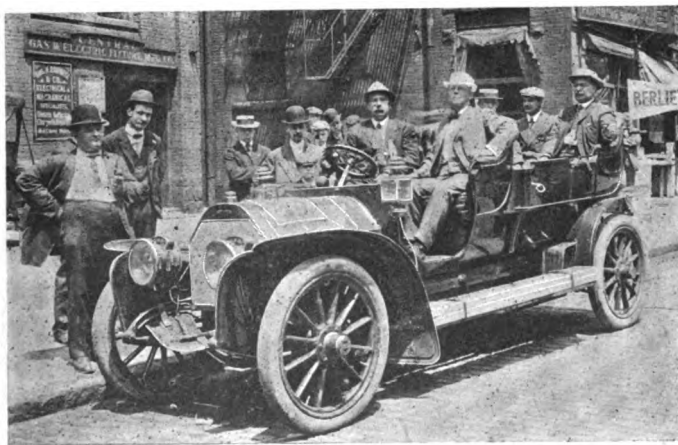
That a schedule of some sort is required to properly test cars is admitted. It should not be so fast as to cause the affair to degenerate into a road race, nor should it be so slow as to permit too much work to be done on cars. If a fast schedule is to be followed, no passengers or baggage should be required in the cars, and entrants should be permitted to do anything to help supply the speed.

Properly conducted tours help the industry, but unsanctioned racing on the public highways brings discredit on everyone concerned. Racing, however, is a fever that is contagious, and it can hardly be cured by any other measure than the providing of a pacemaker, who must not be passed by any contestant, but to whose time shall be added half an hour or so in favor of the competing cars to give them an opportunity for filling fuel tanks,

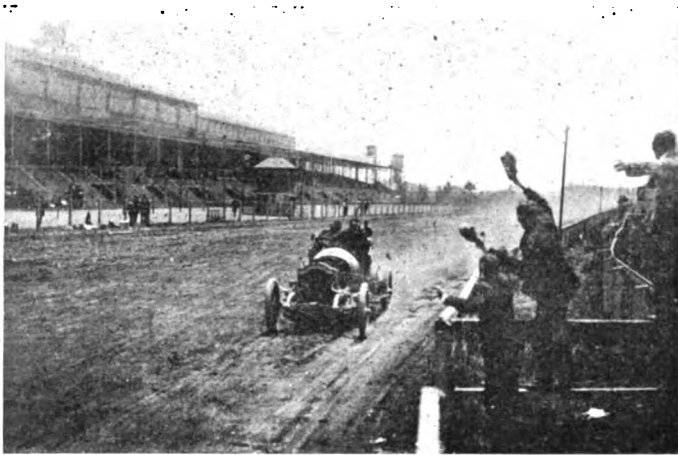
oiling moving parts, replacing punctured tires and making slight repairs. The reliability of cars finishing under such conditions would admit of little argument.

The present tour is a wonderful demonstration of strength and reliability in American machines. Not a foreign car owner elected to undergo the test. Troubles have been of little moment, being mostly in bearings, springs and running gears. Of motor troubles there may be said to be none.

It seems to me that many American makers lose a grand



A. N. JERVIS' BERLIET, A "SEALED BONNET" GLIDDENITE.



COEY IN HIS THOMAS WINNING THE "24" AT HARLEM TRACK.

opportunity to study conditions by failing to either enter a car or to have a factory expert on the trip. The representative of a company which sold \$2,000,000 worth of cars last year stated publicly that they learned some way of improving their product in every contest of this sort and expected always to enter them.

Chairman Hower and Secretary Lewis of the A. A. A. touring board, with their assistants, have worked nobly and with commendable results. They will all learn much from this tour which doubtless will be reflected in the rules for the event of 1908.

THOMAS WINS CHICAGO'S TWENTY-FOUR HOUR.

CHICAGO, July 16.—C. A. Coey (Thomas) was the winner of the 24-hour race held on the Harlem track from 4:45 P.M. Friday to 4:45 P.M. Saturday. Coey's mileage is 846, which, owing to the poor condition of the track, was far below the 1,135 miles two-car record established three weeks ago by Ford machines at Detroit. Mongini (Matheson) was second with 842 miles; Wagoner (Haynes) third with 813 miles; Foster (Cadillac) fourth with 794 miles, and Zirber (Mitchell) fifth with a score of 719 miles. The attendance was large and more cars were never before seen at a track meet.

No sooner was the result announced than it was stated that a protest would be lodged by the Matheson representatives on the ground of inaccurate scoring, points specially mentioned in the document being "that the two Thomas cars were on the track together, both being scored by the officials; that for five laps no record was credited to the Matheson; that 75 per cent. of those present supposed that the Matheson had won." The matter may be brought before the Racing Board of the A. A. A. for adjudication.

A challenge has been issued to the winner by the White Company of Cleveland, conditions of the contest to be the same as on the Harlem track, with details to be settled at the convenience of both parties. Steam cars were barred from the 24-hour and also the sprint races.

Wretched track conditions are alone responsible for the low mileages recorded by the competing cars. The surface was so soft that deep furrows were plowed in the dirt, and the drivers

were obliged to follow these tracks to make any speed at all. To remain in the game any length of time called for almost super-human efforts on the part of the drivers.

The Maxwell car, the famous "No. 13," remained on the track the greatest length of time and was running well until the twenty-third hour, when it was bumped into by Mongini's Matheson, sustaining a broken rear axle. After running three turns, a Pope-Toledo blew out a cylinder. The car was removed from the track, a new cylinder fitted, and on its return did forty-five miles in one hour—the fastest going of the day.

Some of the short sprints were abandoned owing to track conditions, the brief results of those which were held being as follows:

THREE-MILE EXHIBITION AGAINST TIME.

1. Haynes, 35-horsepower; driver, Miss Alice Tetzner.... 6:02

FIVE-MILE MATCH RACE.

1. Packard, 30-horsepower; driver, Otto Lehman..... 7:16
2. Jackson, 35-horsepower; driver, Burman.

JOHN CONDON STAKES, TEN MILES.

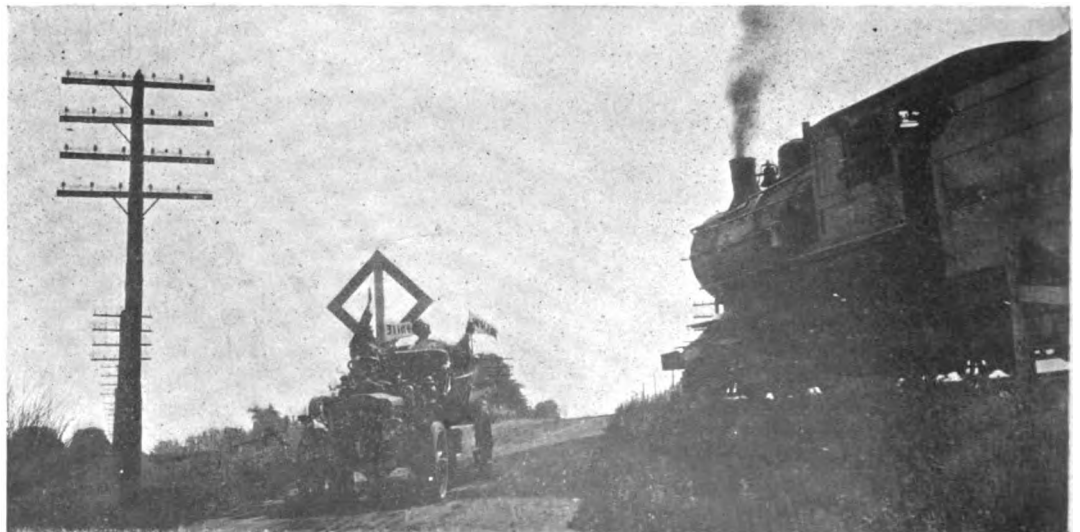
1. Apperson, 50-horsepower; driver, Phil Kirk..... 14:58 1-5
2. Packard, 30-horsepower; driver, Otto Lehman.
3. Haynes, 50-horsepower; driver, C. W. Birchwood.
4. Apperson, 50-horsepower; driver, Eddie Bald.

FIVE-MILE DASH, FREE-FOR-ALL.

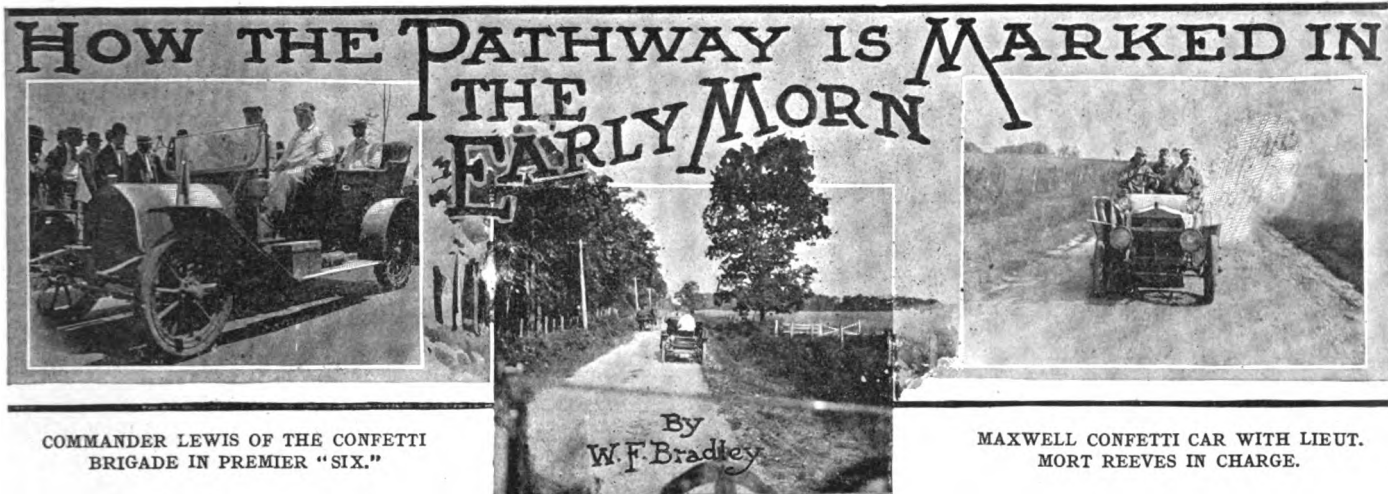
1. Apperson, 50-horsepower; driver, Phil Kirk..... 6:32 1-5
2. Pope-Toledo, 50-horsepower; driver, George Schoeneck.
3. Apperson, 50-horsepower; driver, Eddie Bald.
4. Thomas, 60-horsepower; driver, C. A. Coey.
5. Jackson, 35-horsepower; driver, Burman.
6. Haynes, 50-horsepower; driver, C. W. Birchwood.

The meet was conducted under the auspices of the Chicago Automobile Club by the United States Automobile Racing Association, it being understood that the club was to supply the officials. In order to have scorers who would serve all night it was necessary to use hired men, and here is where the charge of incorrect scoring had its genesis. It is safe to say on the next occasion that this feature will have greater attention from the club and similar annoyances avoided.

On the other hand, however, it is definitely stated that the Matheson team did not receive credit for several miles because of illegal pick-ups. When Mongini was relieved by his teammate the latter would not wait until they were on an equality, but would sometimes run out on the track nearly an eighth of a mile ahead. He was not officially considered in the race until he was alongside his mate. There is a probability that the protest will be simply one of newspaper shouting only, because exact evidence seems to be wanting, though such protests naturally detract from the interest of the meet, and due precautions should be taken to guard against conditions which make them possible, in the interest of clean sport.



AN EXCHANGE OF GREETINGS BETWEEN THE PILOTS OF THE LARGE AND SMALL STEAMERS.



COMMANDER LEWIS OF THE CONFETTI BRIGADE IN PREMIER "SIX."

By W.F. Bradley

MAXWELL CONFETTI CAR WITH LIEUT. MORT REEVES IN CHARGE.

THE STUDEBAKER WHICH ESCORTED US OUT OF SOUTH BEND.

ON the floor above the last feeble strains of a waltz were dying as one reluctant leg followed the other over the bed-edge in response to the unwelcome "Three forty-five, sir" call.

Laying the confetti for A. A. A. tourists is of necessity a natural occupation, appreciated by Chairman Hower, Globe-girdling Glidden, Pathfinder Dai H. Lewis and their few assistants who bustled around the Oliver Hotel at South Bend, electrifying the drowsy hallboys. Confetti car for the occasion was the Premier "Six," just six days out from the factory, and its cargo, Dai H. Lewis, all eyes for the odometer and the road book, and Roy MacNamara occupied with steering wheel and throttle. A sack of confetti and numerous traveling bags shared the tonneau with Designer George A. Weideley of Premier interests, and the scribe, who completed the car's complement.

"Is that odometer set back? Come along, boys! Swing it out thick on that corner; now some more on the next turn," spake the commander of the procession. For it is not a single car, but a procession that is required for blazing the way of the Gliddenites. Ahead, a speedy Studebaker runabout, piloted by local automobilists, showed the way out of the town, the official Premier followed, behind it was a Maxwell runabout with a reserve of confetti, and in the rear the big Pierce, in which the Cup donators watched the proceedings.

Michigan avenue being in the hands of the repair men, a detour of a couple of miles over narrow country lanes had to be effected, then the main road was struck again and the machines bowled along over a fair surface, deserted except for an occasional farm wagon carrying market produce to South Bend.

Down the road a couple of wagons were observed advancing. Studebaker passed them both with barely a slackening of speed. The Premier "Six" went by the first with a nod to the farmer and his cooped-up chickens of all ages, and was approaching the second equipage when it was noticed that Dobbin was restless. Instantly driver MacNamara cut out his ignition and the machine ran along silently toward the two ladies and the hesitating old horse. The road being banked high, it needed but a slight rearward movement of the animal for the buggy to drop down a couple of feet, dragging the horse after it, overturn, and throw the two ladies out from under their umbrella into the long wet grass.

One minute later the younger of the ladies was up on the road, thanks to the agility of

Dai Lewis, and had ceased her shouts of "Father!" Mother came out with cries and lamentations of "O, my eggs!" When father had leisurely hitched up his horse and as leisurely walked back to his spouse and offspring, both had recovered from their surprise and were aiding the automobilists to repair. It took but half an hour to turn the frail, undamaged buggy right side up and gather together what remained of the six boxes of eggs—Dai Lewis declares there were half-hatched chickens in lots of them.

"Mister Farmer," said Chairman Hower, "your wife is to blame for this accident, but we are willing to help you out Will \$10 pay for your broken eggs?"

"Twenty-five dollars wouldn't half pay me for them there eggs."

Angry words seemed probable, when George A. Weideley, at whose motionless Premier the horse had shied, slipped another note into the farmer's hand.

"You're a gentleman, sir, you are; you're all gentlemen," and smiles took the place of frowns. Chairman Hower delivered a lecture as to how to act on the approach of an automobile and Charles J. Glidden supplemented it from his bottomless stock of experiences.

Beyond New Carlisle a perfect macadam surface allowed some of the loss to be regained, the confetti car and its escort sweeping along at a brisk rate without the suspicion of a jolt to passengers perched on the rumble seats behind.

A score of times the procession came to a standstill, while nervous horses were led by the machines, and on each occasion the occupants of the chairman's car gave kindly advice, telling particularly when there were ladies that if the hand were raised as a signal every one of the three-score machines in the tour would stop and wait until the horse were led by.

Did every automobilist follow the gentlemanly example of Chairman Hower there would be no disgusted horse drivers and no need for legal speed restrictions.

When the South Bend pilot had cast us off and turned eastward again, and we had set all Michigan staring at our paper trail, Confetti Chief Lewis became pathfinder-in-chief. Road repairs had rendered the original route impracticable, and a new trail had to be laid out. Almost at every turn the procession came to a halt while the leader interviewed the occupants of a roadside house or went in search of inhabitants when none were in sight.



THOMAS PRESS CAR THAT HAD A "FULL HOUSE."

"It's the hardest thing in the world to get information," said Chief Lewis. "Not one man in fifty knows anything about the roads ten miles from his home."

But we blazed out a way. Down narrow lanes which might have been traced by a rolling early-morning reveler; along tracks which lingered, as if magnetically bound to the iron way; through slumbering villages bursting into life at the sound of the autos, and over fair blossom-bordered highways.

Suddenly the Premier's nose went into a soft, oozy bed of mud of unknown depth and settled down, reluctant to leave it.

Chief Lewis momentarily paled, hesitated and appeared to weigh the chances of a retreat and a search for another track against a forcing of the passage.

Chairman Hower glanced nervously down the road, fearful of the thundering arrival of the first speeding competitors.

"We must go through this," exclaimed Lewis.

When she had been coaxed out sufficient to clad the rear wheels with chains, the Premier six-cylinder purred in deep, quiet tones and the big mass sliced a way through the axle-deep

mud an inch at a time, so slow was the progress of an advance. Onward was a fast clip into Hammond, with only an occasional dropping of confetti on the turns. It was useless sprinkling the clean white paper on Chicago's black, oozing mud and water covered inlets of the South Side, and it was only by tearing up every scrap of paper in the car that the trail could be stretched out through lakeside parks to the First Regiment Garage. In all my experience I've never seen worse streets than those which we encountered in those filthy, ill-smelling sections of Chicago, and the transition into the beautiful parks was like a step from Hades to Paradise. It seems absolutely inconceivable to one new to the country that of one of its largest cities, and presumably rated as being in the first class where American centers of population are concerned, should tolerate the existence of such pest holes and morasses of filth that are characteristic of Chicago's South Side. The city was a stench in the nostrils of the tourists, due to the necessity of passing through such parts of it in entering and leaving, and the good clean mud of the country roads was not half as repulsive as it might have been but for the comparison.

WHAT THE MAN BEHIND THE WHEEL THINKS OF IT

By A. B. TUCKER.

JOHN W. HAYNES, who was piloting the Dragon runabout, No. 112, thinks he has as good a chance at the Hower trophy as any of the "perfect" score runabouts. He said on Sunday that the 12 points he had lost were because of fan-belt trouble between Toledo and South Bend. He had to replace the belt eight times, and the heavy going prevented him from making up all the time which he had lost. He thinks there will be several others who will have marks against them before many days. Mr. Haynes said the little Dragon is running well and is in good condition and had no complaint to make regarding the management of the tour. He said he thought the daily schedule might be made a bit more cleverly, but, aside from that, he thought that Chairman Hower was doing as well as could be expected.

J. W. Mears, who is driving No. 43 Acme, says he has found the schedule too fast for sane and safe driving, unless one is willing to rap his car. "On the run from Toledo to South Bend," said Mr. Mears at Chicago, "I found, soon after starting, that I was up against a road the answer to which was 10 miles an hour, and I cut her down to that whenever the roads demanded it. My maximum that day was thirty miles, which is all I considered to be safe under the conditions. I did not touch the engine nor, in fact, have I had to do any work on my car since the tour started, and she is running as smoothly as a sewing machine. But the careful driving I did and the fact that we were delayed on several occasions by other cars which had skidded across the road and blocked it and needed help, or were hanging half over bridges, and so forth, was the cause of my taking a penalization. I took this gladly, for I would rather have

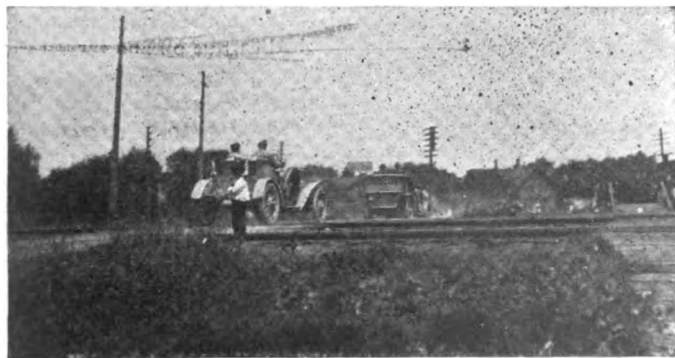
a car to hit the bumps and hills of next week than a clean score at this time. I am morally sure that none of the cars which have persisted in making schedule time up to now are in the tight, trim, just-from-the-factory condition, which is the case with my Acme."

Mr. Mears said that he was confident of finishing the tour, and thought he would be in better shape at the close of it than some of the cars which have a clean score now.

Charles Burman, who is driving the No. 49 Peerless, said at Chicago: "Mr. Straub, who is driving the No. 50 Peerless and myself have had no difficulties of moment since we started. We have each had a little tire trouble, but beyond that have not at any time felt at all insecure about making our night stops on schedule time. Both cars are running nicely and I see no reason why we should not keep up the good work. The second day's run was a severe one, but it is entirely probable that we may have worse before we close our run. With good springs under us, dependable engines and reasonable schedules, I do not care what regulations the committee makes, I think we can meet them."

"This year's tour is undoubtedly a harder one than that of last year, even when the roads are good. With continued rain it may be an exceedingly hard one in the Pennsylvania mountains. But I am the leading member in a flourishing 'don't worry' club of one, and am not borrowing trouble for next week."

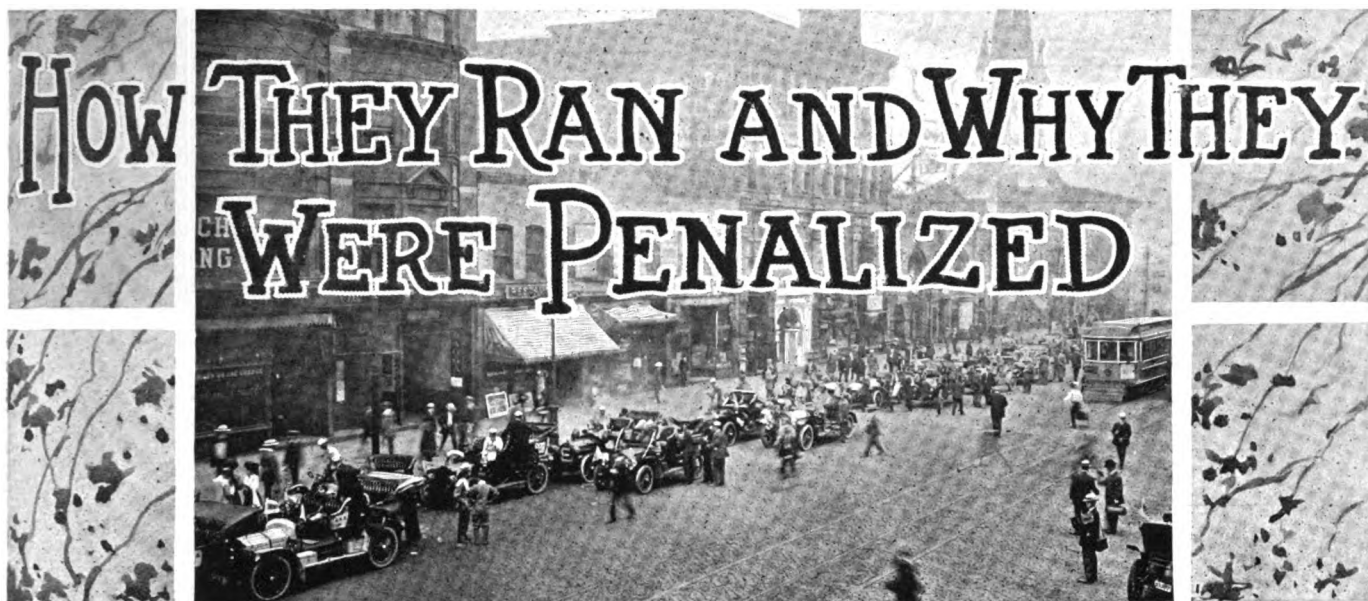
"Chicago entertained us well, and I think there should have been a vote of thanks on the part of the tourists for the pleasant program prepared. I am for another tour next year, but I think it ought to be one thing or the other."



RAILROAD TRACKS WERE PLENTIFUL APPROACHING CHICAGO.



PEACEFUL FARMHOUSES DOTTED THE NORTHERN INDIANA ROADS.



LINED UP FOR THE START OPPOSITE A. A. HEADQUARTERS AT THE HOLLENDEN IN CLEVELAND.

CHICAGO, July 13.—Thirty-one machines out of forty-six competitors for the Glidden trophy traveled from Cleveland to the First Regiment Armory, thus accomplishing the first leg of the great American touring contest, without a single penalization being recorded against them. Fifteen have already stumbled by the way, incurring penalizations from four, in the case of Mrs. Cuneo and her Rainier to maximum points, making all further effort superfluous. Five at least will take no further part in the contest, some of them retiring definitely, others jogging along for the eastward journey as simple non-contesting tourists.

Of the twelve starters for the Hower trophy, eight are without spot or blemish, one has abandoned and three have penalizations.

Three touring machines set out to compete for perfect score certificate without entering the Glidden trophy, and all three have reached the shores of Lake Michigan without the loss of a point. J. G. Barclay's Thomas Forty, originally entered as a Hower contestant, withdrew after a perfect score on the first day in order to be free to attend to Warner Speedometer business for the remainder of the trip. J. L. Zimmerman's Locomobile started and continues as an independent.

Twelve machines are doing various kinds of service work, carrying officials, pressmen, tires, etc., or running independently with non-competing tourists. All have reached Chicago, two only being delayed en route by mechanical troubles.

Club competition, which forms the basis of the Glidden trophy contest, has worked down to a tie between the Automobile clubs of Buffalo and Pittsburg, both with perfect scores, with New York Motor Club suffering a loss of only 13 1-5 points, and others trailing out as follows: Cleveland Automobile Club, 144 7-9 penalization points; Automobile Club of America, 251 1-2; Automobile Club of Detroit, 266 1-2; Westchester Motor Club, 336, and Chicago Automobile Club, 343 points.

Facts About the First Day's Run.

Behind the huge mass of idle spectators, interested automobilists and equipped touring machines crowding the roadway in front of the Hollenden Hotel at Cleveland, July 10, there was an excellent organization which sent the 61 machines engaged in the A. A. tour away on their 1,500-mile journey with perfect regularity.

No sooner had Cleveland's fine asphalt boulevards been left behind than the real struggle began, the machines entering upon Ohio's embryo roads, straight as any highway the Romans laid, but often rocky and uneven as any track of virgin country. Weather conditions, however, were favorable and practically all the machines were able to stand the merciless pummeling for the 121 miles separating Cleveland from Toledo. Seven hours had

been allowed for the journey, thus calling for an average speed of about 17 1-2 miles an hour. As, however, allowances had to be made for moderate travel through towns and villages, almost double this speed had to be attained in open country.

It was a remarkable testimony to the value of the American machines engaged in the contest that, over roads the like of which can be found in no other civilized country in the world, but two machines should fail to arrive according to schedule.

No. 7 Welch in approaching a narrow wooden bridge at the foot of a slight grade collided with the metal part and severely bent the front axle. Fortunately a blacksmith's shop was close at hand and the injured member was instantly put under repair, not without, however, the eventual loss of ten points for late arrival and two points for new bolts.

No. 109, Continental, C. S. Johnston, met with a road accident which caused him the loss of 24 points. When close pressed by a competitor in the rear, he struck a heap of rocks, completely breaking the frame of his car just above the front axle. A couple of metal bars clamped on each side provided a remedy probably sufficiently strong to carry the car to the end of the tour, but too much time had been lost in fixing the stays to meet the requirements of the running schedule.

Among the non-contestants, No. 92, Haynes, "Old Dobbin," carrying pressmen, had to be towed to a garage with a damaged rear axle, but was sent on to Toledo the next morning.

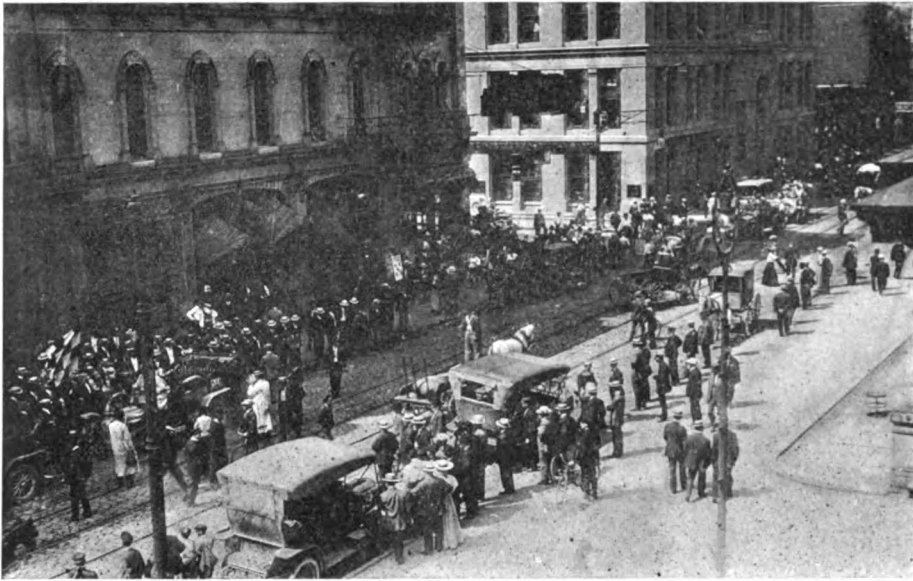
Observing the run from the freelance Aerocar—the only air-cooled engine in the run—no other stoppages for mechanical reasons were observed, and, indeed, the official schedule shows that none other took place.

The Royal Tourist, which Orrel A. Parker had entered and equipped with Newmastic instead of air-filled tires, suffered a delay through one of the new casings bursting. A competing car gave a shoe and inner tube which were mounted after the defective material had been cut off the rim. When a fresh start was made the Royal Tourist had dropped from the head to the tail of the line, but a wild dash got the party into Toledo on time.

At Norwalk, midway on the journey, Colonel Sprague held out the right hand of fellowship to the tourists, providing a wayside luncheon, appreciated by many who would otherwise have driven to the end of the stage without a thought of food.

THE SECOND DAY WAS MOST STRENUOUS.

Rain fell heavily while the Gliddenites slept at Toledo, and when a start was made on Thursday morning road conditions were the worst possible. There are 166 miles from Toledo to



WHEN THE TOURISTS ARRIVED AT TOLEDO FOR THE FIRST NIGHT'S REST.

South Bend which had to be covered in nine hours. The official confetti car took the brunt of the burden, for when Dai Lewis and his party set out on the Maxwell to blaze the way rain was still falling and roads were axle deep in mud.

Almost at the outset—less than ten miles from Toledo—Pierce, No. 2, driven by K. R. Otis, skidded and turned turtle when trying to pass Phil S. Flinn's Pierce, No. 14, on a narrow and treacherously slippery road. Mr. Otis, Mrs. Otis and Miss Rollins were pinned under the car, receiving painful injuries. Photographer F. E. Spooner and Chauffeur J. Newman were both thrown clear as the machine went over and were none the worse for the disaster. Phil S. Flinn held up the cars immediately following, hurrying the sufferers back to Toledo, where they were placed in a hospital. The ladies of his own party, unnerved by the accident, also abandoned the trip, Pierce No. 14 continuing the journey later without them.

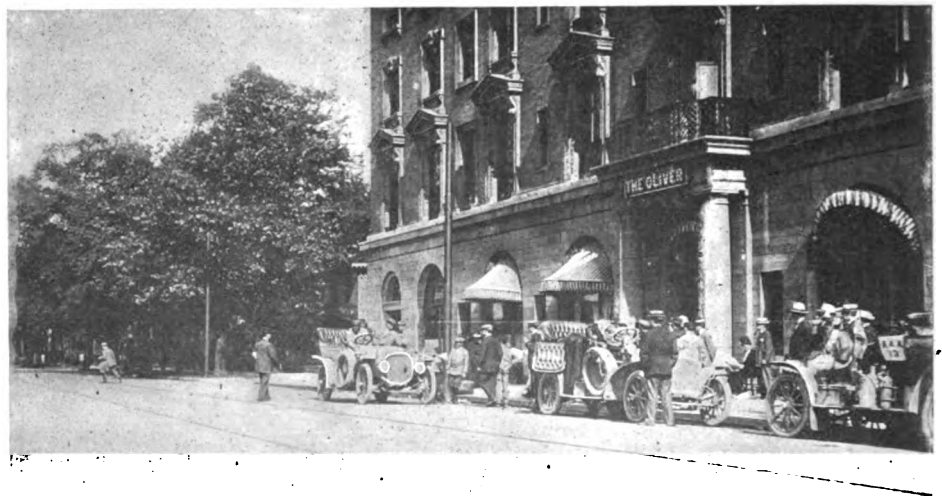
A second accident of an equally serious nature befell T. J. Clark, driving Packard No. 6. Taking a sharp turn at high speed near Bryan, O., the machine rolled over twice, crushing T. J. Clark, who was at the wheel, breaking a rib and inflicting internal injuries. Despite the seriousness of the accident the machine was uninjured in its vital organs, and after the wounded man had been placed under medical care it was decided to continue the run, Dwight Huss taking charge of the car. Half of the steering wheel had been carried away in the fall, making the car exceptionally difficult to manage on the greasy roads. At Brimfield there is a stiff, short rise, followed by a sharp turn to a wooden bridge crossing the railroad. Although going at slow speed, it was impossible to control the Packard, which crashed into the right-hand side of the bridge, breaking down the wooden barrier and stopping with the front wheels suspended over a twenty-foot drop to the railroad below. The double mishap did not dishearten the Packard drivers, for the machine was hauled back onto the road, repaired, and once more started for South Bend. While our Aerocar was held up by the roadside for its fourth inner tube, the Packard rushed by with its two occupants, its broken steering wheel, and its damaged and

very badly scratched body. Every party had to report plenty of mishaps of a minor nature. Running over beds of dripping, oozy clay, on which even a score of cars had failed to find a ground surface, a sudden slewing round of the rear brought mishaps perilously near, and in several cases, as could be seen from tracks, cars had been ditched and hauled out again by other than internal combustion motors. At one wayside cottage, close to a sharp, narrow bend on the road, one good dame reported that three cars had gone into the ditch and that one party had been unceremoniously tossed onto her lawn.

Under the terrible strain of long grinding on the low gear, and of twisting and thumping at the transmission, mechanical weaknesses made themselves manifest. Axle-deep in a sea of mud, the Pungs-Finch was come upon with a cracked cylinder, its cooling water trickling out and losing itself on the besotten highway. A more disconsolate family

party than the two ladies, the young child and four men who cast successive glances at one another, the disabled machine, and the wild waste of mud, it would be impossible to discover. A touch of brightness was added to the scene as a motorcyclist came down the lane, riding with acrobatic agility on a narrow strip of grass or dismounting and pushing his two-wheeler when the border merged into the common basis of mud.

No. 52, Deere, a non-contestant, was passed by the wayside apparently carrying out repairs to front spring hangers. Meteor, No. 37, broke a steering knuckle, which was repaired by the roadside with parts being carried out for the Deere, which had suffered in a similar manner the previous day. Runabout Dragon, No. 113, stripped a gear outside Ligonier and was towed off the scene by a couple of horses. The Acme had serious trouble, incurring a penalty of 106 points. Orrel A. Parker's Royal Tourist was the victim of slight irregularities which made it impossible to adhere accurate to schedule. R. H. Lockwood's little Reo found itself at the end of the day with 22 points to its debit account, and its companion, No. 33, was also docked a point for passing over the line ahead of time. The pilot car had not arrived at headquarters, no flag was displayed, and the Reo driver was in doubt as to the



SOUTH BEND HEADQUARTERS, WHERE SECOND AND FOURTH DAY STOPS WERE MADE.

exact time. Under such conditions his penalization is more of an honor than a disgrace. N. H. Van Sicklen, a veteran of previous Glidden tours, had ill luck which caused him the loss of 23 points. The magneto contact broke away and, although the official score would only appear to indicate a minor trouble, the breakdown was so complete that Van Sicklen ceased to strive for the trophy.

In addition to the Dragon two other Hower trophy contestants suffered from the strenuous conditions, R. G. Kelsey and his Matheson with a loss of 56 points, and C. S. Johnston's Continental with a loss of 35.

THIRD DAY WAS COMPARATIVELY EASY.

With a quarter of the road perfect and the remainder never descending below the moderate stage, excepting a miry mile near Croker and Chicago's unsavory entrance—most of the contestants traveled the hundred odd miles from South Bend to Chicago without penalizations.

N. H. Van Sicklen's Apperson made the journey, but ceased to compete for the trophy, the entrant announcing later that, as the result of magneto troubles, he would not go further than Chicago. No. 6 Packard also ceased to figure as a contestant, and Orrel A. Parker withdrew his Royal Tourist, after protesting that the tour had become a race. Columbia 56, entered by F. E. Dayton, failed to come through, and Charles A. Fleming's Maxwell had to be hauled to a blacksmith's shop with a broken rear axle. When the damage has been repaired the machine will continue as a non-contestant. About forty miles east of Hammond, Ind., A. L. Peterson's Meteor swerved out of the road in order to avoid hitting a buggy, jumped a ditch six feet wide and broke through a barbed-wire fence. A spring clip had to be replaced as the result of the leap, and the time lost in getting the car back to the road involved a penalty of 160 points.

American Mors No. 15, driven by G. Cabanne, skidded while traveling at a rapid clip. A front tire blowing out at the same moment, the machine rushed into a telegraph post, throwing all the occupants into a swamp. None were hurt, nor did the delay affect the clean score of the car.

All the runabouts competing for the Hower trophy finished the daily dash with perfect scores. J. C. Zimmerman's free-lance Locomobile arriving in Chicago just behind the official confetti car. W. A. Badger withdrew his Cleveland No. 115 with a clean score, stating that important business called for his presence at New York.

FOURTH DAY RUN HAD A PACEMAKER.

SOUTH BEND, IND., July 15.—Those who protested that the A. A. A. tour was developing into a cross-country scramble had their justification to-day, when the committee in charge put into operation a scheme by which it was impossible for any competitor to lay up for himself by fast driving a reserve of minutes for possible emergencies. Chairman Hower, on official Pierce "99," set out half an hour ahead of the first car, maintaining an average speed which would bring him into control within the time limit and forbidding any competitor to pass the pacemaker. As the cars were sent away at one-minute intervals, each driver was given a card bearing a large printed number, corresponding to the position he occupied in the procession. Except when a stop was made for repairs, no car might pass another bearing a lower number. Competitors detained en route for any reason had the right of way, on holding up their card, over others with higher numbers, but only to gain their original position in the procession.

The plan worked satisfactorily, for no complaints were heard during the journey, and when criticism was invited at the close of the day none was forthcoming.

Although the Chicago-South Bend route had deteriorated considerably as the result of early-morning rains, 60 per cent. of it being poor to bad, there were few difficulties along the roadside.

H. C. Shoemaker removed his production from the active to the non-contesting list. R. L. Lockwood's No. 34 Reo found 212 points against it at the end of the day, and No. 35 Reo, up to this point a perfect scorer, turned its back on the tour at Chicago. George F. Barr's No. 46 Aerocar, mostly through repeated tire troubles, lost time to the value of 106 points, all other contestants for the Glidden trophy or clean-score certificates arriving according to schedule.

Among the Howerites, No. 106, R. G. Kelsey's Matheson, was the solitary derelict, all others arriving with the regularity of clockwork. About ten miles from South Bend the Matheson broke a connecting rod, was towed home by a White steamer, penalized the maximum number of points and abandoned the run.

Buffalo and Pittsburg automobile clubs still remain with perfect scores. New York, Cleveland, A. C. A. and Detroit had additions to their black list, while Chicago and Westchester clubs finished the day without any loss.

FIFTH DAY'S RUN ENDS IN A WARM WELCOME.

INDIANAPOLIS, IND., July 16.—In the 147-mile run to-day from South Bend, three of the clear-score brigade lost their places in the honor roll of perfect performers. It was a hard day's run over roads that were both good and bad, about as much of one kind as the other. Mayor Bookwalter and "Tom" Taggart, who was the city's chief executive when the L. A. W. meet was held here eleven years ago, were in the party which escorted the early arrivals into the city. At a brief session to-night in the Hotel Denison, where the Automobile Club of Indiana has rooms and entertained the tourists, the Mayor in a short speech tendered the freedom of the city to the visitors. Deep sorrow was expressed when Mr. Glidden stated that word had come from Bryan, O., of the death of T. J. Clark, who was injured on the second day's run. A committee was appointed, with Mr. Glidden as chairman, to draw up resolutions of sympathy to be forwarded to the family of the deceased. To-night the contesting cars are parked in Soldiers' and Sailors' Monument circle and guarded by policemen. One car failed to start this morning—H. N. Coate's Auto-car No. 30, which began the run with a cracked frame, had further trouble and had not checked in when the score sheet was made up. George F. Barr's Aerocar No. 46, which was late to report on Monday, went out of the tour as a contestant, but after being repaired will continue as a free lance. A broken water pipe connection caused the loss of points. J. H. Becker's sealed bonnet Elmore to-day broke a hub, causing a delay of several hours, soiling the previous clean-score record, but not putting the car out of the run. A defective rear axle bearing was the cause of the abandonment of H. C. Stutz's Marion runabout No. 107, about forty miles from Indianapolis, and it was towed to this city.

About twenty miles from Indianapolis I. W. Kirkham's Maxwell was struck by James Barclay's Thomas non-contestant and one of the Maxwell's front springs was damaged. Chairman Hower gave permission to have the spring repaired under suspension to-night without loss of points and the car remains in the clean-score list. It made the control on time to-day by accomplishing a quick temporary repair.

When the caravan passed through Kokomo the tourists made brief stops at the Apperson and the Haynes factories, where the glad hand was extended in good style, cooling drinks being served ad lib. All along the route in this district there was an air of welcome, with flags waving and many spectators. At Kokomo the rival makers tried to outdo one another in being the first to relieve the tourists' throats of some of the parching dust, the Apperson brothers providing a liberal supply of lubricators, with white-jacketed waiters to hand them out, while the Haynes people sent their refreshments out in a number of testing cars, each arrival being held up, to his own surprise and relief. Wednesday the Stoddard-Dayton Company provided both liquid and solid refreshments to the hungry travelers when they arrived at Dayton, where similar pains had been taken to provide royal hospitality and an open welcome to the tired and dusty cavalcade.



SPECIMEN OF THE ROADS ENCOUNTERED BY "THE AUTOMOBILES" AEROCAR BETWEEN TOLEDO AND SOUTH BEND.

Chicago's Entertaining.—Chicago gave gracious welcome to the tourists and contestants. There was a steady procession of private cars running out to the suburbs, with their occupants waving greetings. At the head of Michigan Avenue a long file of Maxwell cars were drawn up, with military precision, each bearing a sign and its horn tooting continuously. The stores of the agents along Michigan Avenue were decorated, and the dealers shouted welcomes from the curb line. The Chicago Automobile Club, the Chicago Motor Club and the Chicago Automobile Trade Association had a printed programme for Friday, Saturday and Sunday ready, which was distributed to the occupants of each car as it arrived. The events of Friday were a concert by the Ellery band at the Coliseum and a reception at the new clubhouse of the Chicago Automobile Club. On Saturday there was the 24-hour race at Harlem, which began at 4:30 P. M. Friday, preceded by short contests. The tourists were not admitted free, as not a few had anticipated, when they reached the track. Sunday there was a run along the north shore of the lake to Ravinia Park, where a concert was given by the Damrosch orchestra. At 5 P. M. a military review followed at Fort Sheridan. As for informal entertainment, it was in progress all the time. Everybody was willing and anxious to buy liquid and solid refreshments, and the cafe at the Annex was kept in a busy state.

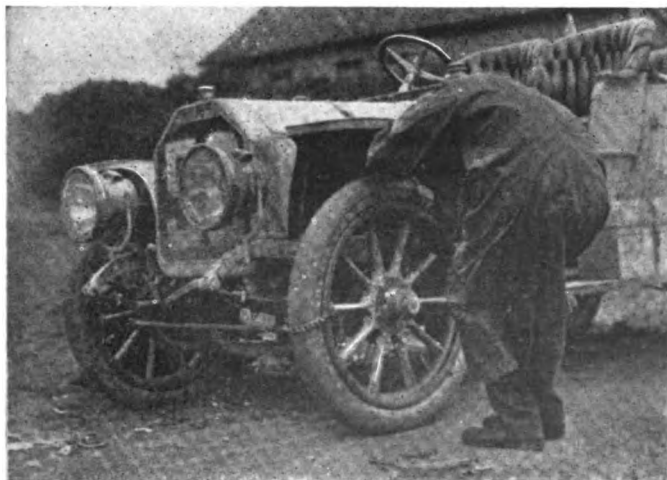
Hotel Arrangements.—The "Man from Cook's" was at times a bit hard to follow, and, of course, there was some kicking

about the hotel arrangements; but the fact is that the committee pretty well lived up to its agreement for impartial treatment of all. The instructions of the advance agent, who was a stranger to the tourists, were to even up the "room-and-bath" accommodations, so that on the whole trip every one would have this arrangement an equal number of times, the "room-and-bath" supply seldom being equal to the demand. A party that had poor accommodations at one place had good fare at the next, and vice versa.

One of the humorous phases of the hotel accommodation matter turned to light when the big hotels were reached. Those who went through Canada last summer and remembered Three Rivers as a sort of "some place east of Suez, where their best is like our worst," put in a sweeping request for the "best there is" throughout the trip. At Chicago one of these participants found his chauffeur and mechanic, as well as himself, assigned to rooms at \$8 a day, while Chairman Hower was passed out for his lonely occupation a corner suite of bedroom, parlor, dining-room and bath, with oil paintings on the walls, and a tariff of \$25 a day, European plan.

Suggestions for the Next Tour.—Said one who gives much thought to endurance touring: "Nearly every one has it all framed up how these events should be run in future. One thing seems certain, that we have more valuable experience in regard to what conditions are proper than ever before, and another year should see an excellent set of rules. The folly of penalizing the cars for arriving ahead of time, and the farcical harshness of making them and their occupants sit in the sun or rain, all dirt begrimed, for an hour or so before checking in never was brought into relief more ridiculously. This rule, originally designed to prevent racing, does nothing of the sort, and, therefore, is the persistence of a silly blunder. A premium is put upon 'beating it' by requiring that lost time be made up, and the only way to abolish it seems to be in the suggestion to borrow an idea from the rules framed by the Automobile Club of America for its Sealed Bonnet contest—have all the stops for tire troubles, repairs, refreshments, etc., added to the running time, so that a stop of an hour makes a car due one hour later. This, of course, would necessitate placing an observer on every car, but it would eliminate the racing, and a schedule could then be framed that would be sufficiently severe to make a contest."

Now Inclined to Believe in Fate.—Frank J. Fanning, sales manager of the Haynes Automobile Company, and Mrs. Fanning, believe somewhat in fate now. While traveling in the Haynes No. 92, entered by F. Ed Spooner, from Toledo to Bryan they had a narrow escape through a skid, which threw



CHAINS WERE NEEDED EVEN ON THE FRONT WHEELS.

the car off one side of the road. The wheels on one side dropped down into a pipe-line excavation, which was hidden in the tall grass. Mrs. Fanning flew out of her seat on soft turf and was uninjured. Mr. and Mrs. Fanning had come to Toledo in a Royal car from Elyria, driven by Robert Jardine, the Royal designer. The Haynes arrived late the morning of the start from Toledo, the delay having been due to a small repair. Mr. Fanning was anxious to go on, and there was one place with Mr. Otis; but both Mr. and Mrs. Fanning could not be taken care of. Mr. Fanning then said he would be all right in Packard No. 6. While waiting for this car the Haynes came along, with Edward Aker driving, and Mr. Fanning took it. The Packard car turned over with Mr. Clark driving, as did also the Pierce car, and Mrs. Fanning was thrown out of the Haynes car in the bargain.

Sally Sandsak.—A surprising amount of sport was had by Arthur Jervis and the other occupants of the only Berliet car, entered for the American Locomotive Automobile Company, out of the dummy figure of a woman that they carried in the tonneau. Originally the thing was a sack to be filled with sand as ballast, in lieu of a fourth passenger, and H. C. Townsend, the driver, had rigged it out as a lay figure for his own amusement. The live passenger was found at the last minute, and the bag stuffed with straw and tied so as to form a head, on which features were painted, and the whole surmounted with a woman's hat and veil, while the body wore a duster. The dummy was christened Sally Berliet Sandsak, and "Sally" made a hit with the bystanders in every town. In fact, her presence in the car won the other occupants much sympathy from the fair sex, who seemed to think that they had been so lonely for female society that they had rigged up "Sally" for company.

The Solitary Air-Cooler of the Run.—Air-cooled advocates failed to put in an appearance for the Glidden, the Hower, or the clean-score competition, a fact which called forth not a little comment from automobilists in general. The only air-cooler on the run was the freelance Aerocar No. 91, carrying THE AUTOMOBILE representatives. Without a falter from beginning to end, without even lifting the hood except to pour oil into the crankcase, the little waterless car has performed a task which some of the powerful water-cooled machines found beyond their strength. Except for a series of punctures on the second day, all the controls would have been made on time, though ever and anon the driver was held back while an interesting scene was snapped or information gathered on roadside phases of the run.

Humorous in His Misfortunes.—Car No. 36, a Pungs Finch, driven by E. B. Finch, was not heard from officially after the start from Toledo on Thursday morning. Saturday afternoon R. D. Chapin received two amusing postals from Mr. Finch, both sent from Swanton, Ohio. The first one had on it a picture of the victim of a lynching bee hanging from a tree limb, and the printed legend read: "I've got to hang around here awhile." Written by Mr. Finch across the face of the card was the message: "Awfully sorry I can't continue with you." The second postal was more explicit. The printed part was a picture of a man suspended by his trousers seat from a hook in front of a butcher store, and the words: "I stopped on my way down." On this Mr. Finch had written: "Cracked cylinder."

Daily Newspapers Well Represented.—The leading dailies which give particular attention to automobilism are all specially represented. New York papers have these well-known writers: Johnson, *Sun*; Curry, *American*; Jervis, *Mail*, until Wetmore joins at Pittsburg, when "Senator" Morgan will again continue the *Globe* story; Gerrie, *Herald*; Horner, *Press*; Harrison; *Tribune*; Field, *Brooklyn Eagle*. Boston has Kerrison, *American*; Sullivan, *Globe*; Reynolds, *Post*; Murphy, *Herald*. Chicago's



SOME PURE COUNTRY MILK WHILE THE TIRE IS REPAIRED.

men are Patterson, *Record-Herald*; Estey, *Inter-Ocean*; Clark, *Post*. Philadelphia has Gilchrist, *North American*; White, *Press*. Cleveland's pair are Lowrie, *Plain-Dealer*; Gilbert, *Leader*. Buffalo supplies Sullivan, *News*; Stevens, *Express*. Of course, the camera stars are along—Spooner, Lazarnick, Shapiro, Corneille and several others.

Youngest Driver of the Tour.—The youngest driver on the trip is little Albert Kumpf, who operates Pierce No. 27, the number always used by Percy Pierce. Young Mr. Kumpf is under 18 years of age. He has been a driver for a great many years, and is a careful and conscientious operator of a machine. "The Kid," as he is known by his fellows, was with Percy Pierce in the Herkomer contest, and has been out a lot in cars. It is said that he was originally office boy for the Geo. N. Pierce Company, and graduated to a position as stenographer, taking up driving through a liking for it. He holds his car well in hand at all times, does not drive at all recklessly, and arrives in ample time to score in every night. He has no ambition to be in hours ahead.

Should the Racing Board Run the Tour.—At Chicago one of the jesting contingent suggested that the balance of the tour be turned over to the Racing Board of the A. A. A. to conduct, there being two members of the Board in the caravan. In speaking thus the joker was unconsciously fitting about the flame of vital truth, which is that, inasmuch as the automobile is primarily a speed vehicle, it is anomalous to project any lengthy competition between motor cars in which the element of speed is not a factor. Excepting gymkhana events, an automobile contest in which racing does not enter is so absurd as to be almost unthinkable. For this reason the Racing Board is the proper body to control all competitions.



COL. SPRAGUE GREET'S "THE EDITOR" UNDER HIS BANNER



THE WHITE STEAMER THAT CARRIED DIAMOND TIRES.

A Royal Try-Out.—Twenty-five miles out of Toledo a slight trouble developed in F. E. Spooner's Haynes No. 92, which necessitated a slight delay, the car being a non-contestant. Robert Jardine, of the Royal Motor Car Co., came up in a Royal. Asked where he was going, he replied "Anywhere," and the party hopped in with a request that Mr. Jardine take them to Toledo. He did so at an average of thirty miles an hour, remained a few minutes, and made the run back to Cleveland in four hours, a trip of 244 miles, as a favor to friends. Mr. Jardine was merely trying out a car brought in by an amateur, who claimed it had no speed. Mr. Jardine found that it did.

How One Farmer Made Money.—Along the road nearing South Bend a farmer's boys aided him by filling a deep rut with great clods of hard dirt. Striking these the cars skidded easily into the ditch, when the farmer made a dollar pulling them out. The writer saw the clods while traveling along in a Thomas "60," sent out by the B. F. Goodrich Rubber Co., and just as the car reached the point the kids came out of hiding in the woods to see the fun. There was no fun, for William Turner, the driver, held the car well in and passed over the trouble easily. For doing so the kids reviled him, and the farmer had rather a sour expression when greeted cheerily.

Ohio Due to Make Roads, Not Presidents.—Here is a press agent's paragraph, given out at Toledo. "A character of the tour, who made a hit from the start, is Sally Sandsak, who sits very erect in the tonneau of the only Berliet entered and is affable to every one. According to Adell Starr, who rode with her the first day, Sally said of the roads: 'This beats the bumps at Coney Island. See this rich country, and these dirt-cheap roads! It does jar me! And I think the people of Ohio had better stop making Presidents and begin to make roads.'" Sally is wise in her generation.



"THE LIFE BOAT" THAT RENDERED ASSISTANCE EN ROUTE.

It's Strenuous, All Right.—It was amusing to the veterans of former Glidden going to hear the newcomers thresh over the old straw of the unmiscibility of the sweets of touring and the bitters of contesting. In announcing his withdrawal, one contestant filled up three type-written sheets with arguments to prove that the schedule required too strenuous a pace for pleasure. He had it all figured out to show that, deducting the mileage through towns at the legal pace, the cars must "beat it" all the time in the open country.

Why He Didn't Drive in Chicago.—The only Tom Fetch turned his Packard press car over to another driver some distance out of Chicago and entered the city on a railroad train. As they say at breakfast time, "There's a reason." Tom, who never could be accused of carelessness, had the misfortune to run down a man in the Windy City not long ago, and the police were looking for him. Tom was not conspicuous at any time during the stay in Chicago.

Two Keen Observers.—Benjamin Briscoe and John D. Maxwell have been more or less in evidence at several of the stops, and they have been keen observers of proceedings. They both like touring, but can't see the fun of a hundred miles or so a day over miscellaneous roads, averring that they do ride in their own cars frequently, like the Cleveland restaurant keeper, who advertises in this strain: "I eat in my own place."

Few of the Fair Sex.—Most of the men competing made up their minds before the start that the affair was not a joy ride, but a contest, and as such would be no place for women. Consequently, there were very few of the fair sex in the party, and those present probably came to the same conclusion previously reached by the men who left their wives at home.

The Busy Publicity Men.—It is an active and resourceful band of publicity men who accompany the tour. They include R. H. Johnson, White; George Davis, Thomas; A. N. Jervis, Berliet and Maxwell; A. B. Tucker, Peerless; G. W. Campbell, Aerocar; Robert Spangler, Welch, and others who do some publicity work incidentally.

Roasting the Chairman.—"Shall we roast Hower?" was the query put to themselves by a coterie of newspaper men at dinner one night. One replied: "Oh, don't shoot the Chairman; he's doing the best he can." This went with most of the scribes, but some captious pens love any sort of a mark.

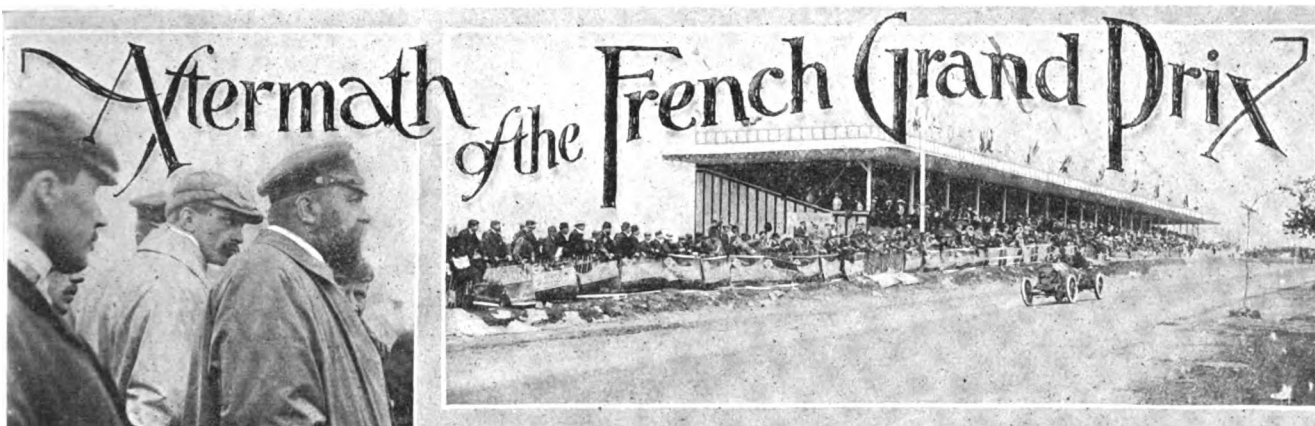
A Pessimistic Reflection.—One of the pessimistic reflections offered at Chicago was: "We have finished three running days out of fifteen, or one-fifth of the task. If the remainder of the tour develops five times the eliminations, penalizations and casualties of the first three days, what will be left of it?"

The Only Woman Driver.—One who is enduring the inconveniences and hardships of the trip not only with fortitude, but with patient amiability, is Mrs. Andrew Cuneo, the only woman driver. She tools her Rainier through the mud and dust and comes in smiling, with a pleasant word for all.

A Heavyweight Quintette.—W. M. Lewis, entrant of the Mitchell No. 24, is carrying a load of five, all of them heavyweights, and yet this is one of the few cars that had absolutely no difficulties in the first three days. Sales Manager J. W. Gilson is one of the happy tonneau passengers.

Likes the Going.—Sales Manager A. D. McLachlan, who rides in Royal Tourist 42, along with Messrs. Jardine and Cromwell, is one who makes light of the rough going. He says that he is riding "as comfortably as in a Morris chair on a veranda at the seashore."

Star Sleuth of A. L. A. M.—James Carples, the star sleuth of the A. L. A. M., was floating about the Auditorium Annex Saturday and Sunday, disguised as a smooth-faced man. There was no use asking his mission there.



WHEN NAZZARO MADE HIS TRIUMPHAL DASH PAST THE GRANDSTAND.



CHAIRMAN RENE DE KNYFF.

PARIS, July 3.
—France has taken her defeat in the Grand Prix in a stoic manner, admitting with a frank-

mileage on a gallon of fuel than had been possible during the previous days. Had the bad weather continued, possibly Nazzaro would not have completed the distance on his fuel allowance.

General satisfaction is expressed on the working of the new fuel consumption regulations. The amount of gasoline allowed is the average amount used by the winning machine in the first Grand Prix and the Gordon Bennett race, with 1,000 kilos weight

ness that is rather surprising that a firm which can triumph over the world's best in three such widely differing contests as the Targa Florio, the German Emperor's Cup and the Grand Prix must indeed be the best. The Targa Florio was run on maximum bore, the German Emperor's race on maximum cylinder capacity, and the Grand Prix had minimum fuel consumption as its basis, each event calling for a different type of motor, and in each case Fiat produced the winner.

A minor satisfaction is drawn from the race by the French from the fact that all positions from second to ninth, inclusive, are held by native machines, Germany only placing one car, and that in tenth position. Altogether, but four foreign machines out of the sixteen officially finishing the race were built out of France, and this is considered as some consolation.

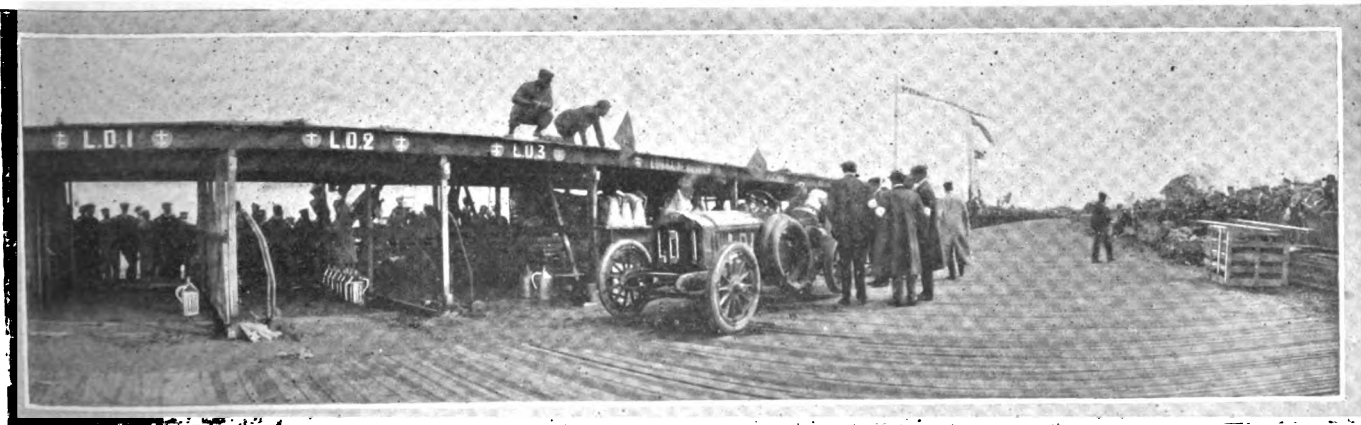
The mistake appears to have been made by French drivers of being too economical of their fuel. Lancia was unable to finish for lack of gasoline; Nazzaro had but 2.4 gallons when he reached the winning point. Most of the French tanks on the other hand contained a plentiful supply of fuel, Rigal (Darracq) having 9.3 gallons, for which he gains the gold medal, Barillier (Brasier) 9.2 gallons, Baras (Brasier) 8.5 gallons, Caillois (Darracq) 7.9 gallons, Szisz (Renault) 6.8 gallons. A week before the race weather conditions had been unfavorable, rain and strong winds considerably augmenting the fuel consumption. But a few hours before the race the weather changed completely, allowing the cars to cover a much greater



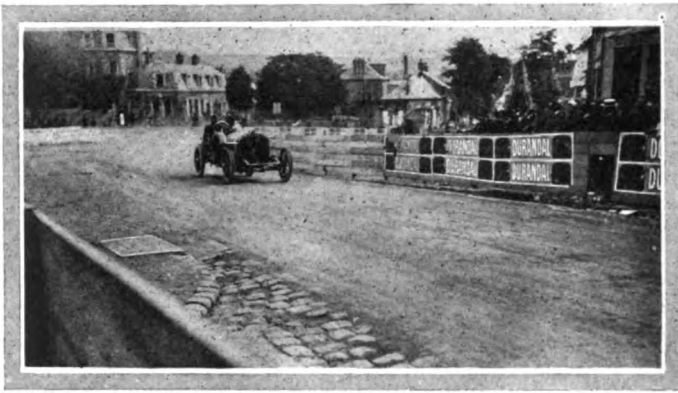
SZISZ IN FULL CRY THROUGH BELLENGERVILLE.

limit. Generally the machines are heavier than previously, but they are at least 10 per cent. faster than those of preceding years and are more economical in their consumption of gasoline. This year's course is no faster than the Sarthe circuit of last year, and is certainly several degrees slower than the Ardennes circuit, yet the machines have attained and maintained a speed unknown in any previous contest.

Brasier was the only manufacturer to complete the race with a



WHERE THE RACING GIANTS REPLENISHED THEIR SUPPLIES IN THE SEMI-CIRCLE OF SPECIAL DEPOTS BACK OF THE GRANDSTAND.



FITZ SHEPARD ON THE CLEMENT PASSING THROUGH ERE.

full team, his car being placed third, seventh and twelfth. Renault, though winning second place, but seven minutes behind Nazzaro, had a series of misfortunes. The day before the race Edmond became ill and had to be replaced by Henri Farman, who had never been round the course on a racer and who had not previously driven the machine. Richez, on the difficult Londinieres corner, overturned his machine, starting again with the loss of a complete round. The Bayard-Clement team of three was robbed of one unit by the breaking of a dismountable rim on Aleyz's machine, his companions, Garcel and Fitz Shepherd, finishing in eighth and ninth positions. Shepherd bought the racer but a few weeks before the contest and although having had little training made the best score in his racing career.

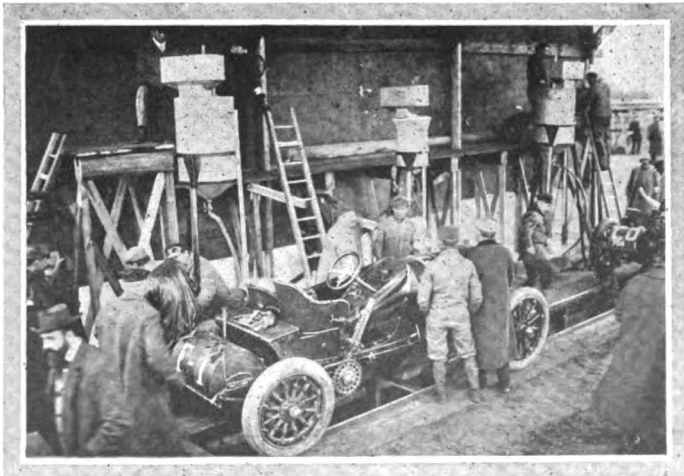
To the surprise of all, not one of the new Panhard machines specially built for the race and tested out for months previous finished within the time limits imposed. Mercedes was only slightly more fortunate, Hemery, who is now an international free lance, placing the only car for the German firm.

SMALL INTEREST SHOWN IN SPORTING CUP.

PARIS, July 3.—In the excitement of the Grand Prix very little attention was paid to the seven machines rushing round the course at the same time in an independent struggle for the Sporting Commission Cup, the regulations for which were identical with those of the greater event, except that the gasoline allowance was reduced by half. De Langhe, previously unknown in the racing world, from the outset secured the lead with his Darracq and retained it, with the exception of the fourth round, when Demogeot, also on a Darracq, led for a few minutes. Final position for the six rounds (287 miles) was as follows:

SIXTH ROUND.

	H.	M.
Darracq, De Langhe.....	51	26
La Bulre, Mottard.....	51	28
Darracq, Demogeot.....	51	30
La Bulre, Sibour.....	51	32
La Bulre, Dumaine.....	51	34
Porthos, Collin Defries.....	51	36



REPLENISHING A CAR'S GASOLINE SUPPLY OVER THE PIT.

I PROGRESSIVE LAPSED TIME FOR ALL CONTESTANTS IN GRAND PRIX, SHOWING PLACES AT END OF EACH ROUND.

	First Round.	Second Round.	Third Round.	Fourth Round.	Fifth Round.	Sixth Round.	Seventh Round.	Eighth Round.	Ninth Round.	Tenth Round.
1	Fiat, Wagner.....	39:53	1:19:47	2:39:10	4:03:56	5:24:56	6:43:13	8:07:58	9:32:36	10:57:23
2	Dietrich, Duray.....	40:00	1:19:54	2:41:36	4:06:42	5:27:09	6:46:18	8:13:45	9:38:34	11:03:00
3	Renault, Szisz.....	40:39	1:21:41	2:42:40	4:07:20	5:28:30	6:48:20	8:15:40	9:42:10	11:08:30
4	Mercedes, Gabriel.....	41:17	1:21:48	2:43:02	4:08:00	5:29:30	6:49:00	8:16:30	9:43:00	11:09:30
5	Dietrich, Gabriel.....	41:32	1:21:55	2:43:05	4:08:05	5:29:35	6:49:05	8:16:35	9:43:05	11:09:35
6	Fiat, Lancia.....	41:33	1:22:03	2:43:37	4:08:11	5:29:41	6:49:11	8:16:41	9:43:11	11:09:41
7	Dietrich, Rougier.....	41:37	1:22:06	2:43:42	4:08:14	5:29:44	6:49:14	8:16:44	9:43:14	11:09:44
8	Darracq, Hanriot.....	41:59	1:23:04	2:44:05	4:08:20	5:29:50	6:49:20	8:16:50	9:43:20	11:09:50
9	Darracq, Rigal.....	42:01	1:23:06	2:44:07	4:08:22	5:29:52	6:49:22	8:16:52	9:43:22	11:09:52
10	Panhard, Le Blon.....	42:06	1:23:39	2:44:26	4:08:31	5:29:59	6:49:29	8:17:01	9:43:29	11:10:01
11	Darracq, Calliois.....	42:06	1:24:34	2:45:45	4:09:05	5:30:35	6:49:55	8:17:25	9:43:55	11:10:25
12	Fiat, Nazzaro.....	43:19	1:25:23	2:46:45	4:09:45	5:31:15	6:50:15	8:17:45	9:44:15	11:10:45
13	Brasier, Barrillier.....	43:45	1:26:23	2:47:45	4:10:45	5:32:15	6:51:15	8:18:45	9:45:15	11:11:45
14	Clement, Alézy.....	44:23	1:27:25	2:48:45	4:11:45	5:33:15	6:52:15	8:19:45	9:46:15	11:12:45
15	Mercedes, Hémerly.....	45:25	1:28:25	2:49:45	4:12:45	5:34:15	6:53:15	8:20:45	9:47:15	11:13:45
16	Brasier, Baras.....	46:20	1:29:25	2:50:45	4:13:45	5:35:15	6:54:15	8:21:45	9:48:15	11:14:45
17	Clement, Shepard.....	46:37	1:30:25	2:51:45	4:14:45	5:36:15	6:55:15	8:22:45	9:49:15	11:15:45
18	Weigel, Hanriot.....	47:01	1:30:28	2:51:48	4:14:48	5:36:18	6:55:18	8:22:48	9:49:18	11:15:48
19	Clement, Garcel.....	50:00	1:41:26	3:02:46	4:18:06	5:39:26	6:58:06	8:24:46	9:51:26	11:17:06
20	Motobloc, Jenatton.....	51:13	1:44:14	3:04:14	4:18:54	5:40:14	6:58:54	8:24:14	9:51:54	11:17:34
21	Motobloc, Courtade.....	51:19	1:44:18	3:04:18	4:18:58	5:40:18	6:58:58	8:24:18	9:51:58	11:17:38
22	Renault, Farman.....	52:23	1:46:55	3:06:11	4:20:51	5:41:11	6:59:51	8:24:11	9:52:11	11:17:51
23	Panhard, Heath.....	52:33	1:48:14	3:07:11	4:21:51	5:41:11	6:59:51	8:24:11	9:52:11	11:17:51
24	Porthos, Stricker.....	53:25	1:48:14	3:07:11	4:21:51	5:41:11	6:59:51	8:24:11	9:52:11	11:17:51
25	Gobron, Rigoly.....	53:25	1:49:49	3:08:14	4:22:54	5:42:14	7:00:54	8:25:14	9:52:54	11:18:14
26	Panhard, Dutemple.....	54:48	1:49:54	3:08:14	4:22:54	5:42:14	7:00:54	8:25:14	9:52:54	11:18:14
27	Corre, Collomb.....	54:48	1:50:03	3:08:14	4:22:54	5:42:14	7:00:54	8:25:14	9:52:54	11:18:14
28	Motobloc, Pierron.....	54:49	1:50:12	3:08:14	4:22:54	5:42:14	7:00:54	8:25:14	9:52:54	11:18:14
29	Germain, Degrais.....	54:49	1:50:12	3:08:14	4:22:54	5:42:14	7:00:54	8:25:14	9:52:54	11:18:14
30	Germain, Perpere.....	54:49	1:50:12	3:08:14	4:22:54	5:42:14	7:00:54	8:25:14	9:52:54	11:18:14
31	Dufaux, Dufaux.....	1:08:24	2:08:09	3:12:09	4:26:09	5:49:09	7:11:09	8:34:09	9:57:09	11:20:09
32	Germain, R-Braut.....	1:08:24	2:08:09	3:12:09	4:26:09	5:49:09	7:11:09	8:34:09	9:57:09	11:20:09
33	Christie, Christie.....	1:20:13	2:36:33	3:52:53	5:09:13	6:25:33	7:41:53	8:58:13	10:14:33	11:30:53
34	Motobloc, Page.....	1:43:19	3:37:33	5:14:19	6:50:33	8:26:53	10:03:13	11:39:33	13:15:53	14:52:13
35	Brasier, Bablot.....	1:54:19	4:14:19	6:04:19	7:54:19	9:44:19	11:34:19	13:24:19	15:14:19	17:04:19
36	Weigel, Laxen.....	2:22:32	4:51:42	7:20:52	8:59:02	10:37:12	12:15:22	13:53:32	15:31:42	17:09:52

The Scottish Reliability Trials

By Joseph A. Mack, Jr.



CARS RESTING AT THE PASS OF GLENCOE CONTROL.

GLASGOW, July 6.—As a searching test of reliability, last week's trial of the Scottish Automobile Club stands out as the most severe on record and will go down in history as unique in automobile annals. In five days the hundred cars have traversed well nigh 800 miles of the most mountainous country of Scotland, and with weather conditions persistently adverse, yet out of this ordeal all have emerged with triumph, and of the ninety-eight starters from Glasgow on Tuesday morning every single car finished on Saturday evening—the withdrawals continuing their journey unofficially and turning in at the close of the proceedings. As a triumph of organization, too, the trial has gained fame. With genial and untiring Secretary Smith at the head of operations, the Scottish A. C. has covered every detail relating to the conduct of the trial and the well-being of participants, every contingency being foreseen with a skill born of long previous experience.

The best tribute of this trial's success is the unanimous support of the trade. Entries totaled 107, and this number, as high as is consistent with efficient management, speaks well for the popularity of an event which has not the international glamor of a Herkomer tour. This number of cars of all powers and sizes was marshaled into seven divisions based on chassis price. Ten were numbered in Class I, listed at less than \$1,000, and here the 9-10 Cadillac and 15 Ford upheld America's reputation. This Ford did creditably under circumstances unusually severe. By the rule stipulating four passengers for every car of greater horsepower than 12, this two-seated runabout had to be fixed up with a special body, and throughout the run conveyed its overload of two extra twelve-stone passengers and their luggage.

In the under \$1,500 section were the Buick, which Huszar came across the Atlantic especially to drive, the 18 Reo and the 16 Maxwell, but this latter failed to materialize, along with the 55-horsepower Benz and seven others. The remaining classes contained the 20-horsepower White in the under \$2,500, the six-cylinder Ford in the under \$3,000, and the big White among the score in Class VI., listed at under \$4,000. The marking system embraced every point interesting to the prospective buyer. Reliability was rated high in value with 750 marks total, while a further 50 marks were given for ease of starting, any delay in excess of the allowed two minutes each morning

causing loss in this section. The timed hill climbs gave 100 marks to the best average performance, with a percentage to the cars coming next in merit, and similar marking rewarded economy in gasoline consumption. Throughout the trial a continuous system of observation was imposed, which pre-

vented any possibility of replenishment or adjustment without marks being deducted.

The usual weighing-in preliminaries were proceeded with on Monday, and the following morning saw the long string of cars wending its way through Glasgow's busy streets. Each vehicle had its official observer on board, the duties of these honorary officials being many and varied. Times had to be booked at each section of the journey, weights of passengers and luggage checked, and at no time was the car to be left unless driver and mechanic obediently followed his lead. The string of cars had a fixed order of starting, varied on subsequent days, and this method prevented the usual scramble for first places which spoils so many of these contests. A fixed minimum and maximum time was made for each section of road, and this likewise deterred the speed proclivities of the faster drivers.

From Glasgow the first day's 170-mile run led past the pleasant country round Loch Lomond to the more mountainous Glencoe, whence the route rounded on itself and went eastward across the South Highlands to Perth. The rough roads that had been selected soon caused trouble. On the big Ford the radiator drain tap worked loose and some delay was occasioned while fresh water supplies were obtained. The 30-40 Maudslay experienced still harder luck. Round a sharp curve the driver steered over the edge of the grass bank and a concealed stone bent the steering connecting rod. Repairs occupied longer time than the maximum allowance for the section, and though this did not involve disqualification other than loss of marks, the car was withdrawn from the run. Together with its companions in misfortune on subsequent days, the Maudslay was driven unofficially over the rest of the course and finished up to time at the week end.

Forty miles out halt was made while the cars were sent up the timed hill climb at one-minute intervals. This ascent of "Res and Be Thankful," the first of the four big climbs included in the contest, was a severe test both on account of the grade and the winding na-



ONE OF THE FIRST ARRIVALS AT INVERNESS.



ON THE CREST OF REST-AND-BE-THANKFUL HILL.

ture of the course. The mile climb, with grades from 1 in 12 to 1 in 7, gave no room for passing, and at the hairpin bend at the summit many of the long wheelbase cars found it necessary to reverse to take the curve. Several inexplicable stoppages which occurred on this climb were afterwards found due to failure of the gasoline supply, and indeed one of the principal lessons drawn from this event has been the liability of trouble through obstructed pipes and faulty arrangement of gravity feed tanks. The results of this climb proved a big victory for Ariels in the three top classes, the Mass, Germain, Calthorpe and Swift taking top positions in Classes IV. to I. The Whites both made good times, though the smaller car was handicapped throughout the tour by the inexperience of its amateur owner, who took the wheel. The 18-horsepower Reo made a good performance, but was balked on the final turn by the St. Vincent car, which it actually bumped before the driver could stop. A second attempt was made, but this did not bring the desired good results. Similar misfortune befell the 40-horsepower Ford. Of the ninety-eight starters a total of fifty-six made complete non-stop runs for this first day and six others experienced but short delay for tires, which was not penalized till the total reached over one hour.

The second day's run to Aberdeen was likewise marred by incessant rain. The continually winding route past Blairgowrie, with its famous beech hedge, led to the famous Devil's Elbow climb up the Spittal of Glenshee, the highest road in the Kingdom. Fortunately for many, this climb was not timed and consequently the frequent halts while the smaller fry were pushed round the worst corners were accepted with complacency. Just at the top of this climb the smaller White had some difficulty with a leaking safety valve and this failure caused its retirement



THROUGH BALLOCK BY THE SHORE OF LOCH LOMOND.

on the following day. The afternoon's run past Balmoral and Stonehaven was entered on in fear by the majority of the competitors, for the famous Cairn O'Mount climb lay before them. With its 20 per cent. pitches this ascent were bad enough at any time, but when the weather has conspired to make the surface inches deep in clay mud, failure need disgrace no car. The story of troubles here would be far too long to recount—even big six-cylinder cars needed an occasional helping hand. The Horbick burnt out its clutch leather in a vain attempt to restart, and similar efforts caused withdrawal of the 40-horsepower Junior and 30-horsepower Mass. The 18-horsepower Reo had its only trouble in the whole of the tour when it shed a passenger for a few yards, and the same may be said of the Cadillac, which here experienced its first delay in any Scottish trial—a total of one minute's stop in three annual events. The 15-horsepower Ford shed but two passengers, and with its normal load easily did the two-mile climb, and likewise the Buick made a very creditable showing.

Thursday's long journey from Aberdeen to Inverness by a circuitous route was favored with better weather, but this small mercy and the absence of a timed ascent were more than compensated for by the mountainous country encountered. The stiff climb up the Bridge of Avon and the consequent descent were noted as the most dangerous part of the tour.

The afternoon's climb up Trinafour Hill was run under a cloudless sky, and with the surface in ideal condition. In Class I. the 15-horsepower Ford did well and easily gained top position, while in the next section the Buick and Reo were respectively placed sixth and eighth. The Mass and the three Ariels took top places in the last four classes, as usual, and the hill climbing prowess of this quartet excited universal admiration. A short but pleasant run led to the resting place at Pitlochry, uneventful but for the differential trouble of the 60-horsepower Belsize, which robbed its driver of the coveted distinction of complete non-stop for the three annual trials. Last day of all, back to smoky Glasgow once again, brought about the resumption of the normal inclement weather conditions. At Aberfeldy came the three-mile climb up Loch Na Craig Hill, with a total rise of over 1,100 feet. The Ford was again well up in Class I. with second award and the Buick and Reo retained their places in the next division. Third section brought out victory for the only lady in the trial and all rejoiced to see Mrs. Riley get top place for her 20-horsepower Belsize after a most persevering run, spoilt only by a single stop of one minute's duration. Mr. Coleman's White met trouble on the hill of such nature that it was fortunate that the day's run was the last of the trip. The feed pump eccentric broke when nearing the summit and a hand-operated arrangement had to be hastily rigged up. For the remaining hundred miles the driver and mechanic heroically pumped with all their might and eventually finished in time after a most arduous day's work.

Back in Glasgow the fuel remaining in the tanks was carefully measured and the cars were then dismissed from their official surveillance. The preliminary non-stop records show surprisingly low numbers, the second day's climb spelling disaster to many who would otherwise have finished without trouble. In the first class no car was able to go through without stop, but both the Cadillac and Jackson cars had only one minute's delay against them. It is greatly to the credit of these smaller cars, however, to note that Class I. was the only section in which every car officially concluded the trial. In Class II. the 12-14 Argyll had a complete non-stop, the Reo coming next with but one minute's delay, together with the 10-12 Darracq. The Buick would similarly have had four non-stops to its credit had not, within the last fifty miles of the trip, a broken spark plug caused further penalization. Class III. had another Argyll as the only successful competitor, but in the next section the Humber, Sunbeam and Austin shared the distinction. The Austin, Straker-Squire and Vinot in Class V., the Berliet and Maudslay in Class VI., and the six-cylinder Hotchkiss in the highest powered division, completed the small list of but eleven cars which came through without stoppage. Seven other cars had but short tire delays.

SOME FACTS PERTAINING TO ELECTRICAL IGNITION*

By HENRY G. CHATAIN, MEMBER SOCIETY AUTOMOBILE ENGINEERS

THE following tests were conducted for the purpose of determining the most favorable operating conditions of a Simms-Bosch low-tension magneto. The magneto is of the inductor type, having a permanent magnet, bipolar field, stationary armature, wound on an I-section core and two revolving inductors, each extending over a quarter of the periphery of the armature. The field pole tips embrace a similar area. The magnetic conditions are shown diagrammatically in Fig. 1, whence it will be seen that

shown both current and potential waves taken simultaneously with magneto running at 600 r. p. m.

The magneto was now run with the make-and-break ignitor in circuit and a curve sheet, Fig. 7, was plotted connecting the position of inductor at time of break with amperes registered on an A. C. motor. The lowest point of the wave was reached when the break occurred, while the axis of the inductors was vertical, i.e. the inductors were just covering the portion of the armature

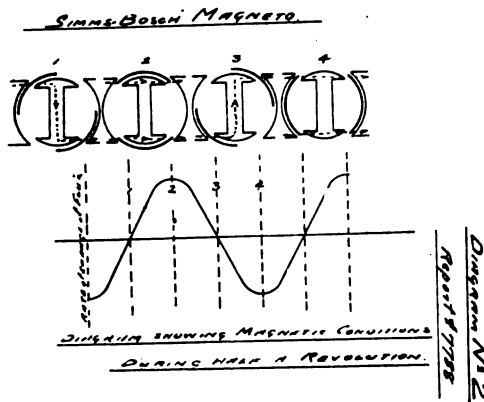


FIG. 1.—Magnetic conditions during half a revolution

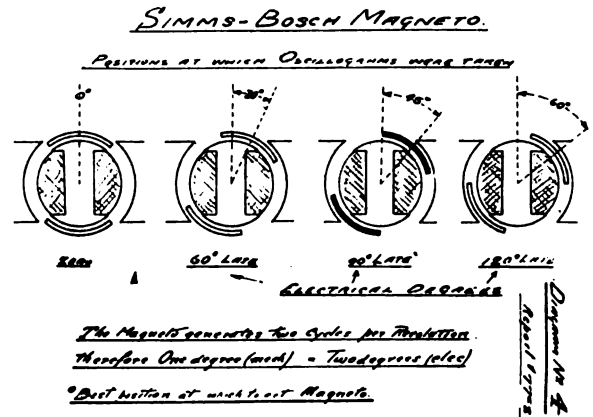


FIG. 9.—Illustrating positions at which oscillograms were taken.

there are four maximum and four minimum points of flux through the armature per revolution, giving the magneto a periodicity of two cycles per revolution.

TESTS: The magneto was direct coupled to a D. C. motor, on the shaft of which was mounted a cam which actuated a variable make-and-break ignitor. It should be noted that the cam had two high points utilizing only two (maxima) peaks out of the four produced by the magneto. This was done to facilitate observations. A break of 5-32 inch was maintained throughout the test.

not enclosed by the poles of the field magneto. This point was taken as zero and the subsequent positions of the inductor at break were measured in electrical degrees from this zero.

Returning to Figs. 4 and 5, I would call attention to the shape of these two waves, the potential rising very rapidly and falling off quite as rapidly. The current rises as rapidly, but in contrast the wave does not fall off; this is a fine characteristic, as will readily be seen by inspecting the wave analyzed, as shown in Fig. 8—showing 80 degrees available for producing a spark of approximately the same current.

The resistance of the armature at 25° C. was 87.6 ohms.

The curves shown in Figs. 2 and 3 were plotted connecting volts and speed open circuit, and amperes and speed, short-circuited, the magneto running as a simple alternator; note the almost constant current. At 340 r. p. m. the short-circuit current

The positions of the inductor at which the oscillograms were taken are shown in Fig. 9. To avoid confusion the use of the terms "advance" and "retard" with regard to the positions of the inductor has been avoided. Instead the relative positions have been designated "late" and "early," according as the break occurs

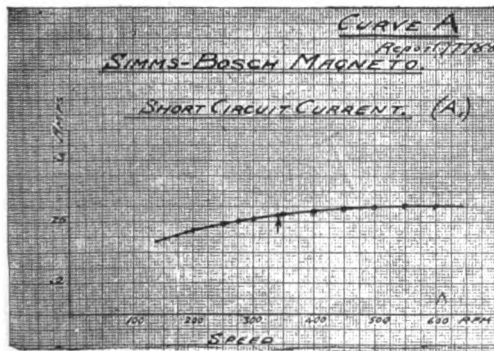


FIG. 2.—Curve illustrating short-circuit current, Bosch magneto.

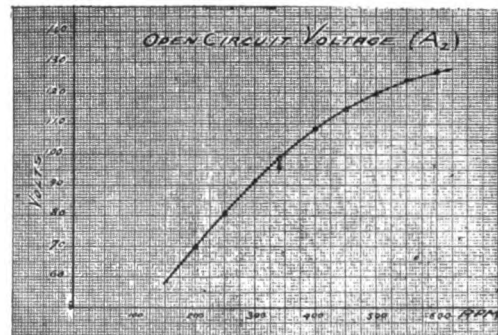


FIG. 3.—Rise of potential on open circuit, Bosch magneto.

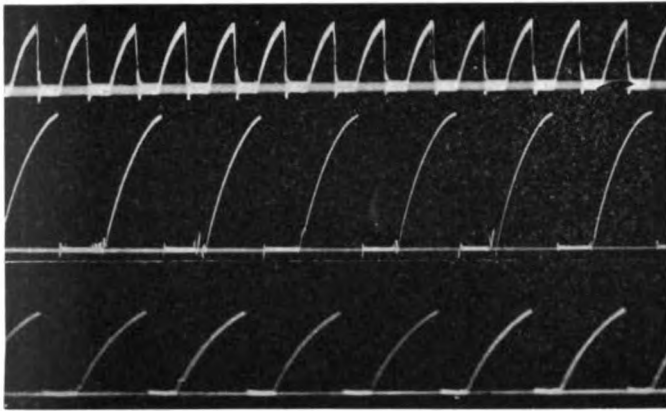
is .225 amps. and open circuit voltage 98, as read on Thomson A. C. instruments.

later or earlier than the inductor reaches the zero point.

Oscillograph records 4 and 5 were taken under the above conditions, showing the actual shapes of the potential and current waves; it will be noted that the potential wave is somewhat different from that usually shown, such as in Fig. 1. In Fig. 6 is

Fig. 10 shows current wave with make-and-break 60 electrical degrees late; note the small negative current to the left of each peak and below the horizontal line. This negative current is better shown in Fig. 11, which also shows potential wave taken simultaneously with the current. With 90 electrical degrees "late" we have a wave as shown in Fig. 12—the varying height of the wave peaks is due to poor contact of the ignitor.

*Extract from paper read before the Society of Automobile Engineers at New York.



FIGURES 17, 18 AND 19.

FIG. 17.—Kingston Coil. 4 volts on prim.; interrupt. per sec., 89; speed of film, 202 r.p.m.

FIG. 18.—"Apple" Coil. 6 volts on prim.; interrupt. per sec., 94; speed of film, 477 r.p.m.

FIG. 19.—Guenet Coil. 4 volts on prim.; interrupt. per sec., 111; speed of film, 435 r.p.m.

Fig. 13 shows potential and current waves taken 90 electrical degrees late, but at 600 r. p. m. of magneto.

A very interesting diagram is shown in Fig. 14, which shows potential and current 120 electrical degrees late. On the potential wave note rise of potential, then sudden fall; when contact is made then sudden rise again.

An analysis of the oscillograms, Fig. 15, shows the quantity of spark 60° late, which appears to be the best position, but all are so near alike that it may be assumed that anywhere between 60° late and 120° late a uniform spark may be attained.

Tests of Some High-tension Coils.

Passing from the low-tension magneto we will investigate a few of the properties of the high-tension coil with trembler. These tests were originally made with the object in view to determine what was the nature of a spark that attained the best results in the cylinder of a gas engine.

The writer has heard for a number of years the terms "hot spark," "fat spark," etc.; these terms undoubtedly convey an idea, but it would be difficult to design a coil from such data. In attempting to discover what a "fat" spark was, the writer has failed, but in the attempt has succeeded in getting some data relative to spark coils which may prove of interest, and may assist others in the discovery of the "fat" spark.

In the following table is given the Name of Coil and Fig. Number which corresponds to the oscillograph record:

Volts on primary, amperes primary, frequency of vibration of trembler per second, resistance of primary, resistance of secondary:

Fig.	Volts.	Amps.	Vibration		
			Prim. Per Sec.	Trembler.	Sec. Res. Ohms.
Kingston	.....	.....	.....	89	.....
Apple	.....18	5.20	2.2	94	.171 3715
Guenet	.....19	3.7	1.31	111	.390 2337
Guenet	.....20	5.8	.....	123	..... 2337
Hardy	.....21	3.78	1.05	122	.274 2779
Fisher	.....22	5.8	.82	149	.613 2590
Dow	.....23	3.84	.57	149	.210 5394
Lacoste	.....24	3.72	1.46	177	.232 2006
Lacoste	.....25	5.62	1.94	197	.232 2006
Heinze	.....26	3.66	1.31	210	.320 1302
Pittsfield	.....27	.....	.....	228	.....
Induction Coil Co.	.....28	3.62	1.55	360	.312 6180
Milwaukee	.....29	.....	.....	390	.312 6180

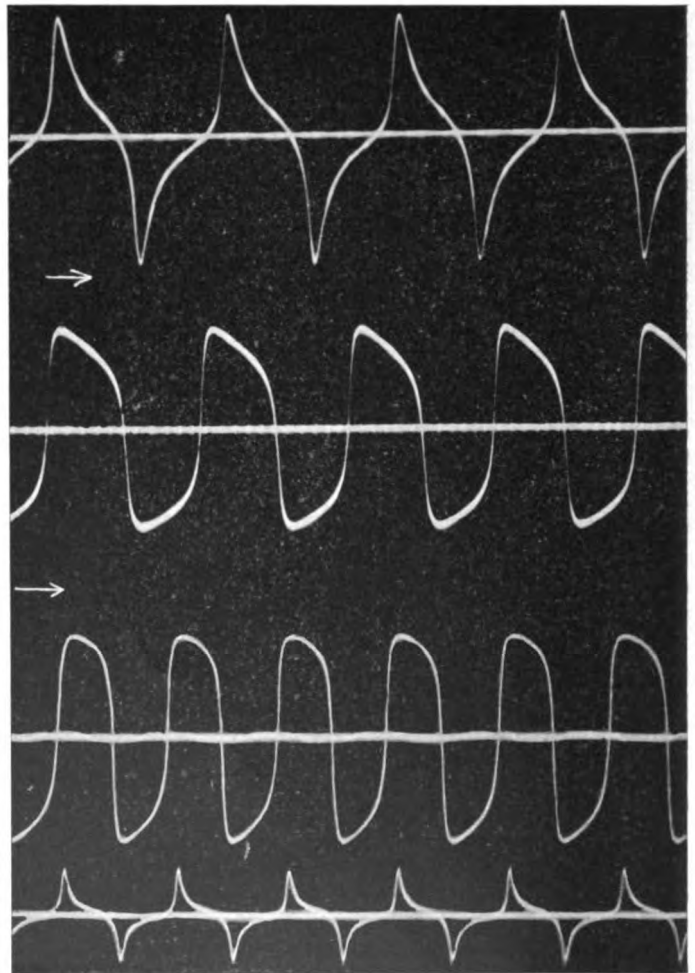
With a trembler vibrating at the rate of 100 per second and a motor turning 1,000 revolutions per minute, assuming that the

first spark occurred at the proper moment, the next spark would occur after the crank had traveled through approximately 61°. With the vibrations twice as rapid, 200 per second, which is more than the average, the crank would travel through 30°, and it is obvious that the second spark would be of little value in case the first did not ignite the gas. It would appear to the writer that the most desirable qualification of a high-tension coil is the regularity of action of the trembler, other conditions being equal, and that it is not necessary to obtain a very high frequency.

Probably the most interesting oscillogram of the high-tension series is the one shown in Fig. 30 with its calibration curve shown in Fig. 31. Here is shown the current waves of both primary and secondary, the upper the primary and the lower the secondary. Note the regularity of action of the trembler as shown by the primary current. In all of the oscillograms shown of the high-tension coils no attention should be given to their relative sizes, as the speed of film varies, likewise the perpendicular calibrations.

Before closing, the writer begs to acknowledge the kindness of Mr. John Taylor, the well-known telephone expert, for the use of his laboratory, and the assistance given by Mr. Richard Amber-ton in conducting tests.

EDITOR'S NOTE.—Mr. Chatain's paper was profusely illustrated by lantern slides referring to tests of the Simms-Bosch magneto as well as of a large number of induction coils, but lack of space makes it impossible to reproduce more than a limited number of those used in the report of the Transactions of the Society of Automobile Engineers, from which the present extract is taken.



FIGURES 4, 5 AND 6.

FIG. 4.—Simms-Bosch magneto, potential wave, open circuit; no make and break. 1 mm. deflection equals 31 volts. Speed, 340 r.p.m.

FIG. 5.—Same. Current wave, short circuit no make and break. 1 mm. deflection equals .0128 ampere. Speed, 340 r.p.m.

FIG. 6.—Same. Current wave (upper), short circuit; potential wave (lower), open circuit. 1 mm. deflection equals .0125 amp. and 37.2 volts. Speed, 600 r.p.m.

NOTES FROM THE SHOP OF AN AMATEUR AUTOIST

By HOWARD GREENE.

MANY men are deterred from using automobiles solely by the fear that the cost of upkeep of a machine will be a constant and serious financial drain—that the first cost of the car will prove to be a comparatively small part of the whole cost of automobiling. It must be admitted that there is some foundation for apprehension; but whether this viewpoint is the correct one or not depends very largely upon the man who buys the car. If he desires to have all the work on his car, except the actual driving, done by others, who must be paid for their services, it will, of course, cost a good hard sum for the season. If, however, he is one of the many who have mechanical tastes, know a little about handling tools and are willing to take care of their own machines—who would rather do their own work than be without their cars—and are willing to take the trouble to become thoroughly acquainted with the details of their machines, he need not go very deeply into his pocket for his fun. A little ingenuity and skill, and a certain amount of willingness to work will take the place of a lot of cash. Moreover, a mechanically inclined man, who can use both hands and brains, can often get a second-hand car for a very reasonable price because of its poor condition, and then overhaul it himself, provided no very exten-

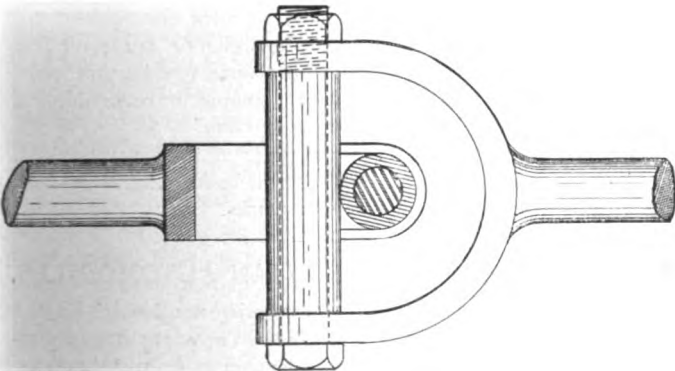


FIG. 1.—How the amateur repair was carried out on the universal.

sive renewals are necessary. Of course, there is a certain risk of accident accompanied by damages beyond the amateur's repairing facilities; but this risk may be very greatly reduced by careful driving. Ordinary small repairs and renewals can be made by the amateur workman at a cost much below the professional repairman's charges. The following examples serve to illustrate the idea and may be useful to someone.

The car in question is a shaft-driven machine. The universal joint at the rear of the gearcase consists of two forks, one on each of the adjoining shaft ends, set at right angles, with a cross-shaped steel casting or forging set between them in such a way that the ends of one of the cross-pieces fit between the jaws of one fork and the ends of the other cross-piece between the jaws of the other fork. The cross-piece ends are held in position, but allowed to swivel by trunnions with threaded parts that screw into the forks, as shown in Fig. 1. The arrangement is a familiar one to automobilists and will be recognized at once. The trunnions are prevented from unscrewing by sheet steel locks fitted over the screw-heads and secured to the forks by a small screw in each.

The trouble, in the first place, arose from the fact that these locks did not always lock. The little screw would work loose and fall out and the lock would follow immediately. Then the trunnion itself would gradually work out. The owner of the car caught trunnions working out three or four times, but while he was meditating upon an improved form of lock one of the trunnions broke off short and the joint let go, making a fierce banging and clattering, but fortunately doing no further damage.

Examination in the shop showed that all the screws were worn loose in their tapped holes, and that they should be replaced by larger ones, with larger trunnion ends to fill the worn holes in the cross-piece ends. But instead of rebuilding the joint in its original form the amateur adopted a plan that gave better results and that cost very little.

A rough forging for the cross-piece was purchased at a cost of seventy-five cents, under the name of an "offset," the two parts being offset from each other and at right angles. Instead of drilling a short distance into each end, a hole was drilled clear through each cross-piece, care being taken to have the holes at right angles, and the holes were reamed

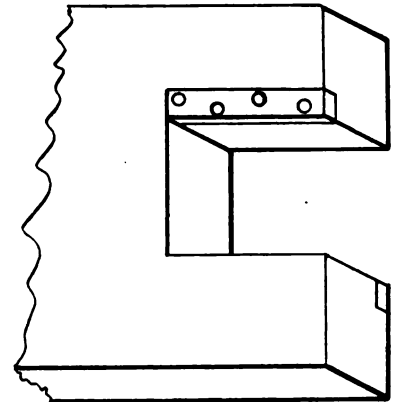


FIG. 2.—The tool steel facing of the coupling.

to fit turned steel bolts. Each bolt passed through the fork ends and the cross-piece between, and its end was screwed into one of the arms, as shown, projecting far enough to take a lock-nut. The new joint has given no trouble and after a season's use is still in good shape, showing little wear and never having caused a minute's delay or anxiety. Moreover, it was silent, whereas the old joint rattled considerably, proving a constant source of annoyance.

Just behind the clutch on the same car is a coupling of a different form, consisting of two slotted members, which lock together as shown in Fig. 2. The abutting parts of this coupling gradually cut into each other until the coupling was loose and rattling. This was cured by chipping out the worn places and fitting in little plates of tool steel, which were riveted in place and filed off flush with the jaws, making the coupling as good as new—in fact, a little better, for the steel inserts were of harder stuff than the jaws and better adapted to resist wear.

The expense of having a set of new bronze bushings made for the gear case—the car was of an early pattern and new parts were not to be had ready made—was avoided by sawing through one side of each of the old bushings and putting a cap-screw through the casing so as to bear on the top of the bushing and close it up

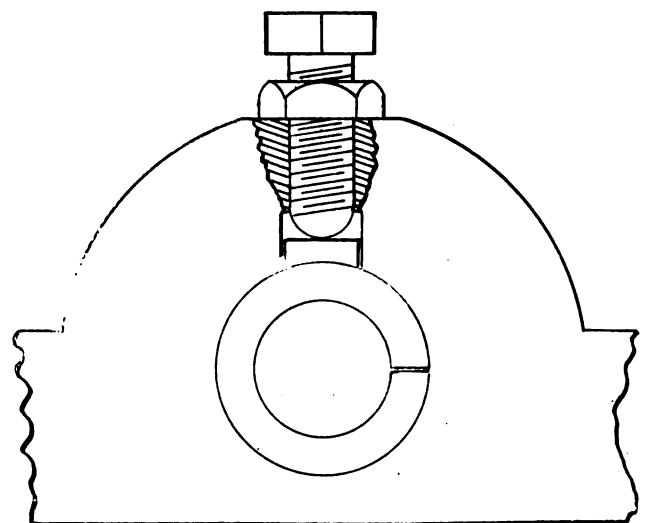


FIG. 3.—An ingenious substitute for new bronze bushings.

when screwed down. In two cases the bushings were rather light and showed a tendency to dent under the pressure of the cap-screw. So the ingenious amateur chipped a recess in the casing to permit the insertion of a small plate of very stiff steel running the length of the bushing and distributing the pressure of the screw (see Fig. 3). While this may seem a very primitive arrangement—and theoretically it is about as crude as possible—still it has worked admirably in actual practice and has made it possible to keep the bearings of the gear-shafts tight and quiet, without any outlay to speak of; the very worst worn of the bushings is good for the rest of this season at the least.

Of course these particular ideas could not be carried out on every car, but doubtless there are some cars where they could be used, perhaps with some modification; and in any case they serve to show what can be done by the combined use of hands and brains. It may be well to call attention to the fact that these are actual repair jobs done by an amateur and that the car is at this moment in commission, so that these suggestions are entirely practical and well worth following.

NOVEL DOUBLE-ACTING MOTOR.

It has often been wondered, particularly by the layman, why the internal combustion motor as applied to the automobile could not be greatly improved by making it double-acting, but to the engineer the difficulties involved have always been considered to be such as to make it not alone impracticable, but as being entirely out of the question in view of space and other limitations imposed by the car. An engine of this type has been built for motor-boat use, but so far as known nothing of the kind has previously been attempted in the shape of an automobile motor until the present, when the Fish Gas Engine Company, of Denver, Col., have devoted themselves to the matter and will shortly place on the market an engine of this type made under their own patents. They are not in a position to publish drawings or illustrations of their new motor at this moment, but the following description of its characteristics and the numerous essential features in which it differs from the standard type will be found of considerable interest:

"This engine is an improvement over the ordinary engine in the following respects," says its inventor: "It has an impulse of the piston at the beginning of every stroke in each direction, giving an action exactly analogous with a steam engine and can be built in single or compound cylinders. The compression spaces of the ordinary engines are removed from the cylinders and fed by a compressor into which the new charge is always taken and from which it is being continually forced into the auxiliary chambers, commonly called compression spaces, which are located in the cylinder head of each end of the cylinder, from which spaces it is admitted to the power cylinder, at the beginning of each stroke, in either direction, through mechanically operated ports of the proper dimensions. These auxiliary chambers are so constructed as to permit the volume being increased or decreased at the will of the operator. It will readily be seen that there being a fixed volume of intake at all times into the compressor, if this volume be forced into a chamber containing say fifteen per cent. of the original volume, the compression will be much higher and a denser gas produced than if this same volume be forced into a chamber containing twenty per cent. of the original.

"The engine is so constructed as to permit the operator to change the compression from half an atmosphere up to any desired compression permissible by the safety valve, or *vice versa*, while the machine is in full operation, this only requiring the mere turning of a three-way air valve. These auxiliary chambers are so arranged that the speed of the engine is increased until four or more full strokes of the power piston may be made while the waiting charge is expanding; that is, if the fuel requires such time for complete combustion. We have found that in moving the piston in the beginning of each stroke, to deliver a given horsepower, we need about one-twelfth the com-

pression required in an ordinary four-cycle engine, and we have also found that to give the gases their proper time for combustion there is absolutely no odor and but little sound coming from the engine, which is not even tapped for an exhaust pipe, to say nothing of a muffler; this being the case, the most inexperienced operator can tell instantly when the timer is delivering the spark at the proper moment to obtain the maximum power from the exploding gas.

"From the carbureter the gas enters the compressor which carries practically the same temperature all the time; here the compression begins and with it the temperature of the gases begins to rise and continues through its entire usage, unless it be when the engine is stopped; even then the stored charge will fire at an indefinitely later period—an experiment showed that we could hold this four days and nights and start the engine on the spark. Under the proper timing of the machine the charge will reach the maximum expansion in about seven-eighths of the piston stroke and deliver the exhaust at practically atmospheric pressure.

"The card taken from operating under these conditions is exactly the reverse of the card taken from a four or two-cycle type of engine; the reason for this almost unbelievable fact is that in the before-mentioned types of engines the gases are ignited while in direct contact with a moving piston, while in this they are only in contact with the piston at the proper point.

"This engine differs from others chiefly in that it is odorless and noiseless, having nineteen points of friction against sixty-five of the ordinary automobile engine of forty horsepower, and kerosene, gasoline, alcohol, distillate, naphtha or crude oil may be used. The engine also requires no change-speed gears, operating almost identically with the steam engine, is reversible and can be operated by an inexperienced person."

This new engine differs so radically from familiar standards that doubtless the majority of autoists will be like the Missourian and want "to be shown" just how it works.

BRISK DEMAND FOR AMERICAN AUTOMOBILES.

In referring to the fact that a considerable number of English inquiries have been received at the Bristol Consulate from American manufacturers regarding motor machines, Consul Lorin A. Lathrop says:

Some American cars have been sold in Bristol and have given satisfaction. Competition increases by leaps and bounds, and I think it quite useless to approach the English market in other than a systematic and determined way. By this I mean a central depot in one of the great centers—London being pre-eminently the place—advertising, travelers, and the systematic establishment of agencies by demonstrators who come along with the car. The industry is developing rapidly in England. It is estimated that \$60,000,000 at least are invested in it, and all the first-class manufacturers are producing at their utmost capacity. It is estimated that some 20,000 motor vehicles of all grades and sizes were turned out in this country in 1906. Over 70,000 cars are now running, and the trade organs expect that this number will be quadrupled within ten years. Distances in Great Britain are so short and roads are so good that it is expected that all but the laboring classes will use motor cars within the lifetime of the present generation. Figures show that imported cars are not holding their own in the rapid increase, but there is a large and growing increase in the importation of "parts of cars." Manufacturers have not yet been able to catch up with the demand for the more expensive car, hence little attention has been given to the cheap, small, and handy vehicles. It is recognized that American manufacturers are ahead with the runabout. France, Belgium, and Italy are competitors with whom we have to reckon in England as well as with the domestic manufacturer.

American manufacturers have achieved great success in motor boats, and there is an excellent market for their product, but not in this consular district. Tidal changes in the Bristol channel are so great as to preclude the use of the small motor boat, and inland waters are shallow and weed infested. Public attention has been drawn to canals of late, and a royal commission has been appointed for examination into the conditions of their maintenance. It is generally believed that inland artificial waterways will be restored and more largely utilized in future. If this well-founded anticipation is realized, the motor boat, both for business and pleasure purposes, will find a considerable market in Bristol.

LETTERS INTERESTING AND INSTRUCTIVE

Will a Four-cylinder Motor Run with No Flywheel?

Editor THE AUTOMOBILE:

[819.]—Some time ago I had an argument with a brother autoist as to the capability of the average four-cylinder motor to run without its flywheel. He contends that it can, and I have taken the opposite stand. We are both quite positive that we are in the right, but though our contention is of somewhat long standing, neither of us has ever been able to substantiate his view beyond a doubt by actually making a test on an engine. As the opportunity to do so would appear to be rather remote at the present writing, it has occurred to me that probably you have seen the matter demonstrated or know of this having been done at some time or other. If not, you can probably support my theoretical stand that the thing is not possible. If you think the matter is of sufficient general interest to your readers, will you kindly give it what attention you think fit?

A and B.

Tuxedo, New York.

Considered merely from the academic point of view, the question is one of more or less general interest, and as such may be answered in the affirmative unequivocally. There is no doubt that a four-cylinder motor of the four-cycle type can be made to turn over without its flywheel, and this would naturally be true to an even greater extent of the two-cycle owing to the greater number of impulses per revolution in the latter. But one case of a motor of the former type having done so ever came to our attention, and the circumstances were more or less similar to those which actuate you in making the inquiry—that is, simply to see if it was possible, as but a moment's consideration is necessary to show that it is not practical. The experiment was tried merely from the promptings of curiosity, which were satisfied by the result, which was in the affirmative. The motor did turn over, but its motion was the jerkiest that could possibly be imagined; it all but came to a dead stop between impulses and then the effect of the explosion was more like that of a projectile leaving a gun than anything else. As each charge was fired there would be an exceedingly quick, sharp stroke, barely sufficing to carry the piston in the next cylinder to fire to the proper point, when it would be repeated, the action of the motor resembling a series of hard blows. Failure to ignite a single charge naturally brought it to a dead standstill, usually about at the end of the compression stroke, so that it was easy to restart it merely by switching on the current. The experiments merely showed that it was possible for a motor of this type to turn over minus its flywheel, but had no other value.

Regarding the Legal Requirements of Several States.

Editor THE AUTOMOBILE:

[820.]—Will you please advise me as to State License Regulations in the States of New York, Connecticut, Massachusetts, Vermont, New Hampshire, Maine, Rhode Island and New Jersey, and in which of these States it is necessary to take out license for passing through; also which of these States recognize a Pennsylvania license? Would also like to know the license requirements of Ontario, Canada.

I will appreciate all information you can give me on this subject.
New Castle, Pa. JOHN S. OURSLER.

All of the States you mention in your letter will recognize your Pennsylvania license, with the exception of New Jersey, so that it will be unnecessary for you to take out any additional license or register your car in any of these States except Jersey. In the case of Connecticut and Massachusetts, the exemption to non-residents only applies for a period of fifteen days, but as there is no one at the border to record your arrival and departure this section of the automobile legislation in question is of little or no force, so that such States are virtually upon the same basis as New York and others which recognize all foreign licenses indefinitely. In Ontario non-residents are not exempt and application must be made to the Provincial Secretary at Ottawa for registration, which costs \$4.00 for the first year. All of this information, and a great deal more, is presented in convenient tabular form in the Automobile Official Blue Book.

Why Will Some Cars Not Throttle Down Satisfactorily?

Editor THE AUTOMOBILE:

[821.]—I have a four-cylinder gasoline car that is about three to four years old, and that has always given me satisfactory service, except in one particular, and that is the fact that I find it rather difficult to run it slowly on the direct drive. In other words, it will not throttle down satisfactorily, and before I learned its peculiarity in this respect I stalled the engine a good many times—on some occasions in more or less ticklish places, such as in the midst of traffic, when it is not alone awkward, but rather humiliating to have to get out and turn the crank while some irate truckman yells at you to "get a horse."

In order that you may have sufficient information on which to diagnose the case, I will give you a little history concerning the car. I bought it at second-hand two years ago, and its original owner had had it about the same length of time, and had always obtained good service from it, and, in fact, I can say the same of it, ever since it has been in my possession, with the exception just noted. When first turned out it was equipped with a rather complicated system of ignition—in fact, its first owner, who was an electrician, said it resembled a miniature central station more than anything else. There was a small direct-current dynamo placed on one side of the motor and driven at high speed, the latter being regulated by a governor. This dynamo was used to charge two sets of storage batteries, and current was taken from the latter for ignition and possibly also for side lights. On the dashboard there was an automatic switch which threw the dynamo from one set to another as soon as one was fully charged, and which cut both out when it slowed too much, in order to protect them, again closing the circuit automatically when the motor resumed. Probably it also had other functions, but this will be a sufficient description. This switch was enclosed in a brass case with a plate glass front, and is quite as ornamental as it is imposing looking, so that when the remainder of the outfit was removed from the car it was left in place—maybe to mystify the uninitiated. The original owner of the car had the system in question taken off, with the exception of the switch mentioned, and had the engine entirely overhauled and a low-tension magneto put on. This is the shape in which it was when it came into my possession.

I have learned the details of the car pretty thoroughly in other respects, but never have been able to fathom the cause of this refusal to throttle down properly on the high gear, which necessitates the use of the second speed to a great extent when driving in traffic. Can you help me out on this? LOW TENSION.

Los Angeles, Cal.

Doubtless the fact that the magneto with which your car is equipped will not generate sufficient current to spark the motor when running at a low rate of speed accounts for your inability to throttle it down enough to run through traffic satisfactorily on the high gear. It is not so much a fault of the engine itself as it is of the ignition equipment with which it is fitted. The only remedy would naturally consist in the installation of a battery to take care of the ignition when the motor was running too slowly to make the magneto available, switching back and forth from one to the other as the circumstances required, but only using the battery to avert the necessity of having to resort to the second gear when compelled to drive slowly, as a battery will quickly be exhausted when used in connection with a make-and-break system of ignition. However, fresh dry cells will usually run an ignition system of this kind for from five to ten miles at a time without becoming entirely exhausted, and if only used when the occasion demanded would doubtless give considerable service owing to their great recuperative powers.

What Causes This Hammering or Pounding?

Editor THE AUTOMOBILE:

[822.]—I have been troubled the past few days with a pounding in my engine, and have thus far been unable to discover the reason for same. My auto is a Model C Ford, 10-horsepower, 2-cylinder engine. When running on low gear or on the high gear on good, level roads the engine does not pound. But when I try to climb the least incline on high gear the engine pounds very badly, and also shows a great loss of power, making it necessary to use the low gear. When using the low gear the engine does not pound. The engine seems to pound the same with a small load as it does with a large load. This pounding has troubled me for some time.

and I have tried my best to locate same but so far have been unable to improve upon the action. I have given the oiling unusual care, have had a good mixture, kept the engine cool, have inspected the connections of the cranks to the piston and the shaft and find them all O. K. Have also used the spark advance very moderately, finding, however, that it pounds a great deal worse when advanced too far. Flywheel is tight, and all bearings in apparently good working order. From my opinion I think the trouble, that is the pounding, is in the connection either to the shaft or the piston, of the crank.

Any information that you can lend me through your paper that will assist me in freeing myself of this trouble will be greatly appreciated, and I wish to thank you in advance.

Tracy, Minn.

C. B. PATTRIDGE.

Judging from the description that you give of the pounding that takes place in your engine, we should say it was due to looseness in one or both ends of the connecting rod, *i. e.* where it is joined to either the crank pin or the piston pin. The fact that the motor only pounds when the load is applied is an almost certain indication of this, and that it does not pound so badly or at all when running on the level or with the low gear in only goes to show that it has not reached a stage where it is sufficiently acute to manifest itself under all conditions. Once under way when running on the level, or with the low gear in on the level, the stored energy of the flywheel practically supplies all the demands for power and the load does not come directly on the pistons; however, with the motor slowed down to take a grade the propulsion of the car devolves directly upon each power stroke of the motor, particularly in the case of single and twin-cylinder motors, in which the power impulses are separated by such wide intervals. Such a state of affairs is indicated by the fact that the car goes forward in jerks when hill-climbing instead of running smoothly without this perceptible effort. This causes a considerable shock to be exerted against the piston and its connections every time the direction of its travel is reversed, so that the slightest amount of play is evident in the shape of a knock. Excessive advance of the ignition also has the same effect for practically the same reason. Some engineers have attempted to differentiate between pounding and hammering, particularly steam users, and the example might well be followed in the case of the automobilist, as in many respects motors of the two classes are subject to the same ills. Hammering is thus employed only to refer to noises generated by mechanical troubles, such as a loose big end, loose piston pin, insecure flywheel and the like, while pounding is something that is the outgrowth of improper conditions in the cylinder, as in the case of the steam engine, where water is imprisoned in the cylinder due to the condensation of the charge left in it when stopped previously or the use of steam that is too wet. In the gasoline motor similar causes are found in running, with the ignition too far advanced, preignition and the like, and the difference would appear to be based on sound and logical reasoning.

Concerning the Route of Last Year's A. A. A. Tour.

Editor THE AUTOMOBILE:

[823.]—Will you kindly let me know through "Letters Interesting and Instructive" in your next issue the route of last year's Glidden tour, and also on what condition an American car can be taken into Canada for about two weeks.

SUBSCRIBER.

The route of last year's tour of the American Automobile Association for the Glidden Trophy was from Buffalo to Bretton Woods, New Hampshire, by way of Rochester, Utica, Saratoga, Elizabethtown, Rouses Point, Montreal, Quebec, Jackman and Rangeley, Maine. This, together with some additional information regarding the event was published in last week's issue of THE AUTOMOBILE, July 11. In order to take an American car into Canada it is necessary to give a bond for its withdrawal from the country at the end of the period named. We have no information at hand as to the exact amount of the bond required, but believe it is nominal and all the details can be arranged right at the frontier, either at Rouses Point or Niagara Falls, in a short time, there being no preliminaries necessary. It is also necessary to take out a local license and pay the usual registration fee, as the Canadian provinces do not exempt non-resident

autoists from the provisions of their automobile laws, regardless of the length of their stay. Like New Jersey and Pennsylvania, which have erected a wall against the autoist which he cannot pass without the proper credentials, a car cannot be driven in or into Canada without these formalities having been complied with. As application must be made to the Provincial Secretary at Ottawa, this should be done some time in advance to avoid delay.

Internal Combustion and Steam Motors Compared.

Editor THE AUTOMOBILE:

[824.]—I have had considerable experience with steam engines for some years past, but am more or less new to the gasoline and kerosene motor, and would like to ask a few questions regarding them on a matter that has puzzled me more or less ever since there has been so much published on the subject of the horsepower of automobile motors. For instance, take a stationary gasoline engine, such as we have here for power purposes. Its dimensions are given as 6-inch bore by 10-inch stroke, and it is rated at 7 horsepower at a speed of about 275 revolutions per minute. We also have a four-cylinder automobile here, the motor dimensions of which are given as bore 4.1-2 inches, stroke 4.3-4 inches, but it is rated at 35 horsepower, which would make the output of each of its cylinders almost 9 horsepower, or considerably in excess of the big 6 by 10 engine, though the latter has tremendous flywheels. To make another comparison, and this is the one that has puzzled me more than the foregoing, a friend of ours has a small steam launch with two cylinders, the dimensions of which, I think, are something like 4 by 6, and he says it develops 25 to 30 horsepower or more. I have no reason to doubt his word on the subject, and I know the launch to be very fast and powerful for its size, but I would like to see an explanation of the reason for the great difference in the power developed by these various engines. Any information you can give through your correspondence department will be appreciated.

A. W. B.

Dubuque, Ia.

Your questions involve the most rudimentary principles of motor design considered generally and regardless of the form of power used, electric excepted of course, and considerable misconception appears to prevail on the subject. To take up the matter of steam and internal combustion prime movers, constituting your last question, when it is borne in mind that the power developed by any type of pressure motor depends entirely on the mean effective pressure exerted on the head of the piston throughout the stroke times the number of strokes the motor makes in a given period, usually a minute, it will not be difficult to differentiate between them. This is the most important factor in any horsepower calculation and is usually referred to as the *m. e. p.*; it can only be calculated accurately by the use of indicator cards showing the maximum pressure attained in the cylinder and its expansion line down to the point of exhaust, as well as the condition of affairs during the exhaust stroke, as back pressure is sometimes present in the latter to offset the work accomplished on the power stroke. The exact area of these cards is determined with the aid of a planimeter, from which the average pressure on the piston throughout its working stroke is figured, this being the method employed of ascertaining this factor.

In the internal combustion motor this pressure is developed as the result of the explosion, aided by the initial compression given the charge of gas and air, whereas in the steam engine it is entirely a function of the boiler less any losses incurred in the transmission of the steam from the boiler to the engine. Thus the launch engine you cite is probably run at a boiler pressure of from 200 to 250 pounds to the square inch and is further a high-speed double-acting engine, receiving four power impulses for every revolution of the crankshaft, so that is in reality the equivalent of an eight-cylinder gasoline engine of practically the same dimensions. The same reasoning applies with equal force to your question concerning the large-cylinder stationary engine and the very much smaller automobile motor, which is nevertheless rated so much higher. As you say, the former travels at a very slow speed, not over 300 r. p. m.; its initial compression will probably not exceed 35 to 50 pounds per square inch at the most, while that of the automobile motor will doubtless be from 60 to 70 pounds and it will make 1,000 r. p. m., thus running more than three times faster. Its *m. e. p.* will not only be far greater,

but it is also exercised more than three times as often on the head of the piston of the one cylinder which you take to compare with the stationary motor. The flywheel has no direct bearing on the power developed, but influences the steadiness with which the motor runs. A single-cylinder motor naturally requires more weight and a wheel of greater diameter than a four-cylinder engine, due to the great disparity between the number of impulses generated by the two, and there is a far greater difference between the stationary and the automobile motor in this respect. Considerations of space, weight and, more than either of these, the effects of gyroscopic action, combine to limit the size of the flywheel of the automobile motor. There are not alone no such restrictions in the case of the stationary motor, but the latter is also designed to run at a uniform r. p. m. rate.

Correction Regarding Comparison of Steam and Gasoline.

Editor THE AUTOMOBILE:

[825.]—In your issue of July 4, in answer to "Puzzled," appears a statement which should be corrected. I had expected to see a correction in your next issue, but as it did not show up, and as the last ten years of fighting the battle of the combustion engine has given me the habit, I shall take the liberty of correcting the mistake, which consisted of the statement—A single-cylinder, double-acting steam engine is the equivalent of eight four-cycle gas engine cylinders, as far as the number of impulses is concerned. A moment's thought will show that this is not true. Whoever wrote the answer must have confused revolution and cycle.

One double-acting steam cylinder receives the same number of impulses as four four-cycle internal combustion cylinders or as two two-cycle cylinders. And one thing more that is not fair to the internal combustion engine in the same answer—the combustion engine does not receive a series of blows on the piston head—there is quite an appreciable interval of time necessary to burn the whole charge in the cylinder and during this interval the pressure is increasing.

K. G. JOHNSON.

New York City.

As you say, a moment's thought would suffice to show the error of the statement you call attention to, which represents an example of the class of errors that are inadvertently allowed to slip through despite the closest proof reading, and which are bound to occur in a newspaper from time to time. The comparison should naturally have read, either four-cylinder in the case of the gasoline engine, or two-cylinder in the case of the double-acting steam engine, in order to make it correct. However, there was no intention whatever to disparage either of these motive powers in favor of the other, in the latter part of the answer to which you call attention, this comparison being the illustration usually cited to show the relative difference in the action of motors of the two classes, and it must be admitted that the explosion of the internal combustion motor is more in the nature of a blow than is the admission into the cylinder of steam at even the highest pressures used in practice. We are glad to make the correction you refer to and are always pleased to have readers call attention to misstatements or omissions.

A Hardy Annual to the Fore Once More.

Editor THE AUTOMOBILE:

[826.]—I have an argument on with a friend of mine, and the stubbornness with which each maintains his position is doubtless in direct proportion to our mutual ignorance on the subject. I will designate myself as A and my antagonist as B, because I feel quite certain he is in the wrong and should be relegated to second place.

I maintain, first, that a 100 per cent. grade is an incline making an angle of 45 degrees with the horizontal or road line, and, secondly, that there is no authentic record of a car ever having climbed a 50 per cent. grade or better on an ordinary road or under ordinary conditions. I am quite aware that cars have climbed what amount to terrific grades in the shape of specially built wooden inclines and the like—circus stunts they may as well be called, for they do not show what the same car can do on the road.

B holds that a 100 per cent. grade means a perpendicular line and that other grades are in proportion. To make a sort of school-boy simile of it, a man hauling himself up a bar or climbing a rope hand over hand in ascending the equivalent of a 100 per cent. grade. He is also quite certain that 50 per cent. grades are not the extremely uncommon affairs that most engineers claim them to be and that many cars are able to go up them, if not "on the high," at least with credit to themselves and their builders.

As we have, metaphorically speaking, almost come to blows over this subject, a little light on it would be appreciated.

Kansas City, Mo.

A and B.

A is quite correct, a 100 per cent. grade is a 45 degree angle, grade percentages being measured by the number of feet of vertical rise, proportionate to the number of feet of horizontal travel. Fifty per cent. grades are very uncommon, indeed, if not impossible, except on mountain trails and specially prepared inclines, as you mention. We do not know of any car ever having overcome one except in the performance of what you have dubbed "circus stunts." We think B was fittingly put in second place, at least on the matter of grades—a constantly recurring subject of inquiry.

OWNERS' PROTECTIVE ASSOCIATION SUGGESTED

Editor THE AUTOMOBILE:

[827.]—As the result of my arrest at Amityville by no less than five husky deputy sheriffs recently, I wrote a letter of protest to the "Brooklyn Eagle" and to the "Brooklyn Daily Times." While driving along an open stretch of road we were apprehended by a guesswork calculation and on the merest technicality, and it took five officers of the law to see that we got our just deserts for this heinous crime. But it was not until we had run around a good part of the country that we could find a judge at Lindenhurst, who was probably on hand Sunday, as I believe he combines judicial functions with running an ice cream establishment. I was kindly warned that unless I was prepared to give bail I would be locked up, but it was suggested that \$20—it was called a fine—would save me considerable inconvenience, and I was admonished from the bench that I ought to be glad it was not \$50. In interim we (my wife and myself) had been subjected to the indignity of being paraded through the county and compelled to wait for fifteen minutes in front of a low village grocery for the entertainment of the local hoodlums, almost like prisoners in stocks. All this for "covering one-sixteenth of a mile in ten seconds," or the equivalent of 22 miles an hour, which was the charge, though we were actually not exceeding 10 miles an hour.

My letter to the "Eagle" received the attention it merited, but I was surprised to note that a supposedly sane editor, in the case of the "Brooklyn Times," should be guilty of such intemperate language as to compare automobilists with the wild beasts of a cheap Coney Island show, "who must be kept in cages for the good of the community," to quote from the editorial in question. Probably this great editor (?) would evidently like to gather in the automobilists, and after their "being caged" as Bostock's lions, to which he makes reference, charge the public twenty-five cents a head for the privilege of gazing at those suffering from "Mania Automobiliana," this being the caption of his editorial, or, as he elsewhere terms them, "automobile mad gentlemen." Then he and the over-zealous deputies of Long Island might divide the spoils, including the fines, and find it more profitable.

The sheriffs of some counties of Long Island are very busy men these days, hiding behind trees and barns and lying in the tall grass, to see what will fall into their trap. This does not seem like a very dignified occupation for officers of the law toward citizens who are responsible and not in any way intentional lawbreakers. I think the time has come for the owners of automobiles to combine for their mutual protection, and would be pleased to cooperate in organizing an "Automobile Owners' Protective Association," as I believe in this way we will be able to accomplish by combined strength what it is now impossible to do as individuals, and eventually will be able to abolish a great many injustices.

Brooklyn, N. Y.

A SUBSCRIBER.

CORRECTION REGARDING A RECENT PATENT.

Editor THE AUTOMOBILE:

[828.]—I noticed in your issue of June 27, your article covering the patent recently granted me on a combined reverse and differential, and the purpose of which you describe as being the elimination of the reverse pinion from the change speed gear box.

While this application is of advantage, the chief purpose I had in mind in the designing of the invention was for use on different lines, and on which its advantages are more readily apparent. Many medium powered touring cars and runabouts having a shaft drive use the planetary form of change speed gearing, because it is cheap to make, very efficient on high gear, foolproof, and no clashing of gears in changing speeds, but with one or two exceptions they are all limited to two speeds and reverse. This invention of mine provides a simple reverse at the rear axle, and without any increase in size or parts allows the planetary form of change speed, as at present used, to be used, only changed to give three speeds forward instead of the usual two forward and reverse, thus making it equal to the three-speed and reverse sliding change speed gears, for convenience in driving, and retaining the planetary advantages.

WM. A. SALTER.

Cedar Point, Wis.

VARIED HAPPENINGS AMONG THE AUTO CLUBS

California Club's Annual Meet at Del Monte.

DEL MONTE, CAL., July 10.—The first run of the season of the Automobile Club of California consisted of a tour to Del Monte in order to attend the race meet held there on the Fourth. Eight hours were allowed to make the run from San Francisco, and, considering the hard nature of the going from Gilroy to this place, little or no time was given for unexpected repairs, but few of the cars experienced any trouble and all of their occupants reached the Vendome in good season.

The feature of the next day's racing was the event for the Del Monte Cup, which was again captured by Max Rosenfeld, of San Francisco, in a Peerless, it now becoming his property, as this is the third year in succession that he has won it. The final was between Minor's Locomobile and Rosenfeld's Peerless and the race was close for most of the distance, the Peerless getting ahead toward the finish and crossing the line a quarter of a mile in front of the Locomobile in 6:16 $\frac{3}{4}$. The touring car event between Bert Dingley in a Pope-Hartford and a new Thomas 60-horsepower Speedway runabout promised to be of interest, but fell flat owing to a puncture in the gasoline tank of the latter, so that Dingley had no competition. It was the third event that roused the spectators, when the Stevens-Duryea Big Six, which had previously been in hard luck, did such fine work that neither the Packard nor Peerless could get near it, making the best time of the day in 6:06 $\frac{1}{2}$.

The race for touring cars of 24-horsepower and over was won by Welch's Packard in 6:13 $\frac{1}{2}$, while a novel event in the shape of a 100-yard dash for gasoline cars only went to Fleming's Pierce Arrow in 0:11 $\frac{3}{4}$.

In the two-mile race for runabouts of 20-horsepower and under, the victory went to Tony Nichols' 12-horsepower Franklin, with the Moline second, Aerocar third and Locomobile fourth. Time, 3:14 $\frac{3}{4}$. In the 20-horsepower and under touring class, Hendry's Moline won and the latter also carried off the mile speed-judging contest by coming closest to twenty miles an hour for the entire distance.

Good Roads Convention in Springfield This Fall.

SPRINGFIELD, MASS., July 15.—The Automobile Club of Springfield has taken up the subject of good roads in earnest and in furtherance of it will hold a good roads convention here the last week in September. The feature of the convention will consist of the attendance of highway commissioners from New York, New Jersey and the New England States, while delegates from all the automobile clubs within that territory that are affiliated with the American Automobile Association will also attend. A sufficient number of the members of the State highway commissions have already signified their willingness to attend to insure the success of the project. The convention will last for two days and will consist of two business sessions, followed by a banquet. Papers will be read on road building and maintenance, as well as other kindred topics of interest.

Minnesota State Association's Successful Run.

MINNEAPOLIS, July 15.—A two-day run of the Twin City members of the Minnesota State Association has proved to be one of the most successful and enjoyable affairs ever held under the auspices of the latter body. The run was to Mankato, Minn., which was made in a little less than five hours, Louis Piper and William Eastman in a Packard showing the way, while strung behind them were sixteen good-sized touring cars, George Daggett, chairman of the touring committee of the association, bringing up the tail end of the procession, together with a Red Cross car, which, however, was not needed.

Gymkhana Sports of the Rochester Autoists.

ROCHESTER, N. Y., July 15.—The gymkhana sports of the Rochester Automobile Club, which were postponed two weeks ago, were held Saturday at Genesee Valley Park. The weather was ideal and over 6,000 spectators were present. Both sides of the course were lined with automobiles. J. J. Finucane in a Packard runabout car was the star of the day and captured the silver cup trophy in having the most number of points. Finucane won first place in the obstacle race for machines having wheel base of 100 inches or over. He also won the 100-yard dash 50 feet backward contest, the javelin hurling contest, the brake contest, and the flag race. In the last-named race there were three entries—A. M. Zimbrich, Owen DeWitt and J. J. Finucane. The cars were to run at not less than fifteen miles, stop, the operator to pick up a flag and then reverse to the starting point. Zimbrich's car in this event nearly got away from him in picking up the second flag and he recovered it just in time to graze the crowd of spectators. H. G. Strong and Owen DeWitt made a fine showing in tilting the rings. Both were tied for first place and in running off the tie it took two trials, as each captured the ring on the first attempt. DeWitt failed on the second and Strong became winner by annexing the ring this time also. The other events resulted as follows:

Obstacle Race, Class 1—Cars having wheelbase of 100" or over: J. J. Finucane, Packard, first, time 12 1-2 seconds; W. W. Powers, Packard, second; J. Seward Summers, Ford, 6-cylinder, third. Class 2—Wheelbase under 100": H. G. Strong, Franklin, first; time, 13 1-2 seconds; A. M. Zimbrich, Stoddard-Dayton, second.

Quarter-mile Time Contest—Contestant running closest to ten miles an hour, or 1 minute 30 seconds for the quarter mile, to win: E. Franklin Brewster, Stoddard-Dayton, first, time 1 min. 34 sec.; A. M. Zimbrich, Stoddard-Dayton, second, time 1:24.

One Hundred Yard Dash—Running left wheels on planking for distance of 25 yards: W. L. Smith, Pope-Hartford, first, 10 1-5 seconds; R. F. Ford, second; J. Foster Warner, Stevens-Duryea, third.

Dropping Potatoes in Basket—100 yards, flying start: E. Franklin Brewster, first, two potatoes in basket in 14 1-2 seconds' time; J. W. Cook, Franklin, second; J. Foster Warner, third.

Brake Test—Cars to speed for 100 yards and stop at line: First, J. J. Finucane, stopped on line, time 9 seconds; second, E. F. Brewster, stopped on line, time 15 1-2 seconds; third, J. W. Cook, Franklin.

Balancing Contest—Cars to carry pail filled with 30 pounds water up and down teeter board. J. H. Schoenhelt, Buick, first, spilled 3 1-4 pounds; A. M. Zimbrich, second, 4 pounds; H. R. Gragg, Premier, third.

Worcester Club Undertakes Task of Road Marking.

WORCESTER, MASS., July 15.—President John P. Coghlin, of the Worcester Automobile Club, has just received a supply of the white enamel signs approved by the Massachusetts Automobile Association last spring and will shortly begin the work of posting the central Massachusetts highways. They measure 12 by 24 inches and carry blue letters and figures on a white ground, bearing the name of the Massachusetts Association and the monogram of the American Automobile Association, in addition to the warning conveyed. They will be posted near sharp curves and bad places in the highway, and the location of each sign will be reported to the State Highway Commission for approval, which, if granted, will make it permanent. Otherwise it will be removed. A second lot of signs of the same character, bearing under the seal of the A. A. A. the information "Endorsed by the Massachusetts State A. A.," are intended to be attached to already existing signs. President Coghlin will pay attention to the main route from Boston to New York in his territory at first, supplementing the work already done by the A. C. A. The portion of Massachusetts lying east of Framingham will be posted by President Lewis R. Speare, of the Bay State Automobile Association of Boston, while that part lying

west of Palmer will be taken in hand by ex-President S. L. Haynes, of the Springfield Automobile Club, these gentlemen forming the signs committee of the Massachusetts Association.

Worcester police started taking time of autoists on city streets Saturday. One course is on Main street north from the Hotel Standish, on the main through route between New York and Boston. The other is on the route from Worcester to Lowell, Nashua and eastern points, just north of Lincoln Square. Notices of these traps were immediately sent to other automobile clubs and the State Association.

President John P. Coghlin, of Worcester Club, and John S. Harrington have established their summer home at Watch Hill, R. I., and drive there, 108 miles, Saturdays, and return Monday mornings.

Harry F. Estey, for two years a member of Worcester Automobile Club, and during that time a partner of Thorvald Hanson in the Palace Auto Station, 32 Hermon street, died Saturday night of Bright's disease, aged forty-one years. He was a native of Lancaster, Mass., and before going into the automobile business was connected with Kinnicutt & DeWitt, bankers.

Youngstown Autoists Organize a Club.

YOUNGSTOWN, O., July 15.—With the election of a board of trustees at a meeting recently held at the Youngstown Club by a number of enthusiastic autoists of this city, the Youngstown Automobile Club came into existence. The trustees are James A. Campbell, C. A. Cochran, J. R. Squires, Dr. C. R. Clark, Dr. W. H. Bilchner, D. B. Klingensmith and George Day. A constitution and by-laws for the newly formed organization were adopted at the same meeting and the board of trustees will meet within a short time to elect the officers.

Holyoke to Have an Automobile Club.

HOLYOKE, MASS., July 15.—Holyoke has long wanted an automobile club and now the desire of enthusiastic followers of the car in this district are to have their wishes gratified. At the organization meeting which took place at the Hotel Hamlin the Massachusetts State Automobile Association was represented by Secretary James Fortescue, while a number of prominent members of the association were present, as well as a delegation from the Springfield Automobile Club. The new club has a membership of about 100.

CLUB DOINGS IN GENERAL.

PUEBLO, COLO., July 11.—The Arkansas Valley Automobile Club has been organized and incorporated here with the following named as incorporators: F. A. Kettler, W. L. Hartman and H. E. Brayton.

AKRON, O.—At a meeting of the Akron Automobile Club, held last Friday, a committee was appointed to confer with the city authorities to secure the enactment of a more liberal ordinance, one embodying general regulations without reference to speed alone.

ST. LOUIS.—The Automobile Club of St. Louis will place signs on the country roads hereabouts every mile, bearing hieroglyphics designating the distance to the nearest town, kind of road, and whether it is best to drive fast or slow. Other counties are arranging to adopt the plan. A printed key to interpret the signs will be furnished automobilists desiring same.

NEW YORK.—The City and Country Motor Club of New York has just added new suburban clubrooms to its facilities, the latest addition consisting of a suite of rooms at the Terre Marine Inn, Staten Island, facing the bay. The club has now three out-of-town assembly places, in addition to its headquarters at 309 West 109th street. Large accessions to its membership have been recorded within the last few weeks.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
 Oct. 31-Nov. 7.....—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
 Nov. 30-Dec. 7.....—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
 Dec. 23-Jan. 4.....—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.

Races, Hill-Climbs, etc.

- July 25-28.....—Providence, R. I., Annual Meet of the Federation of American Motorcyclists.
 July 26.....—Reading, Pa., Automobile Carnival and Races, Berks County Fair Grounds Track, Reading Automobile Racing Association.
 July 27.....—Schooley Mountain Hill Climb, near German Valley, N. J. W. J. Morgan, manager, Bretton Hall, New York City.
 Aug. 1.....—Algonquin, Ill., Hill Climb, Chicago Motor Club and Chicago Automobile Trade Association.
 Aug. 5-10.....—Atlantic City, N. J., Automobile Carnival, Atlantic City Automobile Club.
 Aug. 9-10.....—New York City, Brighton Beach Track, 24-hour Automobile Race, United States Motor Racing Association.
 Sept. 2.....—Bridgeport, Conn., Labor Day Hill Climb, Sport Hill, Bridgeport Automobile Club.
 Sept. 5.....—Chicago, Cedar Lake Economy Run, Chicago Motor Club and Chicago Automobile Trade Ass'n.
 Sept. 14.....—Albany, N. Y., 95-mile Road Race, under the auspices of the Albany Automobile Club.
 Oct. 19.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

Motor Boat Races.

- July 20.....—New York to Marblehead, Mass., 270-mile Motor Boat Race, New Rochelle Yacht Club.
 Aug. 13-15.....—Chippewa Bay, St. Lawrence River, Gold Challenge Cup Race, American Power Boat Ass'n.
 Aug. 22.....—New York to Jamestown (Va.), Annual Cruise, American Power Boat Association.
 Sept. 2-6.....—Jamestown (Va.) Exposition Motor Boat Races.

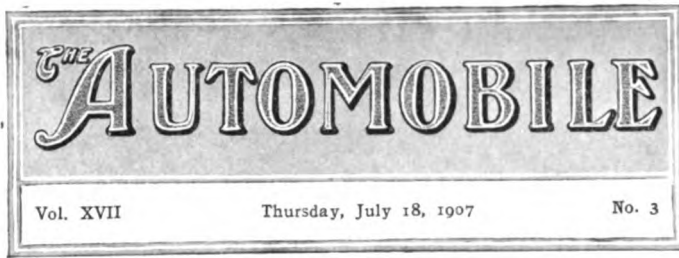
FOREIGN.

Shows.

- Sept. 28-Oct. 7.....—Denmark, Copenhagen International Automobile Show.
 Nov. 11-23.....—London, Olympia Motor Show.
 Nov. 12-Dec. 1.....—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.

Races, Hill-Climbs, etc.

- July 25.....—Ardennes Circuit, Belgium (German rules).
 July 26.....—Ardennes Circuit, Belgium (Tourists).
 July 27.....—Ardennes Circuit, Belgium (Grand Prix rules).
 July 31-Aug. 8.....—Belgium Regularity Contest for Touring Cars, A. C. of Belgium.
 Aug. 1-7.....—Criterium of France, 1,750 Miles Touring Competition and 250-mile Race for the Press Cup, A. C. of France.
 Aug. 3.....—Isle of Wight, British International Cup, Motor Boat Race.
 Aug. 11-29.....—France, Coupe de Auvergne.
 Sept. 1-2.....—Italy, Brescia Circuit, Florio Cup. A. C. of Italy.
 Sept. 15.....—Austria, Semmering Hill Climb, Austrian Automobile Club.
 Oct. 1-15.....—Paris, Electric Vehicle Competition, Automobile Club of France.
 Oct. 13.....—France, near Paris, Dourdan Kilometer Speed Tests.
 Oct. 20.....—France, Gallon Hill Climb.
 Nov. 1-15.....—France, Volturette Contest near Paris.
 July 14, 1908.....—Paris to London, Aerial Race.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
L. R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 835 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union (including Canada) - - - - - One Year, 3.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Iliffe & Sons, Limited, 20, Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second class matter.
The Automobile is a consolidation of The Automobile (monthly) and the
Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October,
1903, and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905,	- - - - -	730,000
" " in 1906,	- - - - -	791,000
" " This Issue	- - - - -	16,500
" " Since January 1,	- - - - -	471,650

SPECIAL ANNOUNCEMENT.

We desire to inform our readers that we have purchased the "Automobile Magazine," with copyrights, cuts, advertising contracts and its entire subscription list, and the same will be consolidated with THE AUTOMOBILE. The "Automobile Magazine" has been published for the past nine years, and was the second automobile publication established in the United States. THE AUTOMOBILE (published weekly) is to-day the outgrowth of the following consolidations: The Motor Review (weekly) and The Automobile (monthly), May, 1902; Dealer and Repairman (monthly), October, 1903; and The Automobile Magazine (monthly), July, 1907.

THE CLASS JOURNAL COMPANY,

Flatiron Building, Publishers of
New York City. THE AUTOMOBILE.
Dated July 18, 1907.

Time to Give the Tire Maker His Due.

The present season has been marked by a number of prominent contests of a degree of importance unequalled in past years, and in every one of them the performance of the competing cars has been a matter for congratulation. Beginning with the Targa Florio, probably the most severe racing test of a car ever held, but which suffers somewhat from the remoteness of its venue, down through the many road races and endurance tours such as the Emperor's Cup, the Herkomer, the Tourist Trophy, the Grand Prix, the Sealed Bonnet Contest, the Scottish Reliability Trials, and a number of others recently reported, the uniformly excellent showing of the cars as a whole has been little short of marvelous, while the accidents that befell the unfortunates have been of such a trivial character on the whole as to constitute prac-

tically a negligible factor when calculating auto reliability. But in none of them has the time maker received his due. Tire trouble there was and always will be, as a matter of course, but the manner in which it has been minimized by the study and improvement lavished upon his product by the maker has never been more strikingly illustrated than during the past season. Tire troubles formed a comparatively insignificant cause of delay in such exceedingly strenuous races as the Targa Florio, Grand Prix and Emperor's Cup. In the Herkomer, the Tourist Trophy and the Scottish Reliability Runs, and particularly the last-named, there was so little as to call forth almost universal comment in the reports of these events, while the climax may be said to have been reached in S. F. Edge's recent startling performance at Brooklands, when a single set of tires was run for 500 miles at an average considerably in excess of sixty miles an hour, and were then only changed as a matter of precaution, though the severity of the duty imposed upon them may be gauged from the fact that the pace caused the dissolution of the specially prepared roadway of cement at the banked turns in a manner that showed it was never intended for such gruelling. Doubtless the outcome of the present A. A. A. tour now under way, and which passes over some pretty rough country, will but add another triumph to the already long list. It is certainly time that the tiremaker was given his full due instead of being eternally blamed for the inherent weakness of his product.



Clearing the Dash of Its Useless Encumbrances.

Early builders doubtless were of the opinion that a multitude of impressive looking devices spread upon the dash of a car gave it an air of mystery and clothed the manipulator of such an imposing array with a degree of importance that was far from genuine. The art of properly driving and maintaining an automobile on the road is one requiring far more than the modicum of skill which is the sole asset of many handlers of the wheel, but the task does not gain in importance or rank by reason of such an appeal to the uninitiated observer, who, after all, is the only one thus awed. It will be recalled that a Windy City autoist, not content with the manufacturer's efforts in this direction, set the extreme of fashion in this respect.

Fortunately, the precedent thus attempted to be established was not followed in other instances, and since that time the makers themselves have been aiming in the opposite direction, so that it is now nothing unusual to see a car of recent date with nothing more than the coil and a single sight feed on the dash. There is usually also a switch, but generally it is combined with the coil box. With the limitations imposed by present methods of construction this probably represents the extreme of simplicity now attainable, but that there is a tendency on the part of designers to pattern after the example cited anyone who has observed the dashes of the most recent models and compared them with those of former years cannot have failed to remark. The tendency is one in the direction of simplicity that is to be commended.



Has the Limit of Weight per Horsepower Been Reached?

It is not long ago that the advent of what has since developed into a special form of the internal combustion motor for aviation created considerable of a stir by the extreme it appeared to represent in the way of an approach to the minimum amount of weight per horsepower. To go back quite a few years, it will be realized that the standard automobile motor of to-day scarcely weighs any more per horsepower, if as much, as did some of these early attempts at building light motors that were universally regarded as freaks. Ten pounds per horsepower was at one time regarded as a perilous approach to a low limit in this respect, but to-day there are few automobile motors that exceed this. Since then the limit has receded, pound by pound, until it is now considerably less than half this standard, as represented by a French motor recently constructed for aviation and rated at 35 horsepower on slightly less than a hundredweight of metal.

OHIO A. A. STATE ASSOCIATION MEETING.

CLEVELAND, O., July 15.—The annual meeting of the Ohio State Automobile Association was held at the Hollenden Hotel last Wednesday, representatives from Cleveland, Akron, Cincinnati, Elyria, Lima, Youngstown and Springfield being in attendance. The election of officers for the ensuing year resulted as follows: President, F. T. Sholes, of Cleveland; first vice-president, T. Neff, Cincinnati; second vice-president, T. Arthbert, Lima; third vice-president, G. E. Mental, Springfield; fourth vice-president, A. L. Garford, Elyria; fifth vice president, Dr. L. S. Colter, Cincinnati; secretary, Henry H. Hower, Cleveland.

Plans for the strengthening of the organization in the Buckeye State were discussed at length, and it is the intention of the new board of officers to make the association a powerful factor in legislative and road improvement matters. Energetic steps will be taken at once to organize clubs in Toledo and Columbus, and have them join the State body. The following standing committees were selected:

Executive—George Collister, Cleveland; H. L. Morse, Cincinnati; Windsor T. White, Cleveland; Val Duttonhofer, Cincinnati; A. Ward Foote, Cleveland.

Good Roads—Asa Goddard, Cleveland; M. P. Colt, Lima; J. L. Elliot, Springfield; W. P. Murray, Cleveland; Harry Crane, Cincinnati.

Legislative—W. Smith, Cincinnati; C. D. Crites, Lima; H. H. Johnson, Cleveland; H. Vail, Cleveland; Paul Staley, Springfield.

Membership—Dr. L. S. Colter, Cincinnati; E. R. Curtis, Lima; George E. Mental, Springfield; Walter C. Baker, Cleveland; H. Andress, Elyria.

TEXAS AUTOMOBILE LAW GOES INTO EFFECT.

DALLAS, TEXAS, July 13.—House Bill No. 93, introduced by Representative Ridgway, and passed by the last Legislature, went into effect in Texas yesterday, and owners of automobiles must register them with the County Clerk of the counties in which they reside. Section 1 of the bill provides that "all owners of automobiles or motor vehicles shall, before using such vehicles or machines on the public roads, streets or driveways, register with the County Clerk of the county in which he resides. As owner, each name shall be registered by the county clerk in consecutive order in a book to be kept for that purpose, and shall be numbered in the order of their registration; and it shall be the duty of such owner or owners to display in a conspicuous place on said machine the number so registered, which number shall be in figures not less than six inches in height. The county clerk shall be paid by such owner or owners a fee of 50 cents for each machine registered."

The penalty for failure to register with the county clerk is fixed at not less than \$5 nor more than \$100.

CONNECTICUT WILL TRY NO SPEED LIMIT LAW.

HARTFORD, CONN., July 15.—The new automobile law which passed the Senate on Tuesday of last week was passed by the House the following Thursday. Representative Allerton, of the Committee on Roads, Rivers and Bridges, stands as sponsor for the bill, and says that it will bring at least \$40,000 a year in revenue to the State in registration fees. In the opinion of members of the General Assembly who are familiar with highway conditions, the new law embraces some of the best features of automobile legislation in the country. The bill has no prohibitive clauses on speed, except that it says that a machine running at a greater speed than twenty-five miles an hour for a distance of an eighth of a mile is being recklessly driven as regards the rights of others. The Governor, it is thought, will approve the measure, and if it goes into effect its working will doubtless be closely watched by autoists throughout the country, as a precedent of this kind has long been wanted in order to demonstrate the absurdity of the arbitrary limits now enforced.

FRELINGHUYSEN OPPOSES VANDERBILT RACE.

PLAINFIELD, N. J., July 15.—Due to his absence in Chicago, during much of the time of which he has been ill, State Senator Frelinghuysen has not been aware of the propoganda afoot to hold the Vanderbilt Cup race in this State in October, but has been immediately galvanized into life on hearing of it. He sent a telegram to the Senate without delay, protesting against its proposed action permitting the race to be held, and gave out a statement for publication in which he expresses himself as being strenuously opposed to the race. It reads in part as follows:

"I am violently opposed to any change in the automobile law, believing that the safety of human life is at stake, and the protection of our people is more important than the mercenary motives of a few and the satisfaction of the sporting instinct of the automobilists.

"I have been informed that the press of the State is almost unanimous in scoring the proposition to suspend the Frelinghuysen law and it shows conclusively that the contest is not wanted."

MASSACHUSETTS' ACTIVE SIGN CAMPAIGN.

BOSTON, July 15.—Bay State autoists are being called upon by the Massachusetts State Automobile Association, through its secretary, J. Fortesque, to co-operate with that organization in seeing that the signs called for by regulations and by-laws of the Commonwealth of Massachusetts relative to ways and bridges, are complied with. The legislation in question calls for the erection and maintenance of suitable guide posts by all towns with a penalty of \$5 for each omission or neglect to maintain the signs thus erected. As it is the duty of the various towns to attend to this matter, the association is calling on its members to report instances of any failure to do so. The sections of the law covering it are being sent out together with the letters. They read as follows:

Section 1.—Every city and town shall erect and maintain guide posts on the ways therein, at such places as are convenient for the direction of travelers, and at such forks and intersections of ways which lead to adjoining cities or towns.

Section 2.—Upon such guide posts shall be stated the name of the city or town or place to which each road leads and the distance to the same.

Section 3.—Every city or town which neglects to erect and maintain such guide posts, or a suitable substitute therefor, shall annually forfeit five dollars for every guide post which it so neglects to maintain.

PREPARATIONS FOR INDEPENDENT'S SHOW.

Compared with former years, it seems a trifle early to be making show preparations at the moment, but as the combined show of the Automobile Club of America and the American Motor Car Manufacturers' Association and the Motor and Accessory Manufacturers, Inc., takes place from October 24 to 31 this year, there is good reason for it. Members of the A. M. C. M. A. have already contracted for fully 85 per cent. of the main floor space of the Palace, which may be taken to indicate that their displays will be more elaborate than ever this year. As 1908 cars will probably be on the market by the end of August, there should be no delay in getting the exhibits ready.

M. AND A. M. TO EXHIBIT AT IMPORTERS' SALON.

At the joint meeting of the show committee of the Importers' Automobile Salon and of the Motor and Accessory Manufacturers, Inc., which was held last week, an agreement was reached by which the importers' show, to be held in January next at Madison Square Garden, will receive the sanction of the accessory makers, many of the members of their association having already requested the reservation of space pending the granting of the necessary approval. A large number of others have deferred the announcement of their intention to exhibit at this show until the fact that their association had definitely decided to grant it a sanction was made public, so there will doubtless be a representative showing.

ALUMINUM FOR AUTOMOBILE CASTINGS

By E. BLOUGH, CHIEF CHEMIST OF THE ALUMINUM COMPANY OF AMERICA.

CONSIDERABLE misapprehension exists in the minds of automobile manufacturers regarding the characteristics of aluminum alloys, erroneous statements regarding their properties having appeared in a number of automobile journals. Even in the pages of THE AUTOMOBILE the tensile strength has been given as low as 9,000 pounds per square inch, and the statement made that such results are obtained in general foundry practice. The writer has had opportunity to do a great deal of work on aluminum casting alloys and has been in close touch with actual practice in this country and abroad and can state that a tensile strength much higher than 9,000 pounds can and should be obtained in regular foundry practice.

Pure aluminum can be cast into a number of articles, but it is not adaptable to general automobile work on account of high elongation and consequent lack of rigidity. However, when suitable alloying ingredients are added to pure aluminum the strength is immediately increased, as is also the resistance to deformation under stress. The alloying ingredients cannot be added indiscriminately and alloys secured with mechanical properties satisfactory for automobile work. Indiscriminate addition of alloying metals is very likely to produce alloys which are difficult to use in the foundry, due to high shrinkage, brittleness, crystallization, segregation, etc. For the above reasons satisfactory alloys are only obtained after careful and thorough study of the whole range of commercial possibilities. The addition of too small an amount of alloying ingredient will produce an alloy of too high shrinkage. When this alloy is cast it may crack in the flask. The shrinkage, on the other hand, may not be serious enough to produce this result, but may cause a casting strain which will only develop into a visible defect when the casting has been put into service. On account of the neglect of systematic investigation, as applied to developing proper alloys and the application of experienced engineering ability, many varying and indifferent results have been obtained from aluminum castings.

Considerable care must be taken with the casting of test bars in regard to their form and gating and the location of risers so that unequal strains are not produced and totally erroneous results obtained. It has been found that very sharp fillets will

cause them to break almost invariably at the fillet, due to the fact that the test bar on cooling caused a shrinkage strain to be produced in the fillet. It is very obvious that results from such abnormal bars should not be taken as criteria on the quality of the metal. Improper placing of gates and risers can produce the same result and must be guarded against.

The first step in automobile casting is the selection of the proper alloy. The physical properties of the aluminum alloys can be influenced to a very great degree by the addition of alloying metals. However, it has been found by experiment and long experience that the useful alloys are limited to certain compositions, which, however, have practicable variations.

Having selected the alloy which will meet the required conditions, the fulfilling of these conditions depends wholly upon the manipulation of the metal in the foundry. Given the proper alloy, ordinary foundry practice with reasonable care in moulding and melting will give uniformly good results. With extraordinary care and special methods of moulding, even better results can be obtained.

An aluminum alloy having the proper composition for the general run of automobile castings will have the following physical properties:

Tensile Strength	Elastic Limit	Elongation	Specific Gravity	Shrinkage
lbs. per sq. in.	lbs. per sq. in.	in 8 in.		in 1 ft.
21,000	12,000	1.4 per cent.	2.82	12/64 in.

Another alloy which has been in successful use for many years has the following properties:

Tensile Strength	Elastic Limit	Elongation	Specific Gravity	Shrinkage
lbs. per sq. in.	lbs. per sq. in.	in 8 in.		in 1 ft.
29,000	16,000	0.50 per cent.	2.99	11/64 in.

There are other alloys possessing still higher tensile strength, among which there is one having a tensile strength of about 42,000 pounds per square inch and an elongation of about 0.8 per cent. in 8 inches. However, it does not follow that the alloy with the highest tensile strength is the most suitable for any particular casting. The alloy to be used will depend a great deal upon the nature of the casting itself, as well as the nature of the service for which it is intended to be utilized.

PATENT RIGHTS OF EMPLOYEES DEFINED.

WASHINGTON, D. C., July 14.—Inventors in the automobile world will be interested in a recent decision of the Court of Appeals of the District of Columbia, wherein the court ruled as follows:

"Inventors are often compelled to have their conceptions embodied in construction by skilled mechanics and manufacturers, whose practical knowledge often enables them to suggest and make valuable improvements in simplifying and perfecting machines or devices, and the inventor is entitled to protection from their efforts to claim his invention. At the same time an employee is to be protected from the rapacity of his employer also, and if in doing the work assigned him the employee goes further than mechanical skill enables him to do and makes an actual invention he is equally entitled to the benefit of his invention.

"Where an employee claims protection for an improvement which he devised while working upon a general conception of his employer, the burden is generally upon him to show that he made an invention in fact.

"To claim the benefit of the employee's skill and achievement, it is not sufficient that the employer had in mind a desired result and employed one to devise means for its accomplishment. He must show that he had an idea of the means to accomplish the particular result, which he communicated to the employee, in such detail as to enable the matter to embody the same in some practical form.

"The reduction to practice of an invention by an original inventor cannot be taken as a reduction to practice by another merely because the ownership of the claims of both may afterward become vested in the same person or persons. * * *

UTILITY AUTOS ON PACIFIC COAST.

SEATTLE, WASH., May 27.—The automobile has commenced to supplant the historic and picturesque stagecoach in the Pacific Northwest, the greatest activity along this line being in British Columbia and the Kootenay country. An experiment was conducted last year by the operators of the stage from Nanaimo to Alberni on Vancouver Island, a distance of 25 miles, and proved a success. This season two large cars have been added for passenger purposes and a Knox truck for baggage. Several cars are already operating between Victoria and Saanich, a distance of eight miles, the demand for this method of transportation being great, as well as rapidly on the increase.

The British Columbia State company has provided autos to cover the stretch between Vernon and Penticton, eight miles, and two routes out of Kamloops will mean daily runs for each car of 40 miles. From New Westminster to Port Moody, a distance of 8 miles, the auto appears to have a cinch on business, as the country is too hilly to ever be covered with electric lines. A large number of cars are now being used for sightseeing purposes out of Victoria. By this method it is possible for tourists to visit many of the picturesque spots of the island. The most recent line installed in Washington is between Everett, Hartford and Granite Falls, the autos meeting all trains at Hartford. At the present rate of increase the automobile stage will soon have a monopoly.

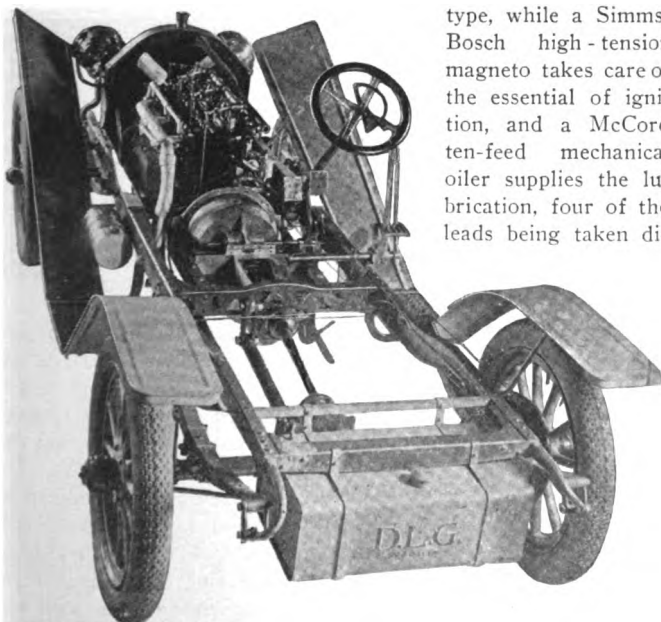


JUDGING from present indications it would seem as if 1908 were to be a six-cylinder year. It is evident that the uncertainty concerning this situation which prevailed last winter has been settled in favor of this type, as a large number of the old established makers who were on the fence, so to speak, when the six-cylinder motor was in question have resolved their doubts by announcing the addition of a car of this kind to their 1908 line, though their allegiance to the four-cylinder is unshaken. Besides these, there are a number of new makers who have come into the field with six-cylinder cars as the main feature of their production. The latest of these to make its appearance is the D. L. G., which hails from St. Louis, its initialed title representing the names of its builders, who are A. L. Dyke, B. Leibert and V. R. Givens, forming the D. L. G. Motor Car Company of that city, with headquarters at 3932 Olive street.

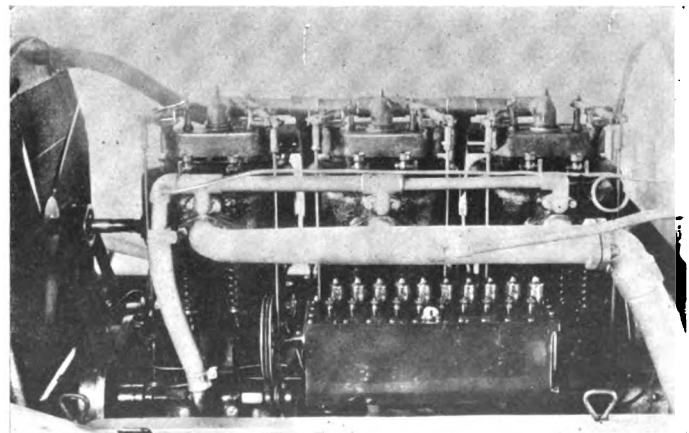
As will be seen by the illustration heading this page, a high-speed runabout on attractive lines is also to be a feature of the line, the chassis being the same in each case with the exception that its wheelbase is shorter by 17 inches than that of the touring car. Interest naturally centers about the motor, which has its cylinders cast in pairs with a somewhat unique valve arrangement in that the exhaust is situated on the righthand side and is operated direct while the inlet is situated in the center of the cylinder head and is actuated by a rocker arm. The carbureter is of the automatic type, while a Simms-Bosch high-tension magneto takes care of the essential of ignition, and a McCord ten-feed mechanical oiler supplies the lubrication, four of the leads being taken di-

rect to the main bearings. The motor dimensions are four inches bore by four and one-half inches stroke, and the motor is given the extremely moderate rating of 35 horsepower at 1,000 r. p. m. Cooling is by means of a Mercedes type honeycomb radiator supplied by a gear-driven centrifugal pump, supplemented by a fan.

The first step in the transmission of the power consists of a multiple-disk clutch, consisting of alternate plates of copper and steel, while the change-speed gear is of the sliding type with selective operation, providing the usual three speeds forward and reverse. Final drive is by propeller shaft to a Timken roller-bearing floating live axle. The front axle is also a Timken product of the I-beam type, while the suspension consists of Krupp oil-tempered crucible-steel springs of liberal dimensions and of a semi-elliptic type, the pressed-steel frame being raised in the rear in accordance with current foreign practice. The wheelbase of the touring car is 130 inches, while that of the runabout is 113 inches, the tread being standard in both cases and the tire equipment is also the same, consisting of 36 by 3 1-2-inch front and 4 1-2-inch rear. Two sets of self-equalizing brakes are centered in drums on the driving wheels. A Gemmer self-locking steering gear is fitted, with the usual type of control. The car has been specially designed throughout and is in no sense an assembled production, Mr. Leibert having been associated with a leading German builder for some years. He has devoted great pains to every detail of construction and material in evolving the design of this new six-cylinder type, considering it his masterpiece, and it is confidently expected that it will be heard from on the track and the road during the coming season.



CHASSIS OF THE D. L. G. AS SEEN FROM TOP AND THE REAR.



EXHAUST SIDE OF THE D. L. G. SIX-CYLINDER MOTOR.

TRANSFORMATIONS IN CENTRAL NEW YORK.

By ROBERT BRUCE.

Automobile tourists are generally aware of the far-reaching road changes now in process in central and western New York, amounting for 1907 to a vast amount of new construction, the present effect of which is to greatly inconvenience the tourist. Probably the largest single contracts let in New York State up to this time, under the present highway law, have to do with portions of the main line between Albany and Rochester, closing several important stretches which, unless the tourist knows something about them in the beginning, are almost sufficient to become a puzzling barrier to his trip. The general situation, especially between Utica and Syracuse, is covered with thoroughness in the New York State section of the Blue Book up to the time of going to press of that volume; but even in the past three months great changes have taken place.

During the past week the editor of the Blue Book has traveled over the entire country between Syracuse, Utica and Schenectady, and sends *THE AUTOMOBILE* this information. At the present time the line between Syracuse and Oneida is open; this is as yet not much changed over 1906. From Oneida Castle east there are on the western end several miles of old road untouched; this is followed by a complete stretch of new State road open to the village of Kirkland. The single exception is one short stretch where work is now in process, but a fairly good emergency road is in use around it, in plain sight, therefore presenting no difficulties. The portion from Kirkland to New Hartford and Utica is closed at the present time. The best way to get around this is to continue east a short distance from Kirkland on the Seneca Turnpike to "Middle Settlement 4 Corners," thence through New York Mills and Yorkville.

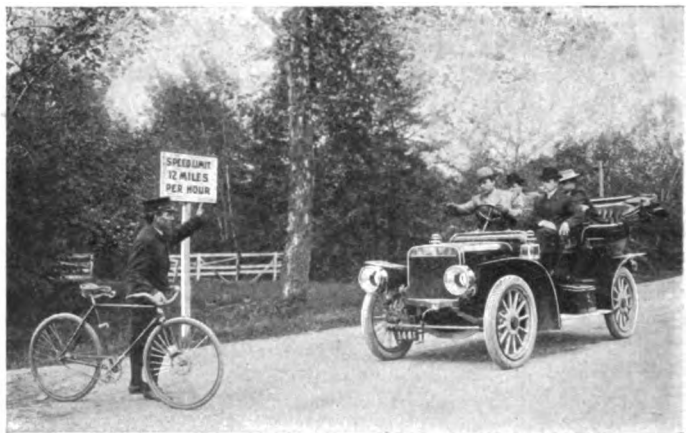
From Utica east, what was formerly the best route on the north side of the Mohawk river from Utica through Deerfield to Herkimer and Little Falls, is entirely closed, and it is necessary to take either Rutger street or Bleecker street, through the Masonic Home grounds, turning over the West Shore railroad and the Erie canal, following the poorer road along the south side of the Mohawk river through Frankfort and Ilion to Mohawk. As the road between Herkimer and Little Falls is also closed, one making the eastbound trip from Utica should not continue through the village of Mohawk into Herkimer, as it will only lead to the necessity of turning back, or else plunging through work in process. However, if the tourist will watch for the small depot of the West Shore railroad at Mohawk, turning 90° right, immediately after passing the depot (and before reaching the bridge over the canal), a narrow but passable road will be found which, with many turns, leads along the lower side of the river to Little Falls, crossing through the factory district and over the railroad into the center of that city.

Here is possibly the most important point on the main line for the tourist to know. Having run into Little Falls, one may travel the usual route on the north side of the river for about two miles only, coming to a frail suspension bridge crossing the Mohawk river at this point. Beyond the suspension bridge the usual route is absolutely closed by order of the State Engineer, a large sign to that effect being posted near the entrance to the bridge. It is important to cross this bridge and also the canal (both requiring care), turning left immediately beyond, running along the lower side from this point to Fort Plain. The route is not difficult to find or follow, but the road is narrow and horses less accustomed to automobiles than those usually met on the north side route are likely to be met. There are also three or four atrocious railroad crossings, requiring extreme care, especially where the West Shore is crossed on a down grade.

Running into Fort Plain, turn 90° left across the Mohawk river at that point, running up a short distance from the bridge to the main highway on the north side at the hamlet of Nelliston. Turning right at this point, the usual route between Utica and Schenectady is resumed, and there is no more difficulty all the way to Schenectady and Albany.

GLEN ECHO DEFIES UNCLE SAM ET ALII.

WASHINGTON, D. C., July 15.—Attorney-General Bonaparte, in fitting and weighty legal language, has rendered his opinion that the little spot on the map called Glen Echo—a suburb of this city—has no jurisdiction whatever over the Conduit road. That the latter is Federal property, and in consequence the high-handed hold-ups and endless fines collected have all been illegal. But Glen Echo is belligerent and after listening to a fiery speech by its boy Mayor, the Town Council not only decided to stand to its guns, but issued a defi by cutting the limit of twelve miles an hour in half. From now on, or at least until the Government puts its thumb on the spot in Maryland, the only safe way for an autoist to pass through it without paying dearly for the privilege will be to get out and push his car, being sure to have the engine stopped while doing so, as the Mayor has been authorized to assess the limit of \$50 in every instance. He cannot push without fear of being punctured from behind by a 44-caliber revolver bullet if he exceeds the speed limit, for the belligerent Marshal Collins, who is in the Mayor's class, as he can only lay claim to having seen twenty-four summers, is reported to have reconsidered his intention to resign for the excitement of "tendin' store" behind the counter in his brother's establishment



Copyright, 1907, by Clivedinst.

MARSHAL COLLINS MAKING AN ARREST AT GLEN ECHO, MD.

in Philadelphia, and is still on the road, while the supply of ammunition is plentiful. Glen Echo wants to know what the Government is going to do about it, and proposes to enrich the town treasury still further by making the speed limit six miles, and the State of Maryland is backing up its belligerent hamlet. Mayor Garrett and Marshal Collins will fight to the death and the Town Council says ditto whenever they speak, so that it would appear to be the Attorney-General's move. His opinion holds that the laws of the State of Maryland confer no authority on the town's Mayor to impose fines, either for offenses against the municipality or against the State, and that Congress has the exclusive right of jurisdiction over the entire length of the Conduit road and has had ever since its building in 1859.

TIME SAVING TO CATCH A TIME-SERVER.

WILMINGTON, DEL., July 8.—Detective James L. Hawkins, who is connected with the office of Attorney-General Richards, has branched out all of a sudden as an automobilist, and a genuine one at that. A few days ago he received a telephone message asking him to go quickly to Claymont, six miles away, that one man was assaulting another and serious trouble was feared. The detective called up a relative who has an automobile. When he got to Claymont he found the man said to have caused the trouble tied to a tree and brought him back to the city. Only forty minutes was consumed from the time Hawkins left his office until he was back again with his prisoner and the road was not in very good condition either.

DETAILS OF EDGE'S RECORD 24-HOUR RIDE.

LONDON, July 1.—Straightaway after its official opening the new Brooklands track has gained worldwide renown by the 24-hour record ride of S. F. Edge and his Napier car. Prompt to time the green 60-horsepower six-cylinder car glided off the mark with its red and white companions to add interest. This additional feature was a lately formed idea to test the possibilities of three sister cars on which change of drivers was made every three hours.

A sixty-an-hour pace was reached the first lap of the three-mile course and with monotonous regularity the green car set up a steady speed of seventy miles an hour, the other contestants trailing close in the rear. These companion cars were there to race and not to give pace to their principal, added interest being lent by the fact that these cars represented the rival interests of the works and the London agency. Soon after the start Edge began to draw away and just inside the first hour he lapped both the others. The close of the first hour showed a 70-mile total for Edge and 66 3-4 miles to the credit of the others who stuck within a few yards of each other for the first few hours; in fact, at the 100-mile mark the white car led its rival by but two seconds. Two hours from the start Edge stopped a few seconds for water and again later on for a change of tires, though but little time was lost.

Weird Scene Through the Night Hours.

As night came on the track was brilliantly lit up with big Well's lights, a row of small red lamps making the inner edge of the track. It had been intended to utilize big acetylene lamps on the competing cars, but practice spins showed this course to be unnecessary. Large tanks had been provided to hold sufficient gasoline for twelve hours run, so that not much time was wasted in refilling. Somewhat remarkable was the freedom from mechanical troubles, not a single stoppage for adjustment being required by the green or white car. The red car experienced hard luck; a heavy jolt over a rough spot at the outside of the track caused breakage of a rear spring and the twenty-five minutes delay thus occasioned was never recovered.

Right through the run Edge's green car showed itself superior in speed to its companions till at the end of the proceedings it had gained a lead of well over forty miles from its nearest rival. Contrary to anticipation no apparent reduction in speed was marked toward the close of the run, and in his twenty-fourth hour Edge covered 62 1-2 miles with no apparent effort.

How the Miles Were Reeled Off.

The distances accomplished by Edge in the successive hours are given herewith:

	Miles.	Yards.	Total		Average Miles per Hour.
			Miles.	Yards.	
1st hour	70	130	70	130	70
2d hour	70	1,190	140	1,320	70
3d hour	66	1,240	207	800	64
4th hour	64	360	271	1,160	67
5th hour	71	190	342	1,350	71
6th hour	64	470	407	60	65
7th hour	67	300	474	360	67
8th hour	63	750	537	1,210	63
9th hour	71	1,270	609	720	72
10th hour	60	480	670	1,200	60
11th hour	66	1,040	737	480	67
12th hour	62	1,120	799	1,600	63
13th hour	66	490	866	330	66
14th hour	72	150	938	480	72
15th hour	68	1,160	1,006	1,640	69
16th hour	61	521	1,068	400	61
17th hour	71	700	1,139	1,100	71
18th hour	63	1,490	1,203	830	64
19th hour	60	340	1,263	1,190	60
20th hour	64	20	1,327	1,190	64
21st hour	60	1,670	1,390	1,110	61
22d hour	68	790	1,458	130	68
23d hour	61	230	1,519	360	61
24th hour	62	950	1,581	1,310	63

The average for the whole distance equals 65 1-8 miles per hour. Second place was taken by the white car with 1,538 3-4 miles, while the red car covered a total of 1,521 miles, and this in spite of the fact that these two cars were driven by men who were relieved at stated intervals.



JUDGE DILL'S CORBIN PARTY LEAVING FOR MAINE.

TRIO OF CORBINS ON A STRENUOUS TRIP.

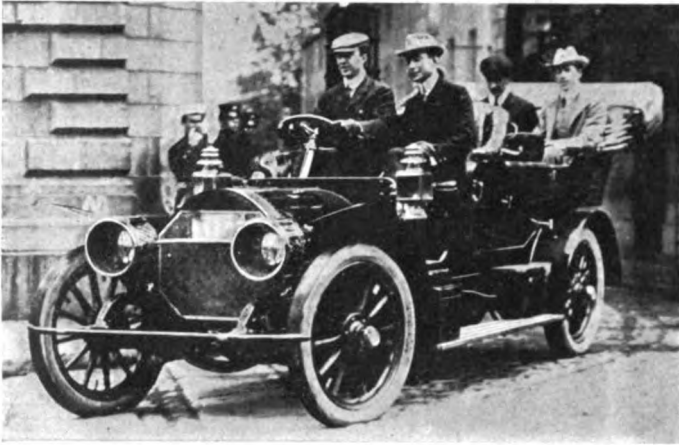
Without any preliminary blare of trumpets or announcement of their going, three Corbin cars left East Orange, N. J., last Thursday bound for what would ordinarily be considered considerable of an endurance run. Judge James B. Dill was at the wheel of the first, Winthrop E. Scarrit, ex-president of the A. C. A., handled the second, while F. W. Darnstaedt, from the Corbin factory, completed the trio, the third car being used principally as a baggage carrier. The guests on the run are Judge Foster of the New York City Court of General Sessions, Judges Reed and Garrison of the Supreme Court of New Jersey, and Mr. Scarrit's two sons. The trip planned is to end at Judge Dill's summer camp at Rangeley Lake and the route is via Saratoga, Lake George and the Adirondacks to Montreal, thence to Quebec and from there down through the famous Chaudiere Valley, thus covering much of the route of last year's A. A. A. tour.

A PREMIER IN AMERICA'S DARKEST EGYPT.

CAIRO, ILL., July 15.—The rest of the country is probably not aware that this part of the State of Illinois is locally known as Egypt from the fact that it lies between the Mississippi and the Ohio rivers and is consequently under water for the most part. As a result, automobiling is not an ideal pastime there, but still there are a number of cars in the town situated on America's Nile and the accompanying photograph depicts one of them—a Premier 24, owned and driven by Leo McDaniell, who, together with a number of fellow autoists, placed their cars on a river boat and shipped them to New Madrid, Mo., recently, to attend a meeting of the Southeastern Missouri Drummers' Association. Automobile races were part of the fun and the Premier carried off the honors, besides getting a prize as the handsomest automobile.



THE PREMIER THAT HELPED ENTERTAIN THE ROAD KNIGHTS.



DUKE OF ABRUZZI IN A BOSTONIAN'S LOCOMOBILE.

On the occasion of his visit to the Hub, the Duke of Abruzzi, well known for his fame as an explorer, and who came over to represent the Italian Government at the recent opening of the Jamestown Exposition, took advantage of an invitation to see Boston from the front seat of a Locomobile.

READING TO HOLD AN AUTOMOBILE CARNIVAL.

READING, PA., July 15.—Friday, July 26, has been set as the date of the automobile carnival and races to be held in this city under the auspices of the Reading Automobile Racing Association. The programme leads off with the race meet, which will take place under the sanction of the American Automobile Association at the Berks County fair ground, the track of which will be banked for the occasion. There will be six races in all, of two, three, five and ten miles, for cars of different classes, in addition to an obstacle race, which opens the programme, followed by a motorcycle race, while event No. 6 is a one-mile gymkhana race in which the driver must get out at the quarter, put on a pair of goggles, stopping again at the half to take a duster out of a suit case, reclosing the latter, and again coming to a halt to take on two passengers with parasols at the three-quarter mark. The races will be preceded by a parade and street carnival in the morning, in which prizes have been offered for the most beautifully decorated car, as well as the most grotesque ornamentation, and also for the neatest and best equipped car. To close the day's programme a ride will be given a number of city's poor children.

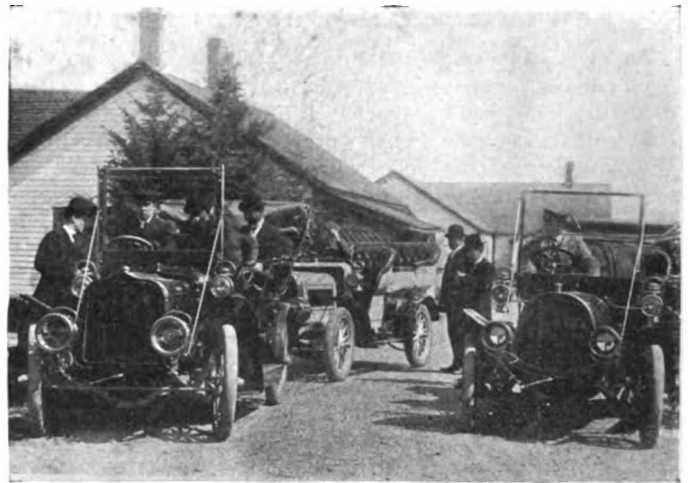


THE AUTOCAR TEAM AND ITS LUCKY MASCOT.

Not all the victories of the Autocar this year have been won by the cars turned out at the factory at Ardmore, Pa. The men who make the Autocars have been even more victorious, for their well-organized baseball team has not lost a game, though it has been in the field all season. The mascot on the radiator is Norman Smith, Jr., son of the second baseman.

PEORIA COMPANY ASKS AN EXTENSION.

PEORIA, ILL., July 15.—Finding itself unable to meet its obligations promptly, the St. Louis Motor Car Company called a meeting of its creditors last week, with a view to making some arrangements by which it can continue business. Jesse French is president of the company and the principal indebtedness of the firm consists of \$70,000 borrowed money, for which he is security, while the other creditors' claims—mostly for materials supplied, total about \$30,000. Mr. French explained to the creditors that there were about thirty cars in the course of construction, and that if they can be completed sufficient can be realized on them to satisfy the smaller creditors, at the same time offering to hold back his own claims in order to permit the company to reorganize and try to get on its feet. He accordingly suggested that a committee be appointed to run the works for the length of time necessary to complete the cars now in process, with the alternative of throwing the company into bankruptcy. It is probable that his suggestion will be acted upon and a committee appointed to take charge of the works. The plant was started here in 1905 and has employed about 100 men ever since. The president of the concern is a well-known financier with headquarters in St. Louis, while his son, Jesse French, Jr., is vice-president and manages the concern.



PRINCE FUSHIMI'S POPE TOLEDO ACROSS THE BORDER.

While in Canada last month, Prince Fushimi, who is a member of the Japanese Imperial family and a member of the Japanese Supreme Council of War, utilized a Pope-Toledo touring car to make a number of side trips in many parts of the Dominion from the private train in which he constantly traveled.

THINGS INTERESTING FROM TIREVILLE.

AKRON, O., July 15.—An interesting competition has been on between the Diamond and Goodrich companies to lead in furnishing the tires for the machines in the Glidden tour. The figures as given out by the Goodrich company are as follows: Official count shows a total of 72 cars, of which 37 are equipped with Goodrich tires, 30 with Diamond tires, 3 with Dunlop, 1 with Fisk and 1 with Morgan & Wright. The Diamond company's figures are as follows: Out of 78 cars, 35 are equipped with Diamond tires, 35 with Goodrich and 8 scattering.

The annual convention of the traveling salesmen of the Firestone Tire and Rubber Company was held this week, closing Tuesday night. Twenty-three of the salesmen were present, and all went to Cleveland to see the start of the Glidden tourists. The company treated their men royally while here, entertaining them at the Country Club. Business meetings were held at the offices, President H. S. Firestone presiding. It was reported at this meeting that the business of the company increased considerably the past year, the sales having been greater in the past twelve months than in the whole history of the concern previous to that, which is saying a great deal.

FINAL DECISION IN ACETYLENE BURNER CASE.

CHATTANOOGA, TENN., July 15.—After having litigated the matter for six years, a decision declaring the Dolan patent, No. 589,342, granted August 31, 1897, invalid, has just been handed down in favor of the American Lava Company and Paul J. Kreusi, of this city, by the Circuit Court of Appeals. There were two actions, the first having as complainants D. M. Steward, M. Kirchberger, B. Von Schwarz, P. Von Frays and Charles W. Iden, while in the second D. M. Steward figured as the complainant alone. The patent covered an air-enveloping acetylene gas burner of the type now in universal use, and the contention was that it was basic and no burner would work on this gas without carbonizing unless made according to its principles. When first tried, Judge Clark, sitting in the U. S. Circuit Court, declared against the defendants and caused a permanent injunction to issue, restraining them from further manufacture of the burners in question, including some seven different types. Shortly after this the American Lava Company brought out a different type, against which the second action was instituted, and a second injunction was granted against the defendants and later suspended on the filing of bonds to the extent of \$6,000 by the defendants. The Circuit Court of Appeals has now ended the litigation by declaring the patent invalid and reversing both of Judge Clark's decisions. The decision was based on the ground that the construction had been anticipated by Bullier in France.

**PANAMA'S RULER AND FAMILY IN A STEARNS CAR**

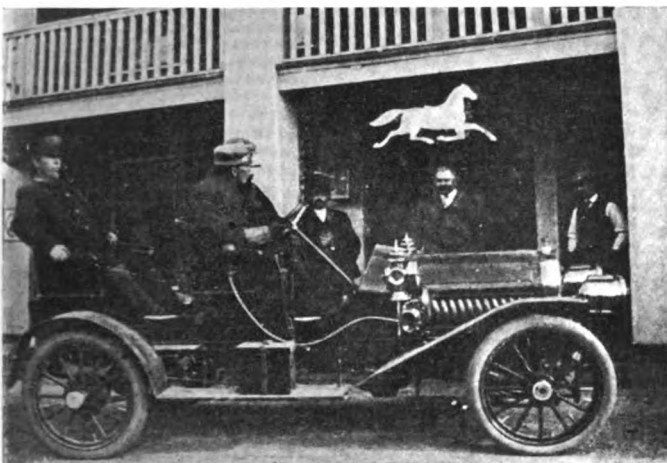
While on his visit to New York, President Amador of Panama and his family were whisked about the metropolis in a big Stearns touring car and were highly delighted with the new method of locomotion of which Panama can boast but few doubtful examples in the shape of some cars of ancient vintage.

BELGIUM'S ROUTE ROYALE OPENED.

OSTEND, BELGIUM, July 15.—The Route Royale, Ostend's special automobile track, was inaugurated to-day by the holding of a race meet. Unfortunately but few heavy machines were present, so that no phenomenal performances took place, but the new road which has been especially designed for automobile speeding has a remarkably perfect surface, which is considered to surpass that of the new Brooklands track. And it has all the disadvantages of the latter in superlative degree, from the spectator's standpoint, for the highest speed of the most powerful touring cars looked commonplace and only the Darracq and Mercedes saved the meet from falling flat. The distance is five kilometers in opposite directions—that is, with and against the wind—and as the latter was very strong only the big cars made a showing against it. Rigel in a Darracq made the fastest time in 2:28 with the wind and 2:38 on the opposite stretch, with Baron de Caters next in a Mercedes, which did it in 2:44 and 2:49.

AMERICAN CARS TO BE SHOWN IN DENMARK.

COPENHAGEN, July 5.—Among the manufacturers of American cars who have already signified their intention of exhibiting at the show to be held here in the fall are the makers of the Ford, Reo and Rambler machines, and they have planned their exhibits on a scale which will place them on an equal footing with the English, French and German makers who will be here to bid for business in full force, as there is no home industry.

**THE RECORD-BREAKING MORA AT THE FAMOUS WHITE HORSE INN.**

S. H. Mora, president of the Mora Motor Car Company, at the wheel; T. W. Martin, vice-president, beside him, and C. L. Crothers, in the Mora Racytype that has created a new world's record by covering a total of 3,219 miles, the entire distance being made under sealed bonnet conditions.

AMERICAN WINS FIFTY-MILE RACE AT ST. LOUIS.

Later information from St. Louis is to the effect that at the Fourth of July race meet held in that city, the American car was victorious in the 50-mile event for touring cars, which was a feature of the day. In printing the summaries of the Lowell, Mass., in last week's issue of THE AUTOMOBILE, a seeming injustice was also done the same car by crediting the Stanley steamer as being the winner of the mile free-for-all event in :45 1-4, whereas the honor should have been given to W. A. Fredericks, driving the American Roadster, who did the distance in :45 flat, making the best time of the day, as stated in the body of the report.

CHARGES AGAINST OLDFIELD DISMISSED.

PORTLAND, ORE., July 10.—Barney Oldfield, who was recently arrested here on a charge of obtaining money under false pretenses by making use of the name of the local club to boom a race meet without the former's sanction, has made a written statement of the circumstances surrounding his connection with the affair which was perfectly satisfactory to the complainant and the charges have accordingly been withdrawn.

**A LITTLE CADILLAC IN THE POSTAL SERVICE IN HAWAII.**

Wherever they are met with, the little single-cylinder Cadillacs are found doing strenuous and exacting duty, as witness the one shown in the photograph, which with 1,000 pounds of mail sacks and a post-office inspector and additional passenger negotiates the mountainous roads of the island.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

The Itala Import Company, of New York City, reports the arrival and sale of its first six-cylinder model.

The Standard Automobile Renting Company, of New York City, has just been organized to carry on the business of renting touring cars, and has placed an order for three Lozier 40-horsepower cars.

The F. C. Stanford Manufacturing Company, Dewey Court, Bridgeport, Conn., are now making a specialty of automobile repairs that require welding, as they have unusual facilities for work of this class, in addition to the manufacture of automobile parts and sheet metal work, of which they turn out large quantities.

A contention of the American Motor Car Manufacturers' Association is that the medium-priced car is the best seller, and offers as proof that there are 7,500 Fords on the road. The association has long advised its members to build at least one model that will sell at a medium price, and points out the popularity of the Ford, Maxwell, Mitchell, Reo and others as conclusive evidence.

Ford cars are cutting a wide swath the world over, for right upon the heels of their meritorious showing in the Scottish reliability trials comes the announcement that both the four-cylinder runabout and the six-cylinder touring car made perfect scores in the Irish event of the same nature. The runabout made the fastest time in its class in the hill-climb, and received a certificate testifying to a "high-gear run" during the first two days.

Recognizing that the demand for high-class autoing apparel was not being more than half met at the Hub, the William H. Richardson Company, 388 Washington street, Boston, has opened a motor apparel department, which, as they state, is "complete to the smallest essential." They will carry a large stock of everything for the autoist, including imported lines, among which Burberry's English motor garments figure largely, while chauffeur's outfits will also be made to order.

Five consecutive scores in five consecutive starts in as many weeks is claimed by the Winton Motor Carriage Company as a record for reliability. The fifth score was made by a Winton Model M in the endurance run of the Bay State Automobile Association, Boston to Keene, N. H., and return, July 6. Thomas F. Walsh, the millionaire mine owner of Denver and Washington, has placed his order for a Winton Model M limousine, finished in royal blue.

The J. S. Bretz Company, Times Building, New York, American representatives of Fitchel & Sachs, has received advices from England that the Napier car, driven 1,581 miles in 24 hours on the new Brooklands track, at Weybridge, England, June 28-29, was mounted on F. & S. bearings. The Bretz Company has already received advices that the winners in the recent Herkomer tour in Germany, the German Emperor's cup race, the Grand Prix, the Targa Florio, the Graphic trophy and the Swiss heavy-wagon competition were all mounted on F. & S. annular ball bearings.

Extensive investigation is being made by the Hess-Bright Manufacturing Com-

pany, Philadelphia, Pa., to ascertain exactly how much wear occurs in a properly made ball-bearing after long use, and every opportunity to examine the bearings of cars that made considerable mileage is availed of for this purpose. The ball-bearing chankshaft of a Stevens-Duryea Bix Six, that had seen 8,000 miles' running, was recently examined, and it was found that the endwise play had been increased by amounts varying from 0 to 0.001 inch, while the radial play had been increased by amounts varying from 0 to 0.0001 inch, the original endwise play in new bearings being 0.021 inch and the radial play 0.0002 inch. It is practically impossible to adjust a plain bearing to as fine a point as displayed by these ball-bearings after 8,000 miles' wear.

That it is possible for an electric to travel almost twice as far on a single charge of the battery when operated on the low speed than when run on the high is the result of exhaustive experiments recently made by the Studebaker Bros. Manufacturing Company, South Bend, Ind., with one of their cars of this type. The car used was a Studebaker electric victoria-phaeton, weighing 2,000 pounds, and which had been in daily service for six months prior to the tests. On the first trial the car was operated at its lowest speed over a two-mile course, and ran for twenty-four hours before exhausting the battery, in which time it covered 154 miles. The second trial was made on the second speed, and it covered 135 miles in 15 hours, while on the third speed it traveled 101 miles in eight hours. The final test on the high speed carried it 82 miles in six hours; but, as the car is only rated to cover 40 miles on a charge, it delivered 100 per cent. more mileage on the high speed, and 150 to 285 per cent. in excess of its rating on the lower speeds.

RECENT TRADE REMOVALS.

The Motor Car Equipment Company is now located in its new uptown quarters, at the southwest corner of Fifty-fifth street and Broadway, in the heart of automobile row, which are generally considered to be the finest of their kind in the city, if not in the country. A most complete line of accessories and clothing is carried, including many well-known specialties, of both American and foreign make, for which this company is the exclusive selling agency.

Bag and baggage, Joseph F. Gunther now finds himself on Michigan Avenue, Chicago's famous automobile row, with all the Ramblers, big and little, his can of gasoline and his bottle of lubricating oil, and he is there to stay. The move has not been a sudden one, for during the past two months or more both the new quarters and the old, on Wabash Avenue, have been utilized; while, more than that, the stock of Ramblers has been so completely disposed of that the actual moving consisted of but little more than the migration of the Gunther staff and the transfer of the fixtures.

NEW AGENCIES ESTABLISHED.

Woodworth leather treads and the "Kant-Skid" tire grip have settled down on New York's automobile row, a branch

having been opened recently at 1,662 Broadway, which is in charge of Fred Blumenfeld, who has had considerable experience in tire protectors.

Following out its policy of covering the entire country with a network of facilities, so that no district of importance shall be without them, the Prest-O-Lite Company, of Indianapolis, Ind., will shortly open new charging plants, one of which will be located in Los Angeles to take care of the lower coast trade, while the other will be in Pittsburg, Pa.

The New England Motor Company, of Lowell, Mass., makers of the Rex accumulators, have just opened a branch store at 163 Columbus avenue, Boston, and the same company has provided for its metropolitan interest by opening an office at 25 Broadway, New York City the latter having been found necessary in order to take care of the increased demand in this quarter.

PERSONAL TRADE MENTION.

R. D. Henshaw, who has long been well known to the automobile trade, has just joined the sales forces of the Pope Motor Car Company, and will handle the Pope-Toledo cars in the New England States from now on.

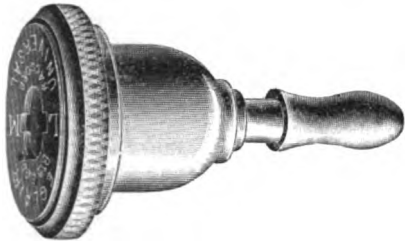
A rumor to the effect that Charles B. Shanks, general sales manager of the Winton Motor Carriage Company, Cleveland, O., had resigned came as news both to the Winton Company and to Mr. Shanks, as it was the first they had heard of it. There was no foundation for the report.

Though not made public at exactly the same time, George H. Strout, sales manager of the Electric Vehicle Company, Hartford, Conn., handed in his resignation, together with President Budlong and Hiram P. Maxim. Mr. Strout is at present on a business trip in the West, and his resignation is to take effect on August 1, after which he will take a short vacation before becoming identified with another automobile factory. He has been identified with the bicycle and automobile industries for the past thirteen years.

Right on the heels of the announcement that Ezra E. Kirk had severed his connection with the Kirk Brothers Automobile Company, of Toledo, O., which he entered after leaving the E. R. Thomas Motor Company last spring, comes the notice that he is already again in harness as western sales manager for the Rainier Company. He will have charge of the territory west of and including Pittsburg and Buffalo, which has heretofore been under the supervision of President John T. Rainier and Vice-President Paul N. Lineberger. The erection of the big plant of the Rainier Company at Saginaw, Mich., has brought with it a largely increased demand for Rainiers in the Middle West, and hereafter Mr. Rainier will divide his time between the factory and the New York office, which will still continue to be headquarters, while Mr. Lineberger will act as eastern sales manager. There are few better known figures in the automobile world to-day than Mr. Kirk, who, like so many others in the field, is a graduate of bicycling days. He enters upon his new duties at once, and will have headquarters at Saginaw.

INFORMATION FOR AUTO USERS.

"Eclair" Pump Connection.—One of the many imported specialties of merit handled by Leon Rubay, 1697 Broadway, New York City, is the Eclair universal pump connection, a French novelty designed to lighten the task of tire inflation. It is attached to the tire simply by pressing it on, and removed by pulling it off. The accompanying illustration shows the joint complete, which consists of a compression chamber, hermetically



THE ECLAIR UNIVERSAL CONNECTION.

closed by a rubber washer of special construction, held in place by a metal disk which screws into a removable ring placed over the compression chamber, and is drawn up tightly against a flange by means of the metal disk, every part of the connection being easily removable. Exhaustive tests have shown that the washer will stand between 4,000 and 5,000 inflations before requiring renewal, which may be made in less than a minute. The joint is attached to the pump in the ordinary manner and sells for a dollar complete.

National Portable Houses.—This is a line of portable house in the manufacture and design of which the makers have paid particular attention to the needs of the autoist, their construction being especially well suited for both small and medium-sized garages. Though designed to be portable, and, as the name suggests, shipped in sections and thus set up, there is no limit either to the size of the house that can be built, nor to the variation of architectural detail that may be supplied according to the requirements of the purchaser. Thus the doors may be glazed or solid, the side walls may have any number of win-

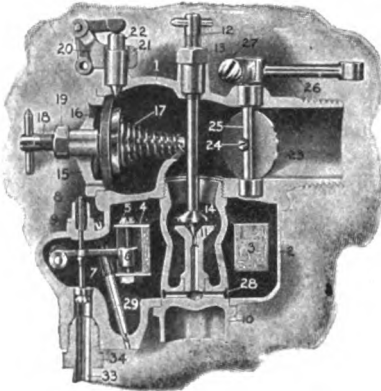


ATTRACTIVE TYPE OF PORTABLE GARAGE.

dows desired, and the floor may be of hardwood or cement, the latter always being recommended for garage purposes. When the construction itself is concerned, this may be of V-jointed matched siding, in steel representing pressed brick or stone, or of fireproof composite construction. There is also a wide range of choice of roofing materials, such as wood shingles, waterproof canvas duck,

asbestos, steel shingles, plain sheet steel, tin, etc. Where floors are required, as in cottages, temporary office buildings, and the like, this is of narrow, 7-8-inch pine, properly dressed and matched, and laid on suitable joists. The sections are keyed into one another on an interchangeable system, and when erected are as rigid and permanent as the ordinary form of built-up construction. They are made by the National Construction Company, 604 Morgan Building, Buffalo, N. Y.

The New Heitger Carbureter.—After a number of years of study, devoted exclusively to the problem of carburetion on the automobile and the motor boat, F. H. Heitger, of the Heitger Carbureter Company, 205-207 West South Street, Indianapolis, Ind., has just placed a new carbureter on the market, for automobile, marine and stationary use, for which much is claimed. It is of the annular float type, with the jet centrally placed and the body of the carbureter and the mixing chamber directly above it. The carbureter outlet, governed by a butterfly type of valve, is located at one side of this chamber, and the spring-controlled

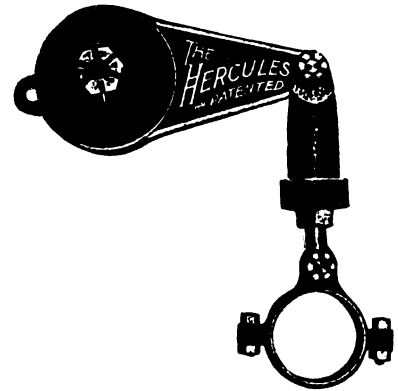


VERTICAL SECTION OF HEITGER CARBURETER.

auxiliary air valve at the other. The small plunger lever for facilitating a start is placed at the same side as the auxiliary air valve, while the needle valve is at the opposite side on top, so that all adjustments are in plain view and may be readily made. The Heitger carbureter is also designed to be easily installed on any make of car, as the throttle can be made to open and close from either direction and the lever can also be operated from any direction, while the gasoline feed opening is provided with a swivel joint.

Hercules Shock Absorbers.—In the present condition of the streets of San Francisco, which is in the throes of rebuilding operations, there is an active demand for shock absorbers, and the Hercules, made by the Hercules Auto Specialty Manufacturing Company, 115 Dearborn street, Chicago, which has but recently introduced its device on the Coast, finds that it is meeting with unusual favor there. Another instance of its success is to be found in the large order for Hercules shock absorbers recently placed by the president of an important jobbing house, who first gave the device a thorough try-out on his own car before setting the seal of approval on it in the shape of a substantial order. While similar in principle to many other shock absorbers, in that it interposes a

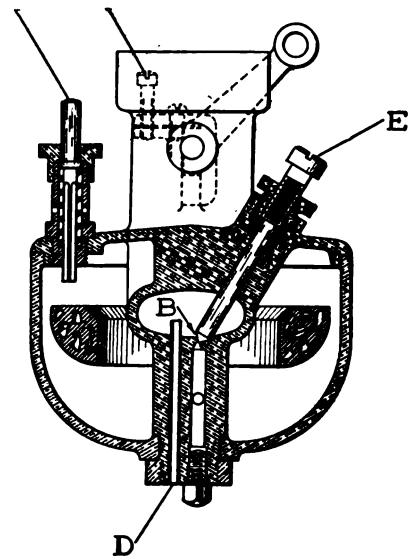
frictional resistance to the excessive play of the springs, it embodies special exclusive features, chief among which is the auxiliary cushion spring, which gives the car's springs plenty of play on smooth roads up to 50 per cent. of their



THE HERCULES SHOCK ABSORBER, COMPLETE.

movement, before the friction device comes into action so that the car does not ride stiff and uncomfortably. The accompanying illustration shows the device complete, ready for attachment.

Holley Carbureters for 1908.—It is a matter of common knowledge that the auxiliary valve of the average carbureter, on which feature it is entirely dependent for its automatic action in supplying a mixture that will be as nearly uniform as possible regardless of the speed of the motor, does not always fulfill its functions properly. The differences in air pressure and the amount of surface acted upon are so small that it is difficult to keep the spring properly adjusted for all conditions of working, so that it comes somewhat as a surprise to note that the 1908 Holley is announced as "an automatic carbureter without moving parts." To accomplish this the principle of the Venturi tube has been employed with excellent results. The Venturi tube is what may be termed a double bell-mouthed pipe, i. e., large at both ends and constrict-



SIMPLICITY OF THE NEW HOLLEY CARBURETER.

ed in the center, and it produces the anomalous action of discharging a liquid or gas with a greater velocity through the smallest section of the tube than that due to the impelling head alone—usually illustrated in lecture room experiments by using

two buckets of water, one with a plain hole in the bottom and the other fitted with one of these tubes the smallest section of which is the same as that of the hole in the other bucket. The bucket fitted with the tube will empty itself in half the time required by its duplicate. Referring to the sectional illustrations of the new carbureter presented herewith, the air enters at A, passing downward and up through a U-shaped tube, constricted at its lowest point; at the bottom of the U is the gasoline inlet B, regulated by the usual needle valve, while the mixture passes through a butterfly throttle to the motor at C. The float chamber surrounds the lower end of the U, this constituting a Venturi tube of special form, allowing a very high air velocity to be obtained at B by avoiding the throttling effect due to the usual irregular constricting arrangements. The float is annular and controls the fuel supply in the usual manner, but the gasoline level in the chamber instead of being lower as customary is about one-eighth-inch higher, so that it is not necessary to lift the gasoline by means of a vacuum as ordinarily done. At low speeds there is thus always a small pool of gasoline in the bottom of the U and mixture for this service is obtained by surface evaporation, the pool gradually disappearing before the air current as the speed increases, being replaced by the usual spray at very high speeds.

Steward's Dolan Acetylene Burner.—The production of a brilliant flat flame by one jet of gas through one opening briefly

this work was undertaken by Clarence S. Steward, who after several months study and experiment, succeeded in perfecting machines, which are now in operation, the company having contracted with the inventors for the exclusive right to manufacture the new burner. The results of tests made by the Department of Physics of Columbia



FLAME PRODUCED BY STEWARD'S DOLAN BURNER.

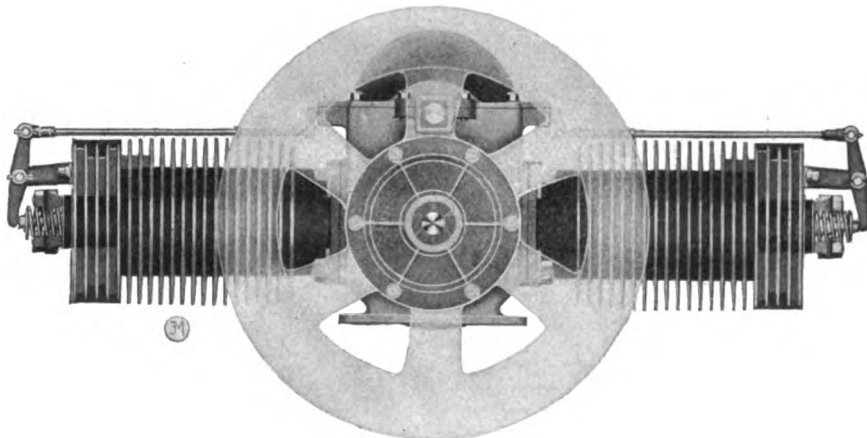
University show that the Steward's Dolan burner also has the great advantage of producing a greater amount of light with gas than the old type, giving an actual candle power of 35.6 on a consumption of .88 of

a cubic foot, or 40.5 candle power to the cubic foot, as against but .33 and 33.1 in the case of some English and German burners that were submitted to the photometric tests at the same time.

Two New Reeves Motors.—The Reeves Pulley Company, Columbus, Indiana, has recently turned its attention to the manufacture of two new types of water and air-cooled motors for commercial vehicle use and reports an excellent demand for them for 1908 deliveries. Model L is a 4 by 4 inch, four-cylinder water-cooled motor, rated at 22-24 horsepower. It is built throughout of the best obtainable materials, while the workmanship is of a grade usually associated with exclusive private designs rather than the commercial motor. All parts are made on carefully prepared jigs and templates, making them interchangeable, so that replacements may be promptly procured, and at reasonable prices. The crankcase is all aluminum, the upper half carrying the bearings and the lower acting merely as an oil pan, thus making it readily removable without disturbing any part of the engine. The crankshaft is turned from a solid hammered billet of specially tempered steel and is finished by grinding.

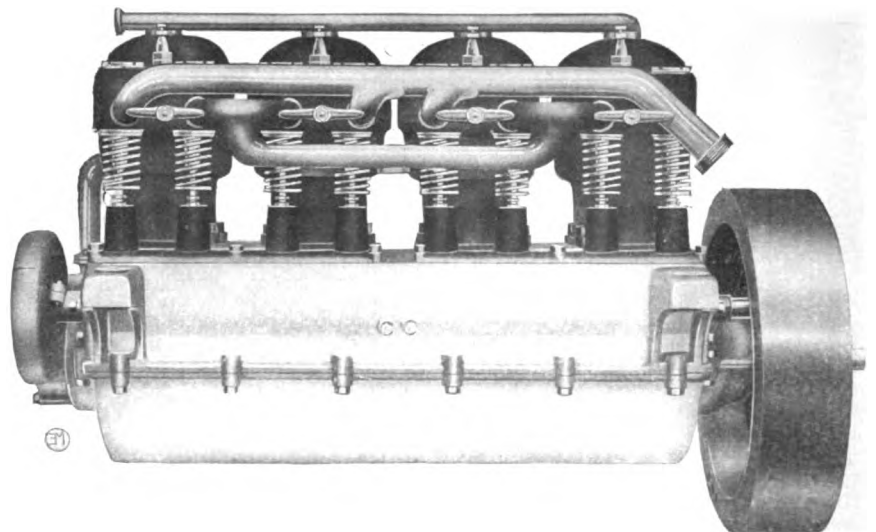
The bearings are all interchangeable die-cast bushings, made of special bearing alloy and hand-scraped to a true running surface. The pistons are of gray cast-iron, accurately turned and ground to fit, and are provided with four rings. The valves are drop-ported in one piece and ground; all are on the same side, actuated from one camshaft. The water jacket not only provides an ample quantity of water where most needed, but has also been designed to deaden the noise of the valves.

Model N is a double opposed 4 by 4 inch, 8-10 horsepower air-cooled motor, the crankcase of which is made of cast iron. The valves are 25 per cent. nickel steel, ground into cast iron interchangeable cages, which are removable. The valve lifters are case-hardened steel and are provided with a timing adjustment on the pushrods. The flywheel acts as the only fan necessary. In other respects the same painstaking care in construction and the same high grade materials are employed as in the Model L. This motor is made to run in either direction and may be mounted in any position on the car.



NEW MODEL N, 10-HORSEPOWER REEVES HORIZONTAL OPPOSED AIR-COOLED MOTOR.

tells the story of this new acetylene burner, which would appear to be destined to revolutionize practice in this field. Among its most obvious advantages over the present type of forked burner are its lack of fine orifices to clog up and the absence of necessity for having two impinging jets in proper alignment because it is likewise minus this feature of the current form in general use. This new burner is the invention of Edward J. Dolan and M. J. Tracy, of Philadelphia—the first-named being a pioneer inventor of acetylene burners, the type now in practically universal use having been brought out by him in 1897. After completing the invention of this new and improved form, it was found an equally difficult task to devise machinery to make its manufacture on a commercial scale possible. It took the inventors several years of patient work to turn out a few specimens properly by hand, and they were submitted to the D. M. Stewart Manufacturing Company, Chattanooga, Tenn., probably the largest makers in this line in the country. The task of evolving machinery to perform



REEVES PULLEY COMPANY'S NEW 24-HORSEPOWER WATER-COOLED MOTOR, MODEL L.

THE AUTOMOBILE

NEVER BEFORE WERE AUTOS SO SEVERELY TRIED AS IN THE BIG A-A-A TOUR

By A.G. Batchelder



Roll of Perfect Survivors

TOURING CARS

Car.	Make.	H.P.	Entrant.	Driver.
No. 3	Pierce	40-45	R. D. Garden	J. Williams
No. 14	Pierce	40-45	Phil. S. Flinn	Thomas Dunn
No. 17	Pierce	60-65	E. S. Day	E. S. Day
No. 27	Pierce	40-45	A. Kumpf	A. Kumpf
No. 9	T. Flyer	60	G. S. Salzman	G. S. Salzman
No. 11	T. Flyer	60	M. Hallowell	C. Richard
No. 47	White	30	W. C. White	W. C. White
No. 48	White	20	A. J. Scaife	A. J. Scaife
No. 49	Peerless	30	C. H. Burman	C. H. Burman
No. 50	Peerless	30	W. C. Straub	W. C. Straub
No. 22	Packard	30	H. H. Perkins	Oscar Theurer
No. 54	Haynes	50	Edward Noble	Edward Noble
No. 29	Welch	50	G. P. Moore	G. P. Moore
No. 33	Reo	16	R. M. Owen	R. M. Owen
No. 31	Walter	40	E. S. Lea	Edward Walter
No. 39	Berilet	40	A. N. Jervis	H. C. Townsend
No. 42	R. Tourist	45	R. H. Tucker	R. H. Tucker
No. 19	Premier	24	G. A. Weldely	J. W. Moore
No. 15	Am. Mors	25	G. Cabanne	F. A. Sharpe

RUNABOUTS

No. 104	Stod.-Day.	35	G. S. Smith	G. S. Smith
No. 108	White	30	H. K. Sheridan	H. K. Sheridan

TWENTY-ONE clean-score twelve-day endurance were ever called upon to ac-driven vehicle modestly began yesterday in New York City. start on Wednesday, July 10. that are a disgrace to the State and execrable highway in the mountains of Western Pennsantly interrupted by water-Maryland and gave a sublime toric country; turned north-and bumpy turnpikes of East-concluded on the macadam New Jersey. Nearly sixteen changeable American road, but mobiles are asked to travel

And it was done on a sched-fast on some days and too slow horsepower of your car—but a the ordinary tourist would at-

ing for pleasure or traveling for necessity, and, in consequence, furnishes no criterion for a touring time table.

Extraordinary conditions were further required in the matter of repairs, for the rules said that only yourself and your mechanic could work on the car, and then only with what you carried; if you used extra parts, there was penalization. At the finish of the day's run your car was taken away and did not return to your possession until the beginning of the next day's journey. Then, after you were on your way, you could give it the meager attention which all machinery should receive to enable it to perform most capably and enjoy a long life.

It was abusive and unusual, the treatment—or lack of it—which the cars received, and that they should survive and endure and proceed was a source of wonderment, more to those who knew and realized the exact conditions than to the thousands of on-lookers who did not comprehend the task to which the mud-caked and uncleaned autos were put as they willingly ploughed forward, intent upon reaching the goal in the metropolis of the country.

True, the rules may be vastly improved upon, there may be better but no more hard-working chairman than Mr. Hower, another year a more interesting route may be selected, and other things might happen, but the 1907 Fourth Annual Tour of the American

survivors of the very hardest touring to which automobiles accomplish since the motor-its cumulative career, ended Cleveland was the scene of the The route led over roads of Ohio; comprised both excel-Indiana and Illinois; traversed sylvania, with progress inces-bar jolting; dropped down into glimpse of picturesque and his-ward and followed the dusty ern Pennsylvania; and then thoroughfares of enlightened hundred miles of typical, of exactly the kind which auto-over every day.

ule which might have been too on others—according to the schedule far in excess of what tempt to accept either in tour-

Automobile Association was worth while: a benefit to buyers and a great proving test for the makers of cars. It should be viewed in its general aspects and the picking of flaws which undoubtedly existed will not wipe out the general good that has and will follow in the wake of such a big event—the most pretentious and best conducted affair of this character yet held in this country.

Fourteen different makes of automobiles grace the list of those which came through without any penalization. But, in all fairness, there should be taken into consideration the fact that not a few of those which suffered more or less depletion of their original 1,000 points through troubles that were either not mechanical or else of a minor nature, a half dozen or more in the finishing miles of the Canton-Pittsburg run—the worst link of the variable cross-country chain—met with punctures owing to the miserable road surface. These, despite the exceptional liberality of the police authorities in Allegheny and Pittsburg, were unable to reach the Hotel Schenley before the expiration of a schedule which on this particular day was a bit close and compelled cars having difficulties to do some tall hustling. And some of the drivers hesitated at racing through the streets even with a fairly good police protection.

The rules required a contestant who made replacements of parts other than what he carried along with him to become a non-contestant, and while some persisted and completed the long journey for the stubborn satisfaction of saying so, others could see little glory and a lot of useless work in this proceeding. In the carrying of these extra parts not a few of those who had no opportunity of gaining experience in previous tours were somewhat at loss to estimate what might be actually needed. The parts carried along did not always necessarily mean that the cars were weakest in these particulars, and more frequently that which was needed was of small cost and often it happened to be just the thing that had been left behind. Therefore, the list printed on another page is not mechanically valuable, but will satisfy the curiosity of those who speculated as to the assortment which might be carried for exceptional endurance emergencies.

"And Buffalo Retains the Glidden Trophy."

The Buffalo and Pittsburg clubs quickly became the real contenders for the possession of the Glidden trophy, the other clubs dropping out of the contest early in the race. When Buse of Buffalo went astray on the road and lost points, there was undisguised elation in the Smoky City camp. When Jones of that city smashed into a mail carrier's cart and did other similar stunts and lost more points than his unfortunate rival, the Bisons did some shouting which was loud and prolonged. Another year it is probable that more care will be taken in the selection of teams, and possibly they might be limited in number and several teams come from the same club. This is an idea of Mr. Glidden, who rode through the entire tour in Chairman Hower's car and naturally figured as a notable all along the line.

The Runabout Contest for the Hower Trophy.

When the call came, somewhat insistent, for the admission of runabouts on an equality with the touring cars, Chairman Hower came to the fore and supplied a trophy for this class. It was rather a matter of surprise that the runabouts incurred penalties, one after another, with great regularity until finally only two were

left—Sheridan with a White and Smith with a Stoddard-Dayton. These two drove with careful judgment and each day seemed to adhere to a steady pace that took not into consideration the doings of their opponents, some of whom appeared unable to resist the temptation of utilizing their horsepower and then loafing for an hour and often several before checking-in time arrived.

Enthusiasm All Along the Line.

From Cleveland to Chicago and back to New York City the autoing caravan was a source of attraction in every city, town and village, and often in the country there were picnic parties which had assembled for the sole purpose of watching the passing of the up-to-date users of the road. There has been established by the participants in endurance runs an inviolate rule that not one splash of mud shall be washed from their cars nor one speck of dirt removed from their clothing. Under ordinary conditions and attired in their riding garb, automobilists look somewhat ineligible for an appearance competition, but when they have proceeded for several days might easily be mistaken for "Weary Willies" of the road if they were proceeding on foot. "General" Coxey had some facetious comments to make at Massillon, and the inmates of an asylum in another town looked askance at the flying procession in such a way as to cause one to believe that those mentally bereft believed that the wrong ones were under surveillance. If someone will start a crusade for cleanliness among automobilists while on an endurance tour—admitting that more dirt will be accumulated on the following day, but why carry all the dirt which sticks—the public might be disabused of the idea that automobiling is the dirtiest kind of traveling.

But the progress of the 1907 tour was a source of enjoyment and great interest from beginning to end, and the attention of the thousands that saw and of the thousands more that read added immensely to the volume of automobile interest and enthusiasm which are evident in nearly every city and hamlet of the country—and certainly in all places that were on the route of the great tour just concluded.

Talk Even Now of a 1908 Tour.

What should be next year? was the matter discussed vigorously during the tour and at its wind-up. Chairman Hower believes that you cannot combine an endurance contest with a pleasure tour. Others have said so before, but this year's event was the third effort by the A. A. A. with a combination run. It must be voted a success and generally beneficial, but the room for improvement still remains and there should be careful planning, starting now for next year's run.

The tour this year was too long. One week is enough. In six days' running the abilities of a car can be demonstrated or its weak points discovered sufficiently to answer all practical purposes. A mid-day control will lessen the unnecessary physical hardships inflicted upon drivers and passengers and lend an essential innings of rest which will not lessen the strenuousness as far as the cars are concerned. Of course, there should be observers, and if any entrant selects an incompetent observer he will have only himself to blame, for if he is wise he will pick one of his most experienced engineers to ride in the cars of the other fellows. This accepts in advance the assurance that a contest with observers will be for makers and not for amateur owners.

FINAL DAY'S RUN WAS THE EASIEST OF ALL

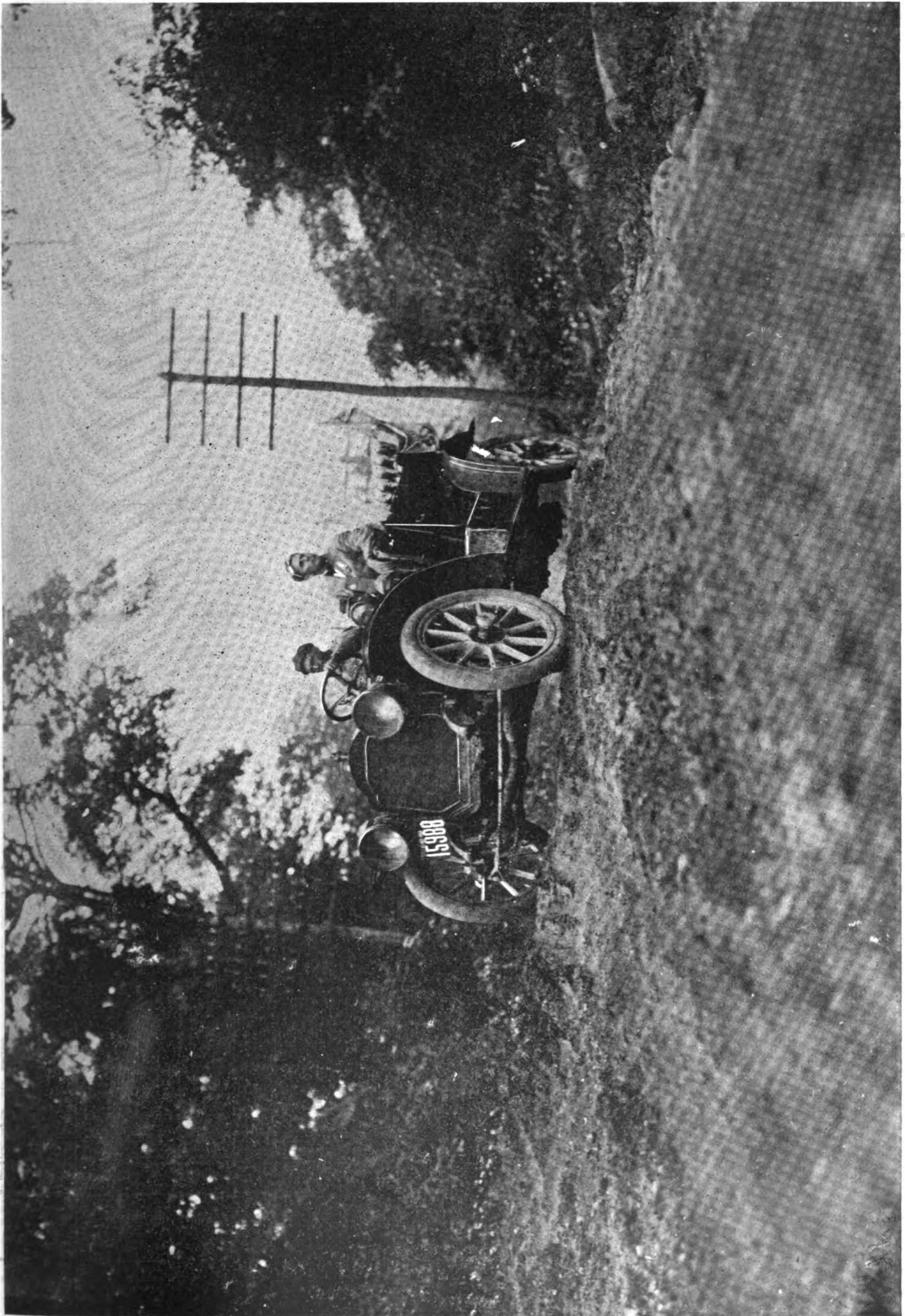
NEW YORK, July 24.—From Philadelphia to New York is slightly under a century, but the good roads of New Jersey are often quickly covered, despite the present law in that State. Confetti-Chief Lewis had as a companion in leaving Quakerville Dr. J. R. Overpeck, driving a Walter, who showed the most available route to reach the open country. At Trenton, the home of the Walter car, this concern gave basket luncheons to

the eager tourists, who, sniffing the salt air afar, were eager to reach Jersey City and feast their eyes upon metropolitan grandeur. Here the White Company thoughtfully supplied coffee and sandwiches at the checking-in place in front of the City Hall. Of course, there was a wait of a couple of hours until the entire cavalcade had arrived. Not a single one met with a penalty, and even the stragglers, who had been catching up for several days

DETAILS OF CARS WHICH PERFORMED MOST CAPABLY

THESE CARS CHECKED OUT OF BEDFORD SPRINGS, 1,160 MILES OF THE 1,570 TOTAL.

CAR	Motor	Ignition	Transmission	Clutch	Drive	Wheelbase	Tires
Acme: No. 43.....	4 cylinders, separate; 4½ x 5 bore and stroke; 32 horsepower.....	Eiseman high tension magneto and batteries..	Sliding gear, selective; 3 speeds and reverse.....	Cone.....	Side chains..	102 ins....	Diamond
American Mors: No. 10..... No. 15.....	4 cylinders in pairs; 5 x 6 bore and stroke; 40 horsepower..... 4 cylinders, in pairs; 4 5-16 x 6 bore and stroke; 24 horsepower..	Mors low-tension magneto and storage batteries.....	Sliding gear, progressive type, 4 speeds and reverse.....	Leather-faced Cone.....	Side chains...	120 ins. ... 106 ins. ...	Diamond Goodrich
Berliet: No. 30.....	4 cylinders in pairs; 4½ x 5½ bore and stroke; 40 horsepower.....	Simms-Bosch low tension	Sliding gear, selective type, 4 speeds and reverse.....	Multiple disc..	Side chains...	126 ins. ...	Diamond
Dragon: No. 112.....	4 cylinders, in pairs; 4 x 4½ bore and stroke; 24-26 horsepower....	Jump spark, storage batteries.....	Sliding gear, progressive, 3 speeds and reverse....	Cone.....	Shaft.....	104 ins. ...	Diamond
Elmore: No. 51.....	4 cylinders, pairs two-cycle; 4½ x 4 bore and stroke; 32 horsepower..	Jump spark, storage batteries.....	Sliding gear, selective type, 3 speeds and reverse.....	Internal expanding.....	Shaft.....	104 ins. ...	Hartford
Gaeth: No. 28.....	4 cylinders, pairs; 4½ x 5 bore and stroke; 35 horsepower.....	Splitdorf low-tension magneto.....	Sliding gear, progressive, 3 speeds and reverse....	Contracting band.....	Shaft.....	112 ins. ...	Diamond
Haynes: No. 54..... No. 55.....	4 cylinders, separate; 5½ x 6 bore and stroke; 50 horsepower..... 4 cylinders, separate; 4½ x 5 bore and stroke; 30 horsepower.....	Remy high-tension magneto and batteries.... Simms-Bosch high-tension magneto.....	Sliding gears, selective, 3 speeds and reverse.... Sliding gears, selective, 3 speeds and reverse....	Haynes individual.....	Shaft..... Shaft.....	109 ins.... 102 ins....	Diamond Diamond
Maxwell: Nos. 41 and 58..	2 cylinders, opposed; 5 x 5 bore and stroke; 16-20 horsepower....	Jump spark.....	Sliding gear, 3 speeds and reverse.....	Multiple disc..	Shaft.....	86 ins. ...	Goodrich
Oldsmobile: No. 32.....	4 cylinders, in pairs; 4½ x 4½ bore and stroke; 40 horsepower.....	Jump spark.....	Sliding gear, selective, 3 speeds and reverse....	Inverted cone..	Shaft.....	106½ ins. ..	Goodrich
Packard: No. 22..... No. 44..... No. 90.....	4 cylinders, in pairs; 4½ x 5 bore and stroke; 24 horsepower....	Simms-Bosch high-tension magneto.....	Sliding gear, progressive, 3 speeds and reverse....	Multiple disc..	Shaft.....	110 ins. ...	Goodrich Goodrich Diamond
Peerless: Nos. 49 and 50..	4 cylinders, in pairs; 4½ x 5½ bore and stroke; 30 horsepower.....	Eiseman high-tension magneto and Fulmen batteries.....	Sliding gear, selective, 4 speeds and reverse.....	Expanding.....	Shaft.....	109 ins. ...	Goodrich Diamond
Pierce: Nos. 3, 14, 21, 27, 100.....	4 cylinders, separate; 5 x 5½ bore and stroke; 45 horsepower.....	Simms-Bosch high-tension magneto and storage batteries.....	Sliding gear, progressive, 4 speeds and reverse....	Cone.....	Shaft.....	124 ins....	Goodrich Diamond Goodrich Goodrich Goodrich
Nos. 17 and 90..	6 cylinders, pairs; 4½ x 4½ bore and stroke; 75 horsepower.....	Simms-Bosch high-tension magneto.....	Sliding gear, progressive, 3 speeds and reverse....	Cone.....	Shaft.....	136 ins....	Goodrich Goodrich
Premier: No. 19..... No. 98.....	4 cylinders, separate; 4½ x 4½ bore and stroke; 24 horsepower.... 6 cylinders, pairs; 40-45 horsepower.....	Jump spark, storage batteries..... Simms-Bosch low-tension magneto and batteries..	Sliding gear, selective, 3 speeds and reverse.... Sliding gear, selective, 3 speeds and reverse....	Multiple disc.. Multiple disc..	Shaft..... Shaft.....	109 ins. ... 124 ins....	Diamond Diamond
Rainier No. 26.....	4 cylinders, pairs; 4½ x 5½ bore and stroke; 30-35 horsepower....	Simms-Bosch low-tension magneto.....	Sliding gear, progressive, 3 speeds and reverse....	Cone.....	Shaft.....	104 ins. ...	Diamond
Reo: Nos. 33 and 34..	2 cylinders, opposed; 4½ x 6 bore and stroke; 16 horsepower.....	Jump spark, storage batteries.....	Planetary, 2 speeds and reverse.....	Friction disc....	Single chain..	94 ins. ...	Goodrich Diamond
Royal Tourist: No. 42.....	4 cylinders, pairs; 5½ x 5½ bore and stroke; 45 horsepower.....	Simms-Bosch high-tension magneto and storage batteries.....	Sliding gear, progressive, 4 speeds and reverse....	Cone.....	Shaft.....	114 ins....	Diamond
Stoddard-Dayton: Nos. 38 and 104..	4 cylinders, pairs; 4½ x 5 bore and stroke; 35 horsepower.....	Jump spark, storage batteries.....	Sliding gear, selective, 3 speeds and reverse....	Cone, leather-faced.....	Shaft.....	105½ ins. .	Goodrich
Thomas Flyer: Nos. 9, 11, 13, 60.	4 cylinders, separate; 5½ x 5½ bore and stroke; 60 horsepower.....	Simms-Bosch high-tension magneto.....	Sliding gear, selective, 4 speeds and reverse....	Multiple disc..	Side chains...	118 ins. ...	Goodrich
Walters: No. 31.....	4 cylinders, pairs; 5 x 5½ bore and stroke; 40 horsepower.....	Eiseman high-tension magneto and batteries..	Sliding gear, selective, 3 speeds and reverse....	Cone.....	Shaft.....	124½ ins....	Goodrich
Welch: Nos. 7 and 29..	4 cylinders, pairs; 4½ x 5 bore and stroke; 50 horsepower.....	Simms-Bosch magneto and batteries.....	Sliding gear, 3 speeds and 2 reverse.....	Multiple disc..	Shaft.....	129 ins....	Diamond Goodrich
White Steamer: Nos. 47, 108..... Nos. 40, 48 and 61.	High-pressure cylinder; 3 x 4½ bore and stroke; 30 horsepower. High-pressure cylinder; 3 x 3½ bore and stroke; 20 horsepower..	Low-pressure cylinder, 6 x 4½ bore and stroke. Low-pressure cylinder, 5 x 3½ bore and stroke..	"Flash" Generator..... "Flash Generator.....	Shaft drive..... Shaft drive.....	115 and 104-in. wheelbase 104-in. wheelbase.....	..... .....	Diamond Goodrich Diamond Diamond



TOM FETCH'S PACKARD AT THE APEX OF ONE OF THE PENNSYLVANIA MOUNTAINS, WHERE THE SCENERY THAT GREETED THE A. A. TOURIST WAS WILD AND PICTURESQUE.

DEDUCTIONS OF THE TOUR THAT ARE SELF APPARENT

By F. B. HOWER, CHAIRMAN TOURING BOARD.

It must be one thing or the other—an endurance contest or a pleasure tour. The pleasure journey is no longer of any special value to manufacturer or user, and therefore it is my opinion that the 1908 event of the A. A. A. should be a prolonged endurance run, with every entrant providing a "scrutineer" or observer, who of course would ride only in the cars of other entrants for obvious reasons.

Each time the "scrutineer" took his place in a car he would be handed the list of extra parts carried, and at the conclusion of the day's run the results of his observations would become a part of the official records.

In touring nowadays a disabled car can often reach a garage or machine or blacksmith shop and accomplish sufficient repairs to continue to the end of the journey, but for using parts not carried, I repeat, there should be at least a five-fold penalty.

The purpose of a strenuous test is to enable the maker to correct the structural weaknesses in his car, and he can discover

these defects only by subjecting his product to extraordinary conditions. If his car has a fault he should be the first one desiring to find it out. It is safe to say that much has been learned by all the makers who participated in the run just ended. We asked far more of the cars than they might ever be called upon to perform, but I believe that in automobiles, like in other construction, there should be ability to withstand several times what may be met with in ordinary usage.

It is self-apparent that an endurance tour or any contest of this character should be conducted by a disinterested body rather than by the makers. The public naturally will look upon the event with greater favor under such circumstances, as it naturally stands to reason that the report of the results of such a test will be received as emanating from a source wholly untainted with the slightest suspicion of trade bias and, in consequence, be considered as authoritative and as having far more weight than they possibly could otherwise.

DEPLORABLE CONDITIONS OF AMERICAN HIGHWAYS

By CHARLES J. GLIDDEN.

THE fourth annual tour of the American Automobile Association was witnessed by more people and created a greater interest than any event of its kind ever held in this country or any other. It has shown to the world the reliability of the American cars, the skill of the drivers, and revealed the deplorable condition of the highways of a prosperous nation.

Seventy per cent. of the roads would, by any European government, be closed to public travel and marked "use at your peril." The serious accidents were due wholly to the condition of the roads which were unknown to the drivers.

The contest for the Glidden Trophy by clubs has removed any possibility of a tie and increased the popularity of the tour. That far the Hower Trophy for high-powered runabouts

has brought into prominence a superior class of vehicles for touring by use of which economical drives can be made for long distances when it is not the wish of the owner to carry a large party, or a great deal of touring impediments.

The tour has been ably managed by the Touring Board, through its efficient chairman, F. B. Hower, and the foundation has been laid for future events in which a large majority of the clubs in the United States will participate and every prominent manufacturer be represented.

The contest is open to the world, and it would be interesting to know the record of foreign manufactured cars on American roads in a test of this character, as, outside of the wilds of Russia, Europe offers no such testing ground as this.



THIS IS A FAIR SAMPLE OF SOME OF THE "GOING" ENCOUNTERED BETWEEN CANTON, OHIO, AND PITTSBURGH, PA.



ROADS THAT WERE SUCH ONLY IN NAME TESTED CARS AND TRIED THE DRIVERS' SKILL.

AFTER twelve days' touring over roads as varied as possible for highways to be—the variety being not merely a matter of road surface but also of changing geographical conditions, it is an easy task to sum up with a considerable amount of accuracy the mechanical features developed by the A. A. A. tour.

A mere numerical declaration of the automobiles which left Cleveland on July 10 and of those which have survived to the end of the journey might cause the superficial observer to be unfavorably impressed with the value of the automobile as a touring machine. Of those having covered the 1,570-mile journey a certain number are incapable of further effort without a thorough overhauling, involving quite a stay in the shop.

Not more than thirty-five machines out of over seventy starters have reached New York in perfect condition, ready to go forth to further exploits without repairs or adjustment. The elimination of over 50 per cent. of the competitors on a twelve days' running schedule may lead critics to condemn the machines as unsuited for the work they are built to accomplish, and might cause prospective automobilists to hesitate in face of such an expensive pastime. Nearly 1,600 miles and 50 per cent. of the machines candidates for the hospital, the layman might muse, and decide to wait for the perfect automobile. But if the true conditions of the tour are understood, such a result will be considered as thoroughly satisfactory. The party toured—but not as ordinary mortals tour, for the average man does not perform herculean feats when he wanders round the country in an automobile or subject his car to maximum tests. Road conditions on the A. A. A. tour were such as are to be found in no other country in the world, and the daily stages and running times called for strains which no sane private owner would impose upon himself or his car. Briefly, a year's ordinary wear is compressed into a fortnight; to survive the fourteen days more than commonplace mechanical construction is required. A few who entered the run—and many who stayed out—were under the impression that the tour was a series of daily journeys under normal touring conditions. Those who have gone through the affair in any capacity know the enormity of their mistake.

Throughout the tour there has been a remarkable immunity from engine troubles. The run could certainly not have been made under sealed bonnet conditions, but there has been less tinkering under the hood than in any other competition of a like nature. One car cracked a cylinder, one retired with a broken connecting rod, another had serious magneto troubles, and there were various cases of broken valve springs, fan troubles, short-circuits, carbureter adjustments, and the like. On the whole, however, the power plants gave full satisfaction. With such heavy going as was met with on the outward run to Chicago and the strenuous hill climbing in Pennsylvania, where the engine was called upon to furnish its maximum power for several hours in

succession, the performance of the motors is thoroughly satisfactory. Leaky radiators were only small in number, and with few exceptions were the result of collisions and blows which would not have been met with under ordinary conditions. Very few motors showed signs of overheating, and more than one car traveled over the mountain stages from Canton to Baltimore without pouring a drop of water into the radiator. Such a performance speaks volumes for the efficiency of the engine.

The weak point of the machines was in their transmission and drive. Clutch, gears, shaft, differential and rear axles in some cases developed weaknesses of such a nature as to put machines out of the competition. One car abandoned with a broken clutch, five at least stripped their gears, and about half a dozen had broken or damaged rear axles. In three cases a broken truss rod was observed, two of which led to the rupture of the rear-axle housing and the total disablement of the car. A few others suffered so severely in this respect that, though they reached New York, their rear axle will have to be dismantled and entirely overhauled. Traveling over such rough roads as the Toledo-South Bend stage, the fast Canton-Pittsburg run, or the heavy pulling over the Alleghenies into Bedford Springs imposed enormous strains, as several makers of lightweight and poorly constructed rear axles found to their cost. On good roads, with minimum loads, the cars might have given years of satisfactory service, but when four passengers and heavy baggage had to be transported over bad roads at a rapid rate the driving mechanism broke down immediately.

Chassis suspension was discovered to be insufficient in a number of contesting and accompanying cars. Several drivers, anticipating trouble of this nature, carried spare springs with them, and had occasion to use them before the end of the trip. More trouble was experienced with front than with rear springs, three machines breaking both front springs and several suffering from one spring more or less seriously broken. Spring irons and rubber bumpers had frequently to be added on the way. When Chicago was reached some of those who had left home without shock absorbers decided that their presence would be useful, and forthwith fitted them to their cars. Few, apart from the perfect-score contestants, had perfect suspension, sufficient to give easy riding to the occupants of the car or immunity from breakage. Frequently the springs might have been lengthened and strengthened with advantage, and an efficient shock absorber added in front at least. Some of the most pleasing machines in this respect had springs of more than ordinary length for their seating capacity, and were fitted with a complete set of shock absorbers. A couple of cases were reported where the shock absorbers themselves were incapable of performing their work, one of them breaking away from the frame repeatedly. Corded springs were noted in a few cases, and one non-contestant im-

provided a set of rubber bumps out of a section of solid tire. Before checking in at the controls a number of drivers wisely paid close attention to the lubrication of their springs.

A very severe and at the same time unnecessary strain was imposed on the springs by the presence of water breakers, for there is no reason whatever why these should be allowed to remain on the highways. From Pittsburg to Bedford they were rather more annoying than dangerous, for, owing to the bad surface, cars rarely took the bumps at a rapid rate. From Bedford to Baltimore the breakers were a constant danger, for, with a car running over the good macadam from twenty-five to thirty miles an hour, it was impossible to slow for every bump, and the strain on the springs was enormous.

Friday, and especially Saturday, were "fierce days on brakes," as some of the drivers appropriately put it. Not that any car was totally inefficient in its braking system or suffered any injury through their failure to act, but on the whole they were shown to be not sufficiently powerful for continuous mountain work. As road conditions improve and mountain touring becomes more general, greater braking surface and more easy methods of regulating the brake bands will have to be adopted. No water-cooled brakes were observed, this practice, a common one on European machines built for mountain work, not having yet been adopted by American constructors. A few cars were obliged to stop to cool off their brake bands as a precautionary measure, and all those who had time to do it overhauled their brakes before checking in at South Bend. One non-contestant declared that he spent all Sunday putting his brakes into shape for the following day.

Steering gear gave very little trouble, there being but one case of a breakage under ordinary running and three disablements of greater or less gravity by collision with road objects. One machine had a stout hickory bar attached to the connecting rod, the driver declaring that it not only minimized the danger through a breakage of the connecting bar, but absorbed a certain amount of vibration.

Users of speedometers, and they comprised nearly every participant in the tour, declared that, although the instrument rarely became disabled, the fixtures were not sufficiently robust to stand the hard going. Several of the brackets broke. Some drivers, anticipating such a trouble, had two instruments, so that if one went out of business they were not obliged to run by guesswork.



COLUMBIA ON ONE OF THE MANY HEARTBREAKING STRETCHES OF ALLEGED ROAD.

SEEN BY THE UBIQUITOUS SNAPSHOTTER.

By F. ED. SPOONER

One blacksmith at a point somewhere between Ligonier and Pittsburg will have reason to remember a hard ride in a Packard car. Wallie Owen had driven hard when he met with an accident and the Packard, belonging to a Pittsburg gentleman bound for Bedford, came along. Owen was offered assistance and at once started for the nearest mountain village to get a job done in blacksmithing. He carried back with him the smithy and carried him so fast over the water breaks that none of the occupants of the car ever found a chance to see whether the cushions were easy. In very fact, they were far above the seat the greater portion of the time. Owen repaired the break and forty miles later on it gave out. He went out Sunday and came in among the cheers of the contestants.

Sunburn was a serious matter with the contestants this year. At no other time did the sun cause like trouble. Faces became red, then started to swell and the face changed its appearance so that many could not be recognized. George M. Davis of the E. R. Thomas Motor Co. and many others suffered from sunburning and were in the hands of the doctors. The malady took on a serious aspect and caused untold agony in some instances. The doctors could not explain it, some explaining that bugs caused it and others that erysipelas developed. Whatever the cause, the beauty of many a man disappeared.

The neatest and best arranged reception along the route was at the old Firestone Homestead near Columbiana. Here the tourists were presented with a handsome basket filled with lunch. Every basket contained boxes of sandwiches, cigars of the finest kind and stone bottles of delicious milk. The ladies received handsome bouquets. The Messrs. Firestone, with their wives and many visiting ladies, presided over a tent filled with good things.

The reception to the tourists at Kokomo, where the Apperson Brothers presented lunches and small bottles and the Haynes Automobile Company supplied lunches from a patrol wagon which met the cars on the road, was appreciated by the tourists. The route was altered to take the tour past the Haynes factory, America's first automobile factory. This was done because Sales Manager Fanning made the request.

When the tourists stopped at Dayton at the big factory of the Dayton Motor Car Company, they were presented with lunches, were not allowed to pay for their gasoline and received a reception which warmed the cockles of the heart. The city turned out en masse and gave the visitors a royal reception. Sales Manager Jamison and Mr. Stoddard attended to all wants.

Mrs. Cuneo wore bands around her arms to strengthen the wrists and at Bedford Springs had armulets which drew much attention. The arms burned below and above the wrist bands and burned badly. Many commented on the fact and scores asked questions. The extent of the effects of the sun were plainly visible on Mrs. Cuneo's wrists.



*Parts Carried
were few
in Number*

IN contrast to previous A. A. A. tours, every competitor in this year's event was called upon to carry all the parts he considered necessary for the trip, and to obtain no parts from outside sources. During the stay at Bedford Springs, all competing cars were examined in order to verify the spares carried. Discrepancies between the manufacturers' list and the actual parts carried were discovered on certain machines, in some cases the parts being in excess of the list and in others parts being missing which, according to the list, should have been on the car. In all cases it appeared evident that the non-conformity between the list and the parts was due to hurried packing on the part of the manufacturer or to negligence of the drivers to verify the materials received.

As an official admission of the parts which, in the estimation of the manufacturer, might need replacing on the journey, the complete inventory holds considerable interest for those who are closely following the tour.

OFFICIAL LIST OF EXTRA PARTS CARRIED.

Car No. 1—N. H. Van Sicklen—Apperson: Four roller bearings, 12 spark plugs, 1 commutator chain, 1 fan belt, 1 oiler belt.

Car No. 2—K. R. Otis—Pierce Great Arrow: No extra parts.

Car No. 3—R. D. Garden—Pierce Great Arrow: Four spark plugs, 1 carbureter float, 1 carbureter air valve complete, 1 unit coil.

Car No. 4—H. A. Grant—Maxwell (non-contestant).

Car No. 5—A. L. Kull—Dragon (non-starter).

Car No. 6—T. J. Clark—Packard: One 714 hand brake ring, 1 796 clutch band assem., 1 1715 front spring, 1 647 foot-brake band shoe F.W., 1 647 1-4 foot-brake band shoe R.L., 1 647 1-2 foot-brake band shoe R.W., 1 647 3-8 foot-brake band shoe F.L., 1 647 5-8 foot-brake band shoe (interm.), 2 1692 spark plugs.

Car No. 7—A. R. Welch—Welch: One fan belt, 1 commutator complete, 1 pair valve arms, 1 exhaust valve complete, 4 spark plugs, 1 set brake lining and rivets, 2 spring clips and rivets, 1 bumper saddle and strap.

Car No. 8—Chas. E. Finlay—Pierce Great Arrow (non-starter).

Car No. 9—George S. Salzmann—Thomas Flyer: No extra parts.

Car No. 10—F. J. Pardee—American Mors: One front spring, 1 rear side spring, 3 gasoline pipes, 4 never-skip spark plugs, 1 406 ball bearing, 1 508 ball bearing, 1 307 ball bearing, 1 309 ball bearing, 1 Whitney chain, 3 intake springs, 6 spark plugs, 3 exhaust springs, 2 valves, 4 nuts, 1 magneto, 2 magneto grease cups, 1 magneto gear, 1 magneto disk, 12 valve washers, 4 bolts.

Car No. 11—Montgomery Hallowell—Thomas Flyer: No extra parts.

Car No. 12—R. D. Chapin—Thomas Flyer: Two valves, 3 valve spring spools, 3 spring clips, 3 commutator wires, 3 universal joint bushings, 1 right front steering knuckle, 1 steering ball joint, 3 post springs, 1 spring repair, 1 spring clip bolt, 2 rocker arms, 1 front wheel inside bearing, 1 front spring bolt, 1 steering gear ball arm, 3 pet cocks, 1 commutator roller, 1 vibrator spring, 1 vibrator screw, 1 commutator contact, 1 carbureter spring.

Car No. 13—Geo. M. Davis—Thomas Flyer (non-contestant).

Car No. 14—Phillip S. Flinn—Pierce Great Arrow: Four spark plugs.

Car No. 15—C. G. Cabanne—American Mors: One front spring, 1 rear side spring, 2 prs. Weed chains, 1 magneto, 4 valve springs, 4

never-skip spark plugs, 1 H. B. bearing, 1 H. B. bearing, 1 H. B. bearing, 1 H. B. bearing, 1 Whitney chain, 4 spark plugs, 4 ignition hammers, 2 grease cups, 8 bus-bar bushings, 8 bus-bar nuts, 4 valves, 6 ignition springs, 4 gasoline pipes, 1 box extra parts.

Car No. 16—Orrel A. Parker—Royal Tourist: No extra parts.

Car No. 17—F. S. Dey—Pierce Great Arrow: No extra parts.

Car No. 18—H. Paulman—Pierce Great Arrow: Non-starter.

Car No. 19—G. S. Weldely—Premier: One spark coil unit, 1 set universal joint bushings, 1 outside front wheel cone, 1 inside front wheel cone, 1 storage battery.

Car No. 20—John Kane Mills—Dragon: Non-starter.

Car No. 21—Thos. P. Jones—Pierce Great Arrow: No extra parts.

Car No. 22—H. H. Perkins—Packard: Four spark plugs.

Car No. 23—H. C. Shoemaker—Shoemaker: One emergency spring repairer, 1-2 doz. cap screws, 1-2 doz. cap screws, 1-2 doz. cap screws, 1-2 doz. cap screws, 1-2 doz. cap screws, 4 spark plugs, 1-6 doz. grease cups, 1 fan belt, 2 spring bolts, 4 flat keys, 1 pr. tire grips, 1 clutch shifting finger, 2 clutch springs, 1 center plate for universal joint, 1 universal joint pin, 1 doz. assorted taper pins, 1 valve, 1 push rod and 1

roller and pin, 1 bearing, 1 brakeband, 1 cardan shaft.

Car No. 24—W. M. Lewis—Mitchell: One carbureter, 1 commutator, 1 unit Splittorf coil, 1 pump coupling, 1 cardan shaft with universal joint, 4 grease cups for cardan shaft, 4 bushings for cardan shaft, 1 torsion rod block with rivet, 2 turn-buckles for rimbeads, 2 mushroom push rods, 2 oiler belts, 12 assorted split cotters, 12 assorted taper pins, 6 assorted cap screws with nuts, 12 assorted rivets.

Car No. 25—Sid Black—Lozier: Two drive chains, 1 front spring, 2 clutch springs, 1 air valve, 1 spark coil, 1 doz. spark plugs, 2 oiler belts, 2 fan belts, 1 complete set wheel bearings.

Car No. 26—Mrs. A. Cuneo—Rainier: One contact plug, 4 complete ignition plugs, 2 valve cocks, 1 front inside wheel cone, 1 inside front wheel ball roll, 1 outside front wheel cone, 1 outside ball roll, 1 outside rear wheel ball roll, 1 inside rear wheel ball roll, 1 inside rear wheel cone, 4 hose clamps, 1 front hub cap, 1 rear hub cap, 1 front spring, 1 rear spring, 4 spring clips, 5 lock nuts (front wheel), 4 lock nuts (rear wheel), 1 wire for magneto, 3 hose connections, 2 valves, 1 right knuckle, 1 left knuckle, 2 oiler chains, 1 steering drag rod, 1 pair oiler sprockets, 1 spring for stud, 1 rear hub lock and nut, 1 torsion rod spring, 5 sets of hammer igniters of 3 pieces each.

Car No. 27—A. Kumpf—Pierce Great Arrow: No extra parts.

Car No. 28—Paul Gaeth—Gaeth car: One oiler belt, 1 fan belt, 2 valves, 1 pinion shaft (ball race), 1 pinion shaft (cone), 1 set pinion shaft balls, 2 front wheel cones, 2 front wheel ball races, 1 set front wheel balls, 2 rear wheel cones, 2 rear wheel ball races, 1 set rear wheel balls, 1 front spring.

Car No. 29—G. P. Moore—Welch car: One fan belt, commutator complete, 1 pr. valve arms, 1 exhaust valve complete, 4 spark plugs, spring mender, set brake lining and rivets, 2 spring clips and rivets, 1 bumper saddle and strap.

Car No. 30—H. M. Coale—Autocar: Inlet valve cover, inlet valve assembly, exhaust valve assembly, rear axle, 2 oiler belts, clutch spring, 2 T roller bearings, 6 spark plugs, 1 fan belt, 2 inlet valve springs.

Car No. 31—E. S. Lea—Walter: One brake band complete, 1 set foot brake connections, 2 complete hub connecting rods, 3 spring clips, 1 valve case, 1 valve nut, 1 exhaust lifter complete, 1 inlet lifter complete, 1 hub cap, 1 belt for brake band, 3 rubber connections, 1 set of brass bushings for driving shaft, 1 box of assorted bolts and nuts, 16 spark plugs, 30 gaskets, 2 oil pipes, 1 rubber bumper, 1 lot of wire, 1 set of spiral springs, 1 complete rocker arm, 1 clutch collar, 2 extra valves, 2 coil units, 2 thrust washers, 2 fan belts, 1 Universal cross, 1 timer, 4 valve cap washers.

Car No. 32—W. J. Howard—Oldsmobile "A": No extra parts.

Car No. 33—R. M. Owen—Reo: Oiler pipe, auto jack, hammer, master links extra, 1 chain, transmission brake band, ball end, distance rod end, push rod, 1 valve, rear wheel key, rear wheel pin, high speed cone, filler plug, carbureter oil, shut-off for gasoline, box friction tape, 2 bolts for hood to dash, 2 high-speed dogs, clamping screw high-speed spider, starting ratchet and pin.

Car No. 34—R. L. Lockwood—Reo: Extra parts same as No. 33.

Car No. 35—Geo. L. Lyon—Reo: Extra parts same as No. 33.

Car No. 36—E. B. Finch—Pungs—Finch: Two valve stems, 2 fan spindles, 1 pump, transmission shaft, brake band.

Car No. 37—A. L. Peterson—Meteor: Three springs, 2 valves, 2 spring clips.

Car No. 38—H. C. Tillottson—Stoddard-Dayton: Leather valve for carbureter, 2 front wheel bearings, 2 rear wheel bearings, 8 wheel lock washers, coil unit, 2 valve caps, 1 push rod adjust screws, fan belt, carbureter, 2 spark plugs.

Car No. 39—Arthur N. Jervis—Berliet: Four spark plugs, ignition rod, 4 igniter contact levers, 7 igniter outside levers, 8 ignition lever springs, 2 igniter plate gaskets.

Car No. 40—R. H. Johnston—White: Non-contestant.

Car No. 41—I. C. Kirkham—Maxwell: Front spring, rear spring, inside ball race, outside ball race, steering knuckle (right), steering

knuckle (left), 2 valves, drive pinion shaft yoke, drive shaft yoke, 2 yoke pins, inlet spring, exhaust spring, drive pinion grease cup, 2 commutator arms complete, 2 spark plugs.

Car No. 42—R. H. Tucker—Royal Tourist: No extra parts.

Car No. 43—J. W. Mears—Acme car: Two sprocket shafts, 2 compensating shafts, 2 con. rod brasses, 1 steering knuckle, 1 steering knuckle arm, 1 driving chain, 2 emergency brake bands, 1 magneto switch, 1 magneto circuit breaker, clutch spring, 2 sets T wheel bearings, 1 complete set of gear shafts and bearing transmissions.

Car No. 44—Gus G. Buse—Packard: Six spark plugs, 4 valve stem keys, 2 valve springs, magneto chain, magneto carbon, spring clip, universal joint cover, governor diaphragm cover (rubber), governor diaphragm cover (leather), 1 foot hose for water line.

Car No. 45—A. M. Robbins—Aerocar: One valve spring, 12 spark plugs.

Car No. 46—Geo. F. Barr—Aerocar: Two valve springs, 12 spark plugs.

Car No. 47—Walter C. White—White: No extra parts.

Car No. 48—A. J. Scaife—White: No extra parts.

Car No. 49—Chas. H. Burman—Peerless: Two spark plugs, pr. external brakes, 2 universal couplings, live driving shaft, rear wheel clutch plate, 2 spring clips and 5 spring bolts, rear hub cap, air valve, 5 fan belts, 6 R.B.F. annular ball bearings, 4 brake rods, brace for crankcase, 2 water jacket gaskets, 3 pieces 1x1-4 inch hose, inside rear hub, outside rear hub, front drive pinion, rear drive pinion, differential, differential.

Car No. 50—W. C. Straub—Peerless: Pr. external brakes, 2 universal couplings, live drive shaft, rear wheel clutch plate, 2 spring clips and five bolts, rear hub cap, air valve, 2 Timken roller bearings, 6 R.B.F. ball bearings (inside, outside, thrust drive, rear drive, differential, differential), 4 brake rods, 3 water hose connections, 2 spark plugs.

Car No. 51—J. H. Becker—Elmore: Two steering knuckles, 4 cones, 6 ball bearings, 1 bypass screen, 4 cylinder rings, timer, timer clamp, coil unit, 2 trans. brake shoes, 4 universal joint bushings, emergency brake lever dog, 2 Sager equalizing springs.

Car No. 52—Wm. G. Houck—Deere: Two valves, 2 valve springs, 8 spark plugs.

Car No. 53—Deere-Clark Motor Car Co.—Deere: Non-starter.

Car No. 54—Edward Noble—Haynes: Two valve springs, 2 universal joint pins, 3 fan belts, 2 oil pump valves, 2 roller bearings, grease cup, 2 spark plugs, 2 spring shackles, carbureter air valve, 2 rollers for pinion, 4 valve plug washers.

Car No. 55—F. N. Nutt—Haynes: One valve, 2 fan belts, 3 valve springs, 2 oil pump valves, roller bearing complete for front wheel, 1 grease cup, 4 spark plugs, 6 valve plug gaskets, carbureter air valve, 2 rollers for pinion, 2 universal joint pins, 2 spring shackle bolts.

Car No. 56—F. E. Dayton—Columbia: No extra parts.

Car No. 57—A. D. Cressler—Thomas Flyer: Non-contestant; from Chicago to Indianapolis only.

Car No. 58—Lucius S. Tyler—Maxwell: Front springs, rear springs, 6 spark plugs, set external brake sheaves, universal yokes, 2 universal yoke pins, inside ball race, outside ball race, dust ring, felt washer for dust ring, 2 inside cones, 2 outside cones, valve, fan belt, 2 inlet valve springs, 1 exhaust valve spring, 2 spring clips, pr. commutator arms complete with spring.

Car No. 59—Chas. A. Fleming—Maxwell: Front spring, rear spring, drive pinion support, 2 sets brake shoes, right steering knuckle and left, fan belt, spark coil units (2), 14 spark plugs, 2 grease cups, 2 inside ball races, 2 outside ball races, 2 pet cocks, 2 spring

clips, grease cup cover, drive yoke, universal yoke pin, 4 inside front wheel cones, 4 outside front wheel cones, 4 valve springs.

Car No. 60—Wm. Turner—Thomas Flyer: Non-contestant.

Car No. 61—H. G. Smith—White: Non-contestant.

Car No. 100—A. E. Hughes—Pierce Runabout: Carbureter air valve, carbureter air valve spool, carbureter air valve spool nut, carbureter air valve spring, seat air valve, 2 interior brake shoe springs, fan belt.

Car No. 101—C. A. Coey—Thomas Flyer: Non-starter.

Car No. 102—H. E. Coffin—Thomas Flyer: Two valves, valve spring, 4 universal joint bushings, 3 clutch toe springs 3 spring clips, 2 commutator wires, 2 coil adjusting screws, left front spindle, valve stem spools (2), 2 rocker arms, inside front wheel bearing, front spring bolt, spring clip bolt, 3 compression relief cocks, 1 pet cock (brass).

Car No. 103—H. O. Smith—Premier: One spark coil unit, set universal joint bushings, outside front wheel cones, inside front wheel cone, storage battery.

Car No. 104—G. S. Smith—Stoddard-Dayton: Leather valve for carbureter, front wheel bearing, rear wheel bearing, 8 lock washers, 1 coil unit, 2 valve caps, push rod adjusting screw, fan belt, carbureter, 2 spark plugs, driving pinion.

Car No. 105—J. C. Zimmerman—Locomobile: Non-contestant.

Car No. 106—R. G. Kelsey—Matheson: Two extra spring shackles, 1 ignition plug hammer, 1 ignition plug anvil, 2 rocker arms, 4 plug gaskets, 1 set (2) Timken roller bearings.

Car No. 107—Harry G. Stutz—Marion: One pin and shaft, 1 transmission shaft assembled, 1 right hand front knuckle, 1 left hand front knuckle, 1 coil unit, 4 spark plugs, 1 Schebler carbureter, 1 Herz timer.

Car No. 108—H. K. Sheridan—White: No extra parts.

Car No. 109—C. S. Johnston—Continental: Two extra springs, 2 spring clips, 2 shackles, leather belting, 1/2 doz. assorted bolts, 4 spark plugs, 3 pet cocks, lot of assorted bolts, starting crank handle, 2 brake bands.

Car No. 110—A. B. Tucker—Dragon: Non-starter.

Car No. 111—W. Owen—Pennsylvania: Three valves, 1 coil, 1 carbureter, 6 spark plugs, roller bearings for two wheels.

Car No. 112—J. W. Haynes—Dragon: Two fan belts, 2 valves, 2 springs, 2 spring cups, 2 spring cup keys, 1 commutator, 1 clutch, leather and rivets, 1 set Timken bearings complete, 1 oiler gear on shaft, 1 fiber oiler gear, 2 full sets gaskets for engine, 4 spark plugs, 2 rollers for clutch shaft, 2 roller pins for clutch shaft, 4 Hyatt roller bearings, 2 thrust bearings, 1 propeller shaft bearing (long), 1 propeller shaft bearing (small), 1 box assorted cotter keys and taper pins, 1 box lock and flat washers assorted, 1 box assorted bolts, nuts, machine bolts and studs, 3 feet hose, 2 connecting rod bearings, 1 piston pin, 1 piston pin bushing, 4 vibration springs for coils, 4 contact points for coils.

Car No. 113—H. P. Branstetter—Dragon: Same list of extra parts as for car 112.

Car No. 114—James G. Barclay—Thomas: Two valves, 3 valve-spring spools, 3 spring clips, 3 com. wires, 3 universal joint bushings, 1 right front steering knuckle, 1 steering ball joint, 3 toe-springs, 1 spring repair, 1 spring clip bolt, 2 rocker arms, 1 front wheel inside bearing, 1 front spring bolt, 1 steering gear ball arm, 3 pet cocks, 1 commutator roller, 1 vibrator spring, 1 vibrator screw, 1 commutator contact, 1 carbureter spring, 1 main shaft for trans., 1 trans. yoke.

Car No. 115—Wm. Badger—Cleveland: One front spring, 1 set ignition parts.

SEEN AND HEARD ALONG THE ROUTE.

ONE fact is self-evident—there's always a grumble on conditions for contests of any sort. The New Jersey Automobile and Motor Club's 600-mile run, the Long Island Automobile Club's three-day run, the Automobile Club of America's 600-mile sealed-bonnet contest, all were far too easy to be a real test of cars, and the New York Motor Club contest was simply a rank failure because it was too hard, and cars could not be expected to make perfect scores. The Fourth Annual of the American Automobile Association was harder than last year. It was a real test of cars and drivers, but according to some it was too hard, these "some" being in the contest, while to many who did not enter it was not hard enough to try out cars. "Too hard" said one, "Too easy" said another, and all have advice to offer as to how a tour should be run, while few will ever take the time to draw up their conclusions and put them in writing, so that committees may consider them.

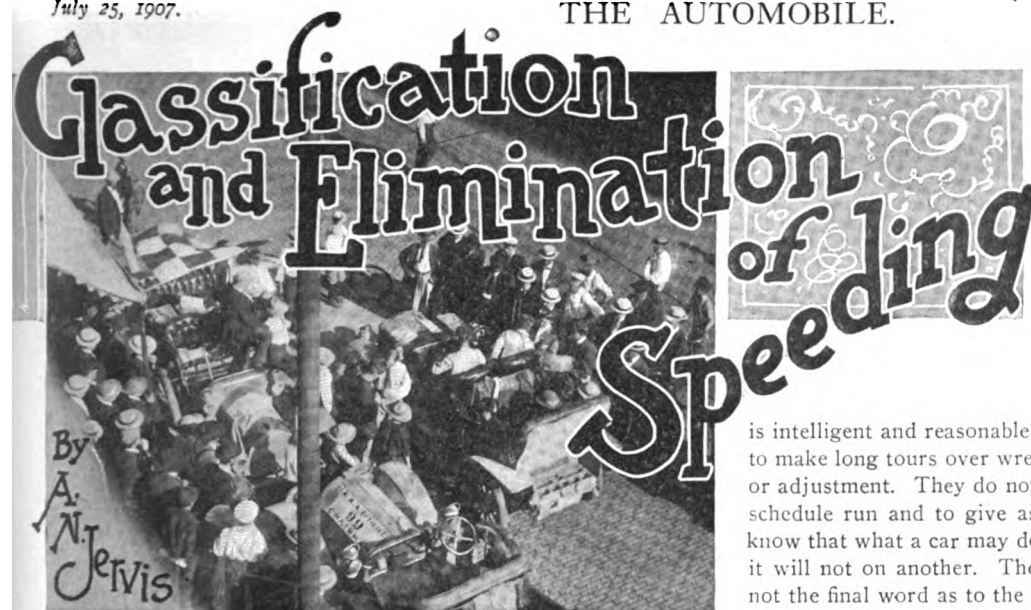
Stone throwing and like troubles nearly caused accidents. Spectators who watched the tour pass seemed to think that the tourists were immune from trouble. Notes wrapped with a stone in paper were pitched into the cars by young girls, and boys threw stones in mischief and without thoughts of danger to the contestants. In one instance a woman threw a wet dish cloth and apples were thrown by kindly minded persons. These pres-

ents and missiles, for they were such in many instances, caused untold agony when they struck the tourists, and in several instances came very near causing trouble through striking the driver.

Since the trip of the Greater Arrow in pathfinding, the roads from Pittsburg to Ligonier had been so improved that time was made in the first half of the Pittsburg to Bedford Springs journey, which allowed a leeway of hours for the latter half of the trip. The eight and one-half hour schedule was considered far too fast when made, but proved an hour too slow for an average on the time made by the cars.

In front of the Auditorium Annex two negroes passing stopped to look and one said to the other: "None but millionaires ride in automobiles." Some of the tourists rather swelled at that, including some newspaper men, and backs became straight, while some felt of their pocketbooks and wondered where the million was going to be found.

The officials required four people in every touring car, but some did not have four all the time, as the water breaks kept at least two in the air most of the time. A few learned to ride the bumps safely by standing, but others took their innings and became rubber balls.



NEXT in emphatic persistence to the impression of the utter crudeness of American roads is that of the wonderful stage of efficiency and reliability to which the automobile has been brought, that it should pound and bounce over them or plow through them day after day for thousands of miles.

The locomotive, on its costly special roadbed and steel guiding rails, is driven along, nursed and cared for constantly by an engineer who knows the machine as a mother does her child, and under all these favoring circumstances the locomotive is not required to go out day after day. It is given a run of 100 miles one day and given a rest the next, being thus relayed all the time. Something in the neighborhood of fourteen locomotives are used to haul the fast trains between New York and Chicago. Yet the lighter and more delicate engine machinery of the automobile is taken out on the trackless trails called roads and bumped along day after day and expected to keep in good running condition without even being cleaned up and attended to over night.

Simply because men demanded it, some cars have been built that will do this, and now it is exacted of them all. It is unreasonable, but competition in the open market compels, and therefore, as an advertisement of the touring qualities of their cars, nothing can be better for the makers than one of these competitive tours if it is sensibly, ably and equitably conducted.

The Old Tale of the Survival of the Fittest.

What the public wants to know about the cars is how much trouble and expense they involve on a long tour. Those who buy cars or are contemplating purchases are entitled to this information when a competitive tour is arranged by a non-commercial organization, of which they are members, such as the A. A. A. What the tour reveals regarding the various cars should be given to the public honestly. There is everything to gain in this. Actions speak louder than words and the performance of a car in a well-regulated touring contest will go further toward establishing a lasting reputation than unlimited shouting and reams of printed argument. The good will stand and the flimsy will fall, and this is what every honest manufacturer wants—to stand or fall on the merits of his product and to see the fit survive while the weak are exterminated. This is certain to happen, whether contests which bring out the weaknesses are run or not, for in no industrial manufacture does the law of fittest survival apply more rigidly. It is fair to assume that every maker is striving to meet the competitive conditions and produce a car that for efficiency and reliability is worth its price, whatever that price is. Those who expect to continue in business must do this. In no other line is it such arrant business folly to build a clap trap article to sell quickly. The maker of such a product in automobiles can have but a very short career. Considering these points, why should not all be willing to see competitive tours run on the

strictest basis of honesty and frankness, without any advertising faking whatever? It is acknowledged that the manufacturers have much to learn before cars will be perfect. They benefit by the instruction, as well as the buying public. It does not spell ruin to have derangements and breakages occur while cars are being put through a strenuous run. That portion of the public which buys automobiles is intelligent and reasonable in the main. They do not expect a car to make long tours over wretched roads without any care or repair or adjustment. They do not expect an \$800 car to make as good a schedule run and to give as little trouble as an \$8,000 car. They know that what a car may do, or fail to do, on one day or one tour, it will not on another. They know that the record of one trip is not the final word as to the merits of a car. It is probable they are less fooled by the misleading reports given out than is supposed. They are too reasonable to suppose that the \$800 car is equal in all ways to the \$8,000 car, just because the rules of some contest permits both to make a perfect score. They do not expect a watch, or a bicycle, a horse and carriage, or a kitchen range to work without regulation and repair, neither do they expect to get as good a diamond for \$50 as for \$500, although they know that a genuine diamond can be bought at the lower figure. It is fatal to try and build up a business in any way that involves fooling the public. Therefore, it is time that all the fog should be driven away from these touring contests. The present one has shown that they can be made of value to both the public and the manufacturer. It is nearer what such an affair should be than any predecessor, although far from being right yet.

Big and Little, All Are Expected to Do the Same.

It is at once too strenuous in some conditions and too lax in others. It is beyond every conception of equity to have cars of all sizes, weights, horsepower and prices competing on equal terms. To those who merely read the reports in the papers one cannot tell but what every car not penalized went through the day or the tour with equal facility. Only those on the tour know the troubles of many that barely pull through and the ease with which others perform the task set. This amounts to misrepresentation and is wrong, because it is a fact that the public is so wise that it is coming to put no faith in the apparent teachings of such events. They know it cannot be true that all these cars of different sorts are equally good performers. They want the truth. The man who cannot afford to pay more than \$2,000 for a car does not expect it to climb mountains and run as fast and be as little trouble and to give as much comfort and last as long as one costing \$6,000. What he does want to know is about how much trouble and expense this or that car is on a long trip and what sort of a time schedule it can reasonably live up to.

To furnish this information the conditions of a contest should be the same in essentials as those of a pleasure tour, but just a bit more strenuous and exacting.

The first thing fundamentally wrong is to frame up rules so that a premium is placed upon speeding, with a time limit as to early arrivals. In all these tours the participants have been encouraged to "beat it" to the night stop, although there is a penalty for being there too early, or, to be precise, for "checking in" too early. Could anything be more ridiculous? The penalty for arriving ahead of time was originally designed to prevent speeding, but the rule of not making any allowance for time spent in making repairs to tires, or cars, for lunching, or for any unavoidable delays, has always induced the drivers to keep as much as possible ahead of schedule in order to have time to spare for unexpected delays. In consequence, the majority arrive at the end of the day's run far ahead of time and then have to stand in the



R. G. KELSEY'S MATHESON ON THE WOOD-SKIRTED HIGHWAY.



ROYAL TOURIST IN COOL SHADOWS OF THE ROADSIDE.

sun or rain till the time for checking in. Could anything be more farcical or more contrary to normal touring conditions?

The pleasure tourist who expects to dine at a certain time and place, if delayed by punctures or other troubles will make up some part of the time, perhaps, but he will not endanger his car and his life to be there at that time, as men have done on the present tour. The rule requiring all lost time to be made up is wrong in every way. It is the one that compels speeding and it is the one that gives out a false impression of merit, because under it a car may be penalized when its running qualities were not at all in fault. Stops should be deducted and a record of them kept, along with every repair and adjustment made.

Elaborate Arrangements Would Be Justified.

Observers would be necessary, of course. It is said that it is difficult to get honest observers. Well, it is difficult to regulate honesty under any conditions. There is certain to be a percentage of deception, as there is under the present rules, and the employment of observers would certainly decrease it.

Some incidental racing to be first at the finish is almost unavoidable under any conditions, although the system adopted on this tour of issuing numbers of the starting order to the cars and having a pacemaker whom none may pass has worked very well. This could be modified so that cars could check in on arrival and not have to stand foolishly waiting for their time.

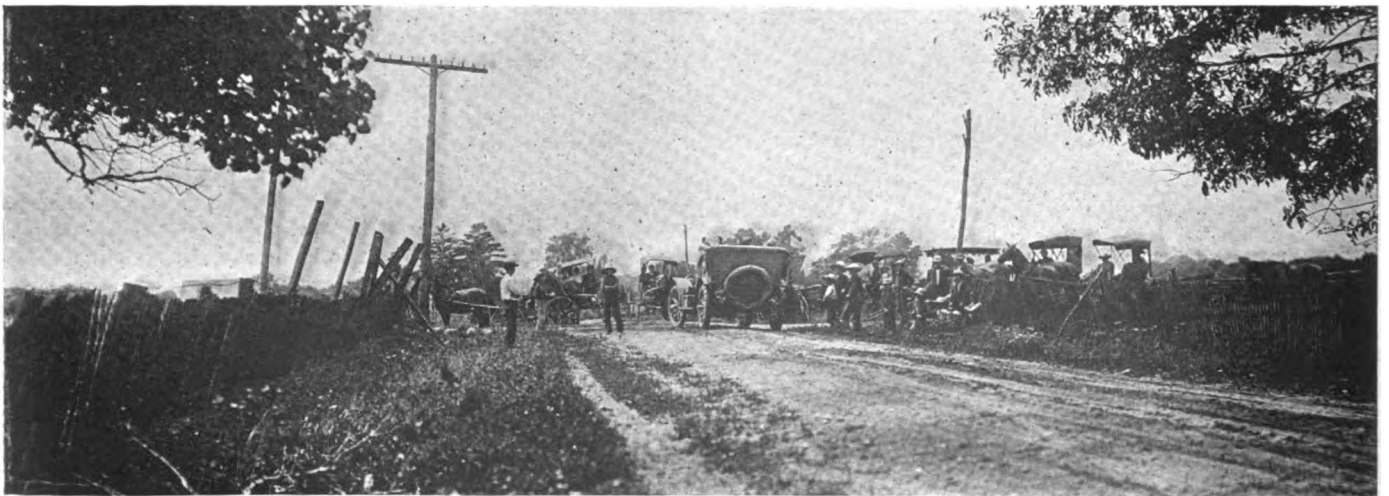
With the cars in classes there would be a pacemaker for each division, of course, and the whole arrangement would be elaborate, but what is worth doing is worth doing well, and one good competitive tour that would really bring out the truth of respective merit, as they have been supposed to do, would seem to be worth while. If a man was to be allowed the time consumed at lunch,

in repairing and in all stops, he would be foolish to risk his chances of lasting two weeks by fast driving. A fairly lively schedule could be made and those who chose to "beat it" might be allowed to do so, for there are wise tourists and foolish ones, but every inducement for "beating it" should be removed. One control a half hour or hour from the finish could be arranged.

An immense amount of detail will be necessary to work out a satisfactory touring contest, but it would appear to be worth while, for with a proper set of rules, that would let every car stand on its merit, it would be "good business" for every maker who really believes in his product to enter several cars. Those that made good would be vindicated and the honest makers of those cars that failed to make good would learn what they wanted to know—their weak points.

WILL THE FARMER INSIST UPON SPEED HIMSELF

"We read in a newspaper that a large manufacturing company is about to engage in building family automobiles for the farmers, but designed for room and ease for the farmer's family rather than for speed," says the *Delaware State News*. "Well, we never saw a genuine farmer yet who would buy an auto that hadn't speed and couldn't just split the air. The farmer now howls at the speed of the auto sports because he must take their dust and insolence. But if he had a machine himself he would undoubtedly let her whiz. Unless his old hoss is well on the road to the graveyard, a farmer will not permit another farmer to drive by him on the road now without a sprint. He is up on his high speed mettle all the time and prides himself on cleaning out any kind of a road race, as much as a school girl glories in being the belle of the school."



HAY MOTOR DRIVERS WATCHING THEIR RIVALS AT THE WHEELS OF THE "BENZINE BUGGIES."

The Details of the Days' Runs



ARE there any roads in the United States way by main strength over every foot timore on primeval cowtracks and through sharp declivities and hurtling down them their spinal columns over endless water—has come to the decision that there are not. human endurance on one side and arti—other, days become whole epochs in the that springs eternal that each one battles

daily endeavor, and it is with a heaven-sent feeling of relief that each one draws up at the finish and receives his formal release—another day nearer the coveted goal. And this for the everlasting honor and glory of the American automobile and its builder, who has demonstrated that no conditions are too severe, no test too gruelling to be overcome with credit to itself by the fabric of iron and steel he has produced. Some day we shall have many miles or real roads. There's might in the automobile's growing army.

that deserve the name? Since fighting their of the distance between Chicago and Bal-veritable sloughs of despond, climbing to the imminent danger of dislocating breaks—each and every one of the tourists In the struggle between mechanical and ficially aggravated natural obstacles on the lives of the tourists. It is with the hope forth to perform his strenuous round of

WHAT HAPPENED ON THE SIXTH DAY

COLUMBUS, O., July 17.—There was some excellent going on this day, despite the fact that the rain of the previous night had raised some havoc with the surface of the Old National Highway, which figured for 106 of the 174.2 miles that constituted the allotted task. A thunderstorm soon after the start drenched the tourists, and the ruts, full of water, supplied a musical splash that made the traveling somewhat skiddy. At Greenfield, twenty miles, traps were said to exist, and so the procession poked its way through town, cautiously and with due respect to the law. Just about this time Old Sol's ruddy face came through the clouds, and the day took on a new aspect, and life was again worth living.

Cordiality and hand waves and flags marked the tour's path-way, and occasionally a bouquet found its way into a car, thrown by a rosy-cheeked lass who often supplied her name for a souvenir postcard. Lewisville enforced the speed limit vigorously, and there seemed a slight hesitancy in the greetings of tourist and onlooker. In other towns there was manifest great disappointment that the pace was not more rapid, and one small boy summed it up when he contemptuously said: "Why, I see 'em go faster every day than you fellers!"

At Dunreith a sign told that the new Maxwell-Briscoe factory was only ten miles away at New Castle. "Come over and see us!" was the invitation, but unfortunately we didn't have time.

Beyond Westville the Indiana barefoot boys and girls—some of the latter of pretty good size—were replaced for more shoeless boys and girls of Ohio. Freckles bedecked their countenances just the same, and sunbonnets and red calico dresses continued stylish in the villages and the country. The scent of new mown hay seemed equally sweet and the harvesting of acres of wheat and oats was moving apace. The country looked prosperous, and the farmers and their families welcomed the passing of the autos in holiday mood and with enjoyment.

At Dayton we bade adieu to the National Highway, said hello at the Stoddard-Dayton factory, got gasoline and lunch for nothing, and continued on our way rejoicing. Just as we entered the lively town the Speedwell Motor Car Company had thrust baskets of thirst quenchers into our cars.

Springfield's wideawake automobile club did a kindly act when it told us to beware of the water bars encountered soon after leaving the town, denoting the nightmares of road building by little red flags. The road, however, didn't prove half bad until we were within a dozen miles of Columbus, when it turned into a rutty road with all sorts and kinds of holes, and we bumped along until the welcome brick pavement was struck at the city's limits. The Columbus Automobile Club entertained in the evening at its headquarters in the Hotel Hartmann.

Steady, Regular Running Was Required.

Over the 174 miles of road between Indianapolis and Columbus few mechanical troubles made themselves visible. Nothing more was required of the machines than steady, regular running for nine hours and nearly all responded to the call. The exceptions were No. 24, Mitchell, which lost a little time on the road owing to ignition trouble, but which would have still reached control on time had not a puncture occurred during the last fifteen miles. A plucky attempt was made to get in on time by driving into Columbus at top speed, but it was then too late to make up the loss and 98 points penalization awaited the car.

With one exception all the Hower runabouts finished the day's run with perfect scores. C. S. Johnston, the owner of No. 109

Continental, was the unfortunate. At Richmond an officious policeman detained the driver for several hours. Misfortune still tracked the Hower contestant, this time a collision with a trolley at Dayton. Mr. Johnston, realizing his chances destroyed, retired.



MODERN TYPES OF CONVEYANCE AT THE INDIANA-OHIO STATE LINE.

THE SEVENTH DAY ARRIVAL AT CANTON

CANTON, O., July 18.—This figured as an eventful day in the history of the tour. There was as poor going getting out of Columbus as there was reaching its hospitable precincts. "Spaghetti Chief" Lewis went astray at Frazeyburg, some 55 miles onward, and the Maxwell and Premier climbed a mountain and climbed down again—some seven miles of the toughest sort of wasted effort—and before the error was corrected several cars, including that of Chairman Hower, had followed suit. Beyond Port Washington there is an abrupt turn with a bridge that jumps over the canal, and here several had to employ skill to avoid accident. One came to grief.

An average country road extended to Massillon, where the Jewel is made and where the most hospitable Cantonians first gave greeting to the visitors.

"Come in, the town is fine. It is yours."

That tells the story which was to conclude early the following

up an embankment and ditched. No. 90 Packard press car was close behind with disabled Deere No. 52 in tow, and the combined crew soon placed the Meteor on the road again, uninjured.

The worst accident of the day was that which befell W. G. Houck's Deere car No. 52. Near Port Washington the steering gear snapped, causing the automobile to shoot over the embankment into the canal. When the car was put on the road again it was found that the engine and transmission were intact, but that the steering apparatus was hopelessly disabled. Tom Fetch, who came along with Packard press car No. 90, rigged up a temporary steering control of an exceptionally ingenious nature. The emergency brake lever was dismantled and attached to a tire tool mounted in makeshift bearings across the fore end of the running board and secured to the connecting link. No tools or part not carried on the car were used for this clever piece of work. Two men were needed to operate



CARS PARKED FOR THE NIGHT ROUND THE SOLDIERS' MONUMENT AT INDIANAPOLIS.

morning when on the outskirts of the attractive little city a banner was to read:

"Good-bye! Good Luck! Here's to the Winners."

Mayor Turnbull, Committeemen F. C. McLain, H. A. Croxton and associates met Chairman Hower and gave to him the key of the city. Lakeside Park was open to the dust-grimed company, which was specially entertained at the Country Club across the lake, with His Honor, the Mayor, acting as the director of ceremonies.

How the Unlucky Ones Suffered.

The road surface for the day was never very heavy and was everywhere dry, yet there was such a succession of ruts and breakers, difficult grades and dangerous turns that it was impossible once time had been lost to again make good.

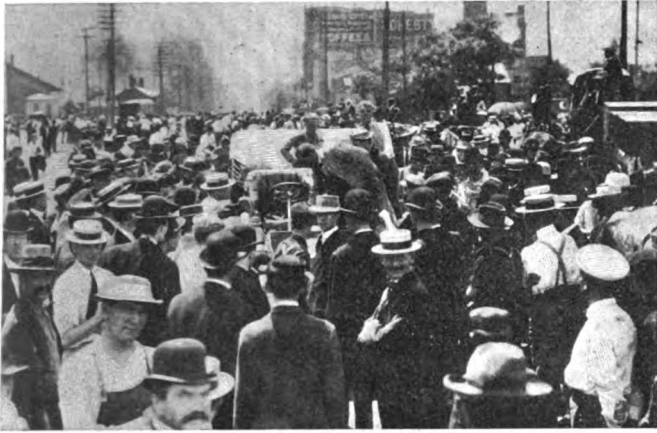
Early in the day A. M. Robbins, driving Aerocar No. 45, withdrew from the contest with a broken clutch. His previous record had been a clean score all along the line.

Meteor No. 37, entered and driven by A. L. Peterson, suffered from a leaky radiator, which on the hilly road made it impossible to continue. On a quiet lane the radiator was dismantled, the soldering iron heated at a nearby cottage and the leaks soldered up. A couple of hours later the car missed a sharp turn, ran

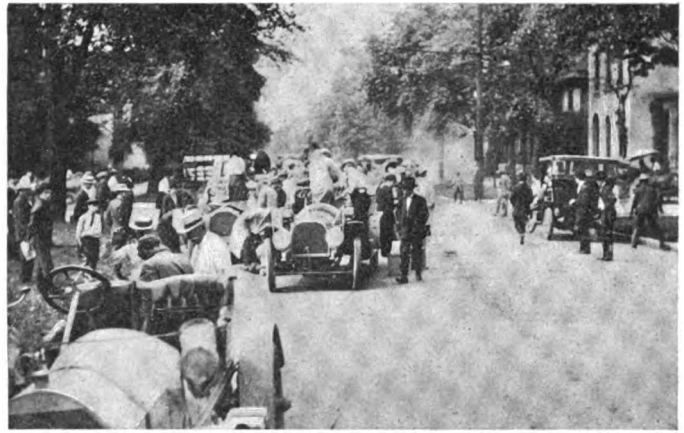
the car, one on the running board to steer and another to control the engine and change gears. For a mile the Deere was towed by the Packard, but when it was found that the steering gear acted satisfactorily, the tow rope was cast off and the machine brought in under its own power.

No. 31 Walter, entered by E. S. Lea, after a sharp turn off a bridge, shot over an embankment, a drop of about ten feet, without suffering any injury. Put on the road, it was in such good condition that it got into the control on time.

No. 43 Acme entered Canton with a loss of 42 points, the hard going having caused a bit of trouble in the rear axle. Gus G. Buse, who had retained a clean score up to this point, and looked upon as one of Buffalo's best representatives, suffered to the extent of 91 points. About sixty miles from home he passed the writer, who at the time was jogging along easily in the White non-contestant, driving at a very rapid rate. According to a rough calculation, he was making a last desperate attempt to reach control by racing over the rough roads. As we were the last on the road and had taken careful note of all lame contestants, the report that Gus G. Buse lost time through missing the trail in Coshocton appears to be correct. All the Hower runabouts—seven of them being still in the running—finished with perfect scores.



[TOURISTS THE CENTER OF POPULAR INTEREST AT COLUMBUS.]



CANTON'S SHADED STREETS PRESENTED A SCENE OF ANIMATION.

EIGHTH DAY THE HARDEST OF THE TOUR

PITTSBURG, PA., July 19.—Enthusiasm galore greeted the arrival in this smoked hustler of American cities, but the ride from Canton—just under a century in distance—was the hardest run of the tour, and the schedule of six hours compelled some fast and skilful driving, especially during the route through Allegheny and Pittsburg right up to the entrance of the Hotel Schenley. But the mayor had prepared for the unusual occasion and police lined the streets and held back the thousands who shouted and waved as the smut-faced drivers and passengers whirled along at speed never before allowed in this city.

For the greater part of the way from Canton the going was simply frightful. Near Columbiana the "Firestone Homestead," a summer outing place of the Firestone Tire Company, the most palatable sort of a lunch was handed to the flying squadron as it temporarily stopped in its rocky progress.

But the worst section of the journey came in getting into Allegheny. At Freedom, some thirty miles out, "Phil" Flinn induced a change of route in reaching his native city, and there are some who believe the book would supply the better going. It is safe guessing that any route into Pittsburg is pretty bad, and it is a fact that the one followed figured as the worst stretch of road of the tour.

At the Schenley there were good accommodations, and the Pittsburg Automobile Club added to the festivities by a band for the afternoon and evening. President Kneeland, Secretary Paul C. Wolff, Dr. J. A. Hawkins and other club members were much in evidence, for few of the tourists had the ambition to accept the club's kindly invitation to call at its downtown headquarters.

Six clean score Gliddenites and one clean score runabout failed to make the schedule time of six hours. Altogether ten touring

cars and two runabouts had penalizations placed against them on the eighth day's running, proving that the test was the most severe of any to which the cars had been put. Had not the police of Allegheny lent that valuable aid and Grand Boulevard been opened for a fast final spurt several others would have been unable to accomplish the run on the very restricted time allowance.

Those That Were Unlucky and Met Penalizations.

F. J. Pardee, driving American Mors No. 10 for clean certificate only, lost his chance of victory through tire trouble; his wild dash over the last ten miles failing to bring him to the checker's line when he was clocked to report in. "Sid" Black, piloting Lozier No. 25, arrived with a time penalization of 57 points. For a couple of days he had been struggling with his front springs, one of which had broken as early as the Chicago-South Bend stage. When both smashed it was impossible to maintain the strenuous pace any longer.

Mrs. Cuneo, who commanded much attention all along the tour, had eight points placed against her for her late arrival, due to the breaking of one of the front springs of her Rainier No. 26. Gaeth No. 28, driven by Paul Gaeth, lost time on the road principally on tires and had his perfect record destroyed by a penalization of three points. No. 37 Meteor arrived very late, having had further trouble with a leaky radiator. On a previous day the starting lever had been bent in such a way that whenever the motor was cranked the lever bore upon the lower part of the radiator and broke away the tubes.

The little Maxwell No. 41 also tarnished a clean score by a time penalty of 37 points. Acme No. 43 reached control with a loss of 27 minutes as the result of a weakened rear axle.



THE APPROACH TO PITTSBURG WAS VERY PICTURESQUE.



DAY OFF AMONG THE SUMMER MAIDS AT BEDFORD SPRINGS.

Another of the perfect score men to meet with misfortune was F. N. Nutt, driving No. 55 Haynes, with a penalization of two points for late arrival. No. 58 Maxwell, a machine with a previous good record, lost three points, also for late arrival.

Among the contenders for the Hower runabout trophy John Haynes, driving Dragon No. 112, was the most serious suffered.

The fan pulley sheared off when the car was ahead of its schedule, necessitating a repair of such a lengthy nature that there was little chance of reaching control on time. Later a blow-out, while traveling at a rapid rate, placed the Dragon hopelessly in the rear. H. E. Coffin's Thomas Forty No. 102 received its first penalization for late arrival, the loss being 77 points. The White and Stoddard-Dayton were comfortably on time.

NINTH DAY THE ALLEGHENIES WERE CLIMBED

BEDFORD SPRINGS, PA., July 20.—Out of the deceptive haze of the Smoky City the dirt-caked and bedraggled procession this morning emerged, and, truth to tell, had they been on horseback instead of in autos they might with few exceptions have been taken for present-day Coxeyites. The other afternoon, while viewing the passing through Massillon, "General" Coxe is said to have remarked that the autoists gave his former "army" a close call in appearances.

Through Wilksburg and then winding down into Turtle Creek, in and out of Wilmerding, and next East McKeesport and the Greensburg pike began. The pall of soot seemed to be thinning and there were patches of light in the sky. Twenty miles there were occasional bits of climbing, and the tourists expressed delight at finding that the water bars were being lessened in number by laborers who worked sturdily. It was learned later that Congressman George F. Huff of Westmoreland county was the man who had given the final word that resulted in lessening these cuss-word producers. Greensburg is the Congressman's home and it is a smart city and thoroughly up-to-date.

It is up and down to Youngstown, and a couple of miles beyond the route paralleled Loyalhanna river, the valley rich in foliage and deliciously cool. The climb of the Chestnut Ridge wasn't hardly worth talking about, and the worst encountered came in the way of a soft spot on the level road near Ligonier. A rough clay hill, next Laughlinstown, and then the string of panting autos tackled the four-mile dig up Laurel Ridge. Rain threatened and at the top a fog enveloped the summit and shut out the picturesque views possible in all directions on a clear day. A coast of two and a half miles down to Jennerstown caused some burning of brakes.

Stoyestown lies at the base of the Alleghenies, and 'tis an upward journey, with occasional variations of downward dips, to the summit, near which is Buckstown, where the farmers for miles around were picnicking for the day, drawn thither by the

passing of the autoists. Sunshine broke forth and the eight-mile coast to the foot disclosed scenic beauties in profusion. Of course, the water bars had kept everybody bouncing about and cussing, and some of the inexperienced mountain drivers did more or less damage to their weakened cars.

'Tis an attractive spot, this Bedford Springs Hotel, where a rest is scheduled for over Sunday, and Manager Wing exerted himself to the utmost to provide for the autoing army, despite the already crowded condition of the well-conducted hostelry.

Some Penalization Came in the Crossing.

With but very few exceptions the sufferers on the ninety-seven miles of mountain climbing were those whose machines had been weakened on previous stages. Columbia No. 56 stripped all gears but the high and was unable to make the journey. Meteor No. 37, after making arrangements to solder the leaky radiator when the motor had been cranked, and cover the distance without stopping the engine, entered into collision with a trolley car and was obliged to remain in the neighborhood of the Smoky City until next day, arriving at Bedford on Sunday night.

Deere car No. 51 was patched up for the run and reached Bedford Springs in a tottering condition, stripping the intermediate gear on the way. To bring it over the mountains after the injuries it received through falling into the canal was a remarkably plucky performance on the part of the driver.

Acme No. 43 stayed behind several hours to repair a damaged rear axle, being heavily penalized for late arrival. Despite his bad position and weakened axle, J. W. Mears declared he would continue as a contestant.

T. P. Jones, driving Pierce No. 21, after a nine days perfect performance, trailed in late and incurred a time penalization of 90 points. The delay was caused by five punctures and two blow-outs and by Mr. Jones' young son being thrown out of the tonneau and having to be attended to by a doctor. This penalization spoiled



WHERE THE LONG ROW OF DUSTY CARS WERE GARAGED OVER SUNDAY IN THE FIELD AT BEDFORD SPRINGS.



BURMAN (PEERLESS) TACKLING 1863 WATER BREAKS OR "THANK-YOU-MA'AMS" THAT CORRUGATE PENNSYLVANIA ROADS.

the Pittsburg club's clean Glidden score and placed Buffalo in lead.

Mrs. Cuneo had been delayed on the run to Pittsburg by a broken front spring, which called for further attention before Bedford Springs was reached. For the last few miles, where speed was possible, the lady driver made a bold dash for home and was rewarded by a rousing cheer from those gathered in the hotel grounds. The inexorable checker, however, marked down three points for late arrival.

When everybody at Bedford Springs had retired for a well-earned rest, Mitchell No. 24 slipped into the ground, unofficially checked of course. Both front springs being broken, the run over the mountains had been a run in name only. W. M. Lewis announced that he desired to continue as a contestant and insisted he would complete the tour at any rate.

Hower trophy contestants suffered heavily during the day. A. E. Hughes, with clean-score Pierce No. 100, had a series of tire troubles and a few mechanical difficulties, which caused him to arrive with a time penalization of six points.

H. E. Coffin, on Thomas "40" No. 102, when trying to pass a touring car at high speed outside Pittsburg, went into the ditch and broke the front spring.

H. O. Smith's Premier No. 104, with a clean score at Pittsburg, was unable to continue owing to the driver, Harry Hammond, falling ill and no substitute being available.

Up on the mountains, miles from any village, Wallace Owen was stranded with his Pennsylvania runabout, also a clean scorer. An encounter with a stony stretch of road broke a steering arm. At noon on Sunday the idling crowds in the Bedford Springs

Hotel grounds were suddenly awakened to life by the appearance of Owen on his runabout, evidently in good shape, the broken steering arm having been replaced.

Only two men, G. S. Smith on a Stoddard-Dayton and H. K. Sheridan on a White steamer, now remained with clean scores out of an original list of eleven competitors. John Haynes arrived on time and was checked in as perfect, but as he had stripped a gear on the journey, had previous penalizations and had no intention of continuing as a competitor, the contest for the Hower trophy narrowed down to a duel between the Stoddard-Dayton and the White.

S. Black, in charge of Lozier No. 25, Sunday afternoon drove into the hotel grounds with his two front springs patched up with stays and buffers and one rear spring in a weakened condition, having successfully crossed the mountains.

BEDFORD SPRINGS, PA., July 22.—When early risers looked down into the hotel grounds this Monday morning they were surprised to find that a couple of runabouts had slipped in quietly during the night. R. G. Kelsey's big Matheson, No. 106, withdrawn several days before with a broken connecting rod, had made a night journey, as was evidenced by its searchlight and lamp for speedometer. Thomas runabout No. 114, attending to Warner speedometer business, had come in on a flat tire, with a weakened right front spring, and a left front spring which had not formed part of the car's make-up when the tour began. The driver, J. G. Barclay, on retiring for a well-earned rest, gave orders to be called at an early hour, but only woke when the tire cars had gone, and so had to await the arrival of a new set of tires.

TENTH DAY'S SCENIC BEAUTY WASTED ON CONTESTANTS

BALTIMORE, Md., July 22.—The route of to-day's 140-mile run supplied scenic beauty in abundance, and though they had what proved to be a most liberal schedule in ten hours for the journey none of the contestants and few of the others took time to observe the grand country through which they passed. From Bedford to Foltz there was mountainous driving, some forty miles, over Rays Hill, Sidling Hill and Scrub Hill, and then the conquering of Tuscarora Mountain. Of course, there were the water bars, but the roadbed was solid and the scenery alluring in the extreme. The Little Juniata River was followed in the early miles of the run, and the rippling stream, gurgling along, often underneath a canopy of foliage, supplied an inviting pacemaker. The red dirt road was dusty and there came discomfort when the cars bunched.

Descending Tuscarora Mountain, its side revealed panoramas of scenery the thorough enjoyment of which was spoiled by the

incessant water bars, which the drivers continued to cuss long and loud and the tonneau passengers added much strength to the vociferous expletives.

At Foltz the pike into Hagerstown began, but before that city was reached there came an easy climb of the Blue Ridge Mountains, which contributed scenery less rugged than that of the Alleghenies, but possibly more pleasing to the eye. How good that pike felt is easily imagined, for despite the fact that it contained water bars these spoilers of pleasure traveling were not of such an obnoxious sort as those met with in Pennsylvania.

Maryland's hills looked like a "Garden of the Lord" to the famished auto horde, and its red brick houses, whitewashed barns, and stone fences, with fields of grain, harvested and stacked, presented a picture that few saw as the winding ribbon of road wore away beneath their flying car.

Some did stop for dinner in historic Frederick, with its Bar-

bara Freitchie lore, but the greater number followed close on the heels of Chairman Hower's pacemaking car and scurried for the outskirts of Baltimore, there to kill time until they could report at the night control.

It was a pity that the grandest day's run of the tour should have been so scantily appreciated except by a handful.

One Perfect-score Car Loses Its Place.

The New York Motor Club was a severe sufferer in the day's run, owing to the heavy penalization of Stoddard-Dayton No. 38 to the extent of 142 points for late arrival, and of Mrs. Cuneo also for late arrival with her Rainier No. 26. W. W. Macdonald, the Stoddard-Dayton driver, had brought his car to every previous control with a perfect score, but was seriously delayed on this stage by the brakes burning out. Later a pin sheared on the transmission brake, causing a further loss of time.

Mrs. Cuneo's Rainier, which started out with a broken front spring, had a blowout of one of the front tires, which rendered the car momentarily unmanageable. It swung off the road between a telegraph pole and a tree, bending the front axle so seriously that a lengthy stay had to be made at a nearby blacksmith's shop.

Excepting the Elmore, which arrived three minutes late, owing to water circulation troubles—the fan having broken and the driver refusing to remove the seals which he had placed on the car at the commencement of the trip—and the already heavily penalized Mitchell, which obtained 60 points more, all contestants finished the day's run perfectly.

No changes were made in the position for the Hower trophy, the White steamer and the Stoddard-Dayton remaining with perfect score, while A. E. Hughes retained his previous position with Pierce No. 100 penalized a total of six points.

ON THE ELEVENTH DAY THERE WAS DUSTY RIDING

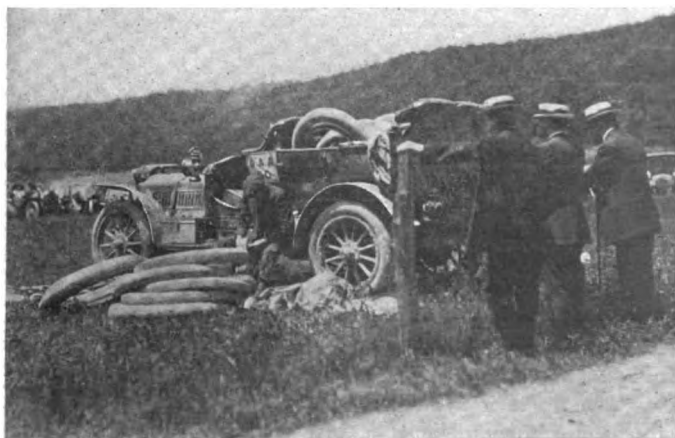
PHILADELPHIA, July 23.—There was little of pleasure touring in the long 174 miles roundabout run from Baltimore, over roads which spilled dust and reeked with water bars—that abomination inflicted upon highway travelers by the roadmakers of the Keystone State. The Marylanders are similarly partially guilty, but not to the extent of the Pennsylvanians.

In the vicinity of Hanover there is one T. J. O'Neill, vice-president of the Automobile Association of York county, and he and his associates have convinced some of the road supervisors that water bars are not essential to the life of a highway, and on both sides of Hanover there was a welcome relief from these preventives to automobile enjoyment.

To-day in Hanover the way into, through and out of town was marked with white flags, and two railroad crossings were specially guarded, as the dusty caravan flew along. As it entered York a sign placed by the A. A. of Y. C. told that the speed law was being strictly enforced. Sure enough it was, for a chain of "cops" extended through the entire town, the inhospitality of which will be remembered for some time to come. One might have thought that a band of desperadoes were coming, of which the town desired to protect itself from.

The numerous toll gates, the soft roads and the innumerable water bars made the run one of the most trying and disagreeable of the tour. At Lancaster the local automobile club supplied appreciated lemonade that washed out the throats of the parched tourists.

Near Philadelphia, at Glen Loch, the enterprising *Press* had hung a banner of welcome, at which were given pennants that carried the incoming cars past all the remaining toll gates without the annoyance of shelling out small change and stopping. Light refreshments also were tossed into the cars.



UTILIZING THE THOMAS'S GENEROUS LOAD OF GOODRICH TIRES.

At Bryn Mawr the Pennsylvania Auto Motor Company made an acceptable gift to the arrivals in the form of baskets of fruit, chilled and palatable.

"We wish you all success," the accompanying card said, though "Wally" Owen, the company's representative, had met with misfortune on the rough Pittsburg-Bedford section and mournfully came along of necessity as a non-contestant.

At Ardmore the Autocar Company said on a banner across the road: "If we can help you, stop!" But the kindly offer did not find many takers, the Quaker City being too near at hand.

To-night the Quaker City Motor Club vociferously entertained the tourists at the Majestic Hotel, Mayor Reyburn officially welcoming the party to the city. The Automobile Club of Philadelphia and the Automobile Club of Germantown also extended courtesies to the visitors.

Score Changes of the Day.

Although all the clean-score men for both Glidden and Hower trophies maintained their position, the day was responsible for a number of penalizations among those who had already suffered. Haynes No. 55 at an early stage of the journey had to abandon with a broken rear axle, after having done nine days clean running and been penalized two points on another day.

F. J. Pardee, driving American Mors No. 10, was in exactly the same position as the Haynes driver. For nine days he had run clean, on one day had a minimum penalization and to-day fell down entirely through having to change his left rear spring and repair a broken leaf of the right rear spring.

Mrs. Cuneo arrived in Philadelphia on her Rainier No. 26 about half-past 8 o'clock and was penalized 191 points. On the tenth day the breakage of one front spring caused her to incur a penalty of 426 points, and, the opposite side having given trouble to-day, she went still further down in the list. To bring the car in under such conditions required a large amount of courage on the part of the lady driver—courage which was rewarded by a rousing cheer from those gathered about the hotel—for one spring was propped up entirely by buffers of various kinds and the other was patched up with half leaves and could have had very little life.

In No. 7 Welch, driven by F. S. Welch, a very promising competitor was wiped off the list through the breaking of a crankshaft. The Welch's previous performance had been twelve points on the first day for a road accident in no way imputable to the mechanism, and a clean score on every succeeding stage. This failure caused the Automobile Club of Detroit to be wiped out of the competition for the Glidden trophy.

Meteor No. 37 arrived on schedule time, but owing principally to a damaged radiator and a collision with a trolley car the automobile had been out of the competition for a couple of days, A. L. Peterson's object in continuing being to get a certificate for having covered the entire distance.

Along the Road and at the Night Stops~



WALTER C. WHITE IN HIS WHITE STEAMER ON THE ROAD NEAR INDIANAPOLIS.

A Good-Roads Auto Caravan.—Reflecting upon these things, it occurs that the best way to campaign for good roads would be to have just such a caravan of automobiles as composes the present A. A. A. tour carry a delegation on a long tour, instead of their traveling about by train, as they now do. In this way they would, first of all, speak with the feeling of personal experience, and, secondly, they could make their appeals in the various localities effective by employing the pointedness of local conditions. Through Ohio, Illinois and Indiana are to be found rich farming districts, where the sturdy agrarians get but one day's wage for the toil of two days, because what they harvest from the fields on one day it takes them one full day more to realize upon in cash, the second day being spent in the haul to market and back, whereas good roads and the modern vehicles that are concomitants would reduce their hauling to fully half the time. It takes the concrete example to reach the bucolic mind, and, therefore, such a campaign as suggested, with the evangels of road improvement gathering the data for local argument as they proceeded, would probably be more effective than any yet conducted, for at the bottom of this whole road problem is the blindness of the farmer to the practical benefits of good roads and his unwillingness to submit to taxes for highway improvement.

But It Is Inaccessible.—In the Alleghenies the tourists passed through one place where there was tossed into each car a well printed and floridly written pamphlet extolling the merits of the place as a summer resort. It was a puny bit of a village, but, as the book said, it was "dropped like a gem in the setting of the grandest mountains," and it really might become something of a resort if there were some way of getting to it, and opportunities for riding, driving and motoring after one was there. Yet the minds of the people had not been opened to the paramount necessity of accessibility and of good roads in the vicinity of any resort, so they were spending money advertising before they had the goods, instead of getting busy on road improvement. If this place was visited by such a touring party as suggested, and the Supervisors taken for a trip in the cars, the situation could be made clear to them as in no other way. They would realize that first of all they must have the roads, and the building of them would, in the majority of cases, begin forthwith.

Brakes Were Well Tried.—On Saturday, when the trip over the Allegheny summits revealed how much brakes have been improved and how much there is yet to be done in this direction, the Berliet car, which had been a more or less sensational performer all along, was revealed as being dif-

ferently fitted in this respect than any other. It raced up and down the hills and bumped along without any trouble, just as it had been doing every day, and it was wondered why its brakes did not heat up. Investigation developed the fact that it can alternate its braking system in four different applications. The clutch can be thrown out and the gear lever set at neutral, so that the driver does not have to hold the clutch pedal back with one foot, but has them both free for the two foot brakes. Then he can alternate with the foot brakes the emergency hand brake, and can also brake with the engine.

How Goodrich Looked After Its Users.—A big Thomas Flyer, with its capacious tonneau stocked with outer shoes, inner tubes, repair outfits and detachable rims, was constantly on the search from Cleveland to New York for Goodrich tire users in need of a replenishment of their stock. H. C. Miller, general representative of the Goodrich Company, had charge of the tire equipment, with W. H. Rutherford assistant, while W. Turner sat in authority at the wheel. It was an exceptionally heavy load that the Thomas carried in its tarpaulin-covered tonneau, yet the car was never delayed by tire troubles of its own. To carry a load of tires insures freedom from tire trouble, declared the Goodrich representative. Other travelers on the 1,600-mile journey had their reasonable share of punctures, but were never troubled with blowouts.

Our Alleged Roads.—From the first day out the impression that has been at once primary and paramount is the wildness of American roads. It strikes one that all the fine phrases about the conquest of the West and the subjection of the wilderness is merest moonshine, when twenty miles from the principal cities of the various States are found alleged roads that in reality are old trails, practically unimproved since the early settlers used them. Perhaps the road conditions were no great surprise to any one, because such execrable highways are to be found in the native State of every American; but the long stretches of primitive clay roads, running through fertile farming districts and connecting important cities of the Middle West, gave to those who had not toured this section before a new and very vivid appreciation of the need of a main pike between the cities.

Something About "Napoleon" Hower.—As the tour progressed the participants grew to like Chairman F. B. Hower much better than they did at the beginning. It became apparent that in his autocracy he was showing no favoritism, but ruled impartially and without vacillating. His task was difficult and at times exasperating, but he was always ready to hear what any complainant had to say. Mr. Hower is

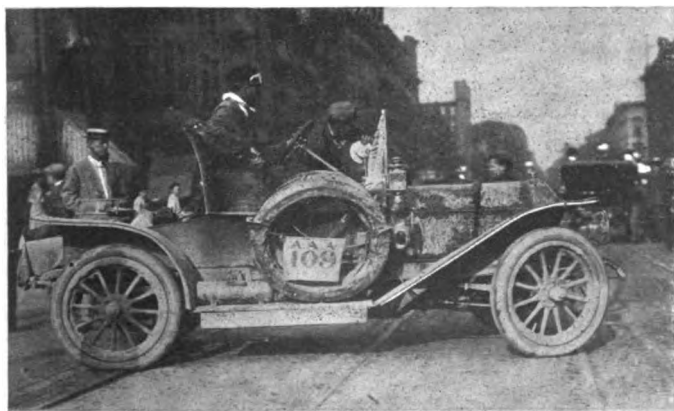


JOHN HAYNES AND THE DRAGON ARRIVING AT INDIANAPOLIS.

the first vice-president of the Automobile Club of Buffalo, and will probably succeed to the presidency next year. For ten years he was commodore of the Buffalo Yacht Club, and his services were so acceptable that the only manner in which he escaped a further continuance in office was to sell his boat and thus become ineligible.

How Diamond Tires Were Supplied.—Diamond tire users had their stand-by in a White steamer, fitted with a special body for carrying casings, tubes, repair outfits and tools, which accompanied the competitors and gave help where help was needed. H. G. Smith, of the Diamond Tire Company, had charge of the equipment, and H. E. Stein drove the steamer throughout. A stock of about eighteen casings and fifty tubes were carried continuously on the car, the provision being renewed each night from a large quantity traveling from point to point by rail. Tire assistant is a strenuous occupation, declared H. G. Smith, for the relieving car must be out first and come in last, and when control is reached a busy time is spent getting in touch with the various drivers, noting their wants, arranging for the shipment of old stock back to the factory and the forwarding of the new material to the next stopping point.

The Sealed Bonnet Maxwell.—One of the real marvels of the run from Chicago east was the keeping of the pace by Charles Price's little 16-20 Maxwell, that has been running with its bonnet sealed since June 28, when it started in the Chicago reliability run. Afterward it was one of the winning team in a six-hour race at Peoria, Ill., and ran until the last hour of the 24-hour race at the Harlem track, Chicago, on July 13, until it was put out of business by a collision. Its seals remained intact, and during the tour they were inspected every day by David Beecroft, of the committee of the Chicago A. C., who first put them on.



JOHNSTON'S CONTINENTAL RUNABOUT, WHICH HAD HARD LUCK.

Greetings Along the Line.—While there were cities and towns on the route of the tour that gave slight heed to the passing of the motor-driven procession, enthusiasm as a rule was contagious, and the greetings of onlooker and autoist were simultaneous. One who never tired of shouting a resonant hello to all comers was J. W. Gogarn, publicity manager of R. M. Owen & Co., and frequently when the observer seemed a bit backward, especially in country districts, Mr. Gogarn brought forth a quick response by his insistent way of salutation.

The Experimental "Little Six" Pierce.—No car commanded more attention during the tour than the one used officially by Chairman Hower, with whom Mr. Glidden also rode. This car is the first small six-cylinder of the Pierce Company, and it was "tried out" on tour with the capable Winchester at the wheel, supplemented by "Jack" Utely, once chief mechanic on the warship Kearsarge, and "Tony" Ledderman. If there were any faults in the "Little Six" needing correction it is a certainty that this trio discovered them.

The Spaghetti Bunch.—Beyond question, the hardest workers on the tour were the drivers and occupants of the two "spaghetti" cars—Maxwell and Premier. Earliest up in the morning, it was mighty hard for them to seek their cots early enough to get sufficient sleep. "General" Lewis and "Lieutenant" Mortimer Reeves were on the job all the time, and Drivers Reynolds and McNamara never failed at any stage of the game. Starter and Checker-in Ferguson was another who worried along unruffled with small chunks of sleep.

Regulars Didn't Like the Autoists.—The arrival of the automobilists at Bedford Springs was regarded as an insolent intrusion by that peculiar person, the chronic sojourner at pleasure resorts, who, like birds of passage, hies from hotels south to others in the north and back again as the weather changes. One woman was overheard to remark to her companion at the Springs: "I suppose, after these dirty autoists go away, they will clean out the swimming tank, won't they?"

That Chicago-New York Highway.—It is safe to say that those who previously had been but mildly interested in the project of a New York and Chicago highway will henceforth be enthusiastic, and they will go even further, for after the trip over the long stretch of the Old National Highway, from Indianapolis to Columbus, no one could fail to wonder why this bit of roadwork never has been continued until it became a transcontinental causeway.

One Publicity Man Who Drove.—R. H. Johnson, the energetic exponent of White publicity, drove his steamer through the entire tour. It is only in the past few months that Mr. Johnson has taken a place at the wheel, and though he has "trade affiliations," he must be considered an amateur driver. Therefore his feat must be rated most excellent, for there were no simon-pure amateurs who completed the long tour in the driver's seat.

What One Hotel Proprietor Said.—There is a mighty fine hotel in South Bend, Ind., and its proprietor, Mr. Oliver, who gave the house his name, passed out some advice to his clerks, bellboys and help before the rather unprepossessing cavalcade of autoists arrived. "Don't judge any of these men by their clothes or appearance," spoke he, "for they may be millionaires, despite their disguises."

Lid Off for Autoists in Pittsburg.—At Pittsburg the Chief of Police declared that the lid was off regarding speed, and the way the cars raced into and out of that burg, under police protection, would have made a New York cop faint away.

DYNAMIC PROPERTIES OF VANADIUM STEEL*

By J. KENT SMITH.

BEFORE I speak of vanadium itself, perhaps you will allow me to say just a few words on the subject of steel from an engineering standpoint. Under the conditions of practice comparatively few years ago we were accustomed to judge with considerable success the steels that we had by their behavior under static tests, that is to say, under tests where the force and the body were more or less at rest, or, anyway, very slowly moving. We had a rough kind of an idea that anything that gave certain static tests would behave in a certain way in use. But as things have progressed, our point of view has changed in regard to this somewhat. A body may be perfectly statically ductile and a body may be perfectly susceptible to satisfactory static tests, and yet when you apply stress tests dynamically (hit the body or vibrate it, or anything like that), it goes to pieces or something happens. As the conditions of engineering requirements got more drastic, we began to have more and more breakdowns, which we were accustomed to call "mysterious failures." Of course, a few of the cases of failure were not mysterious, because the metal was obviously of bad composition; but in very many cases the metal would give perfectly good tests chemically and statically; it might even look perfectly well under the microscope, yet it had broken. The fact of the matter was, it practically got tired of its work and had "thrown up the job."

Series of Light Blows May Prove Fatal.

I think it is beyond argument that we can break a piece of metal by applying repeated strains less than its elastic limit. For instance, supposing we take a piece of metal the elastic limit of which is represented by any number as 10. Now, if we put a series of strains on that metal, each of whose intensity is only represented by the number 5, in due time we will fracture it. If such strains be only represented in intensity by the number 2 1-2, we will in time fracture the metal, but in an interval of time much greater than twice that accompanying the first set of conditions. In other words, all steels deteriorate under repeated strains, and such deterioration is enormously more rapid as those repeated strains approach the elastic limit of the steel. *But such rate of deterioration is not proportionate in different steels,* and it is precisely here that the very great value of vanadium comes in, as the vanadium steels have proved themselves, both by test and in practice, to be absolutely pre-eminent in their power of resisting such deterioration.

The usual dynamic tests include a sweeping shock on a notched bar, repeated blows by a falling weight on either a notched or an unnotched bar, rapidly alternating impacts accompanied by permanent distortion on an unnotched bar, and rotary vibratory flexion tests produced by the suspension of a counter-weight on a rapidly revolving bar of such shape that the area of fracture is definitely located.

Comparative Life Under Repeated Stress.

The rate of deterioration before alluded to as to repeated stresses becomes less severe, as is amply illustrated in Table I.

I strongly advocate also that the usual static "tensile and bend" tests should, in many cases, be supplemented by the knowledge of the behavior of the steel under torsion, while I attach great importance to the repeated bend test made in such a way as to indicate the point at which the metal begins to "break down." In those respects the vanadium steels take the front rank. The action of vanadium is very powerful; it

may be said that vanadium is to metallurgy what strychnine is to medicine, and therefore it is only used in small quantity, or carrying out the simile, small doses.

Vanadium increases the strength of steel *per se*, but to the greatest extent by acting through another constituent

TABLE I. COMPARATIVE EFFECTS OF CHROMIUM AND VANADIUM ON STATIC TESTS.

ROLLED BARS UNTREATED	Pounds per Sq. In. Elastic Limit	Ultimate Tensile Stress	Elongation on 2 Ins.	Reduction of Area
	Tons Per Sq. In.	Tons Per Sq. In.	Per Cent.	Per Cent.
<i>Crucible steels:</i>				
Plain carbon-manganese.....	35,840	60,480	35	60.0
Plain + 0.5 per cent. chromium.....	51,206	76,160	33	60.6
Plain + 1.0 per cent. chromium.....	56,000	85,568	30	57.3
Plain + 0.1 per cent. vanadium.....	63,840	77,952	31	60.0
Plain + 0.15 per cent. vanadium.....	68,006	81,760	26	59.0
Plain + 0.25 per cent. vanadium.....	76,384	88,032	24	59.0
Plain + 1 per cent. chromium + 0.15 per cent. vanadium.....	81,088	108,864	24	56.6
Plain + 1 per cent. chromium + 0.25 per cent. vanadium.....	90,496	135,296	18.5	46.3
<i>Open-hearth steels:</i>				
Plain carbon-manganese.....	39,648	72,128	34	52.6
Plain carbon + 1.0 per cent. Chromium + 0.15 per cent. Vanadium.....	77,056	116,480	25	55.5

(present in such quantity as not to dynamically "poison" the steel in question), while it confers in itself to steel properties of great dynamic value. The first is exemplified by the table.

Its Value as a Master Alloy.

Vanadium thus can be regarded as a "master" alloy, in that it can act in totally different ways, and by judiciously using it in the line one wishes to follow, steels of great dynamic superexcellence, great static superexcellence, or combinations of both, are attainable, such as can be obtained by *no other known means*. The second table illustrates types of this.

The "vanadium axle steel" is of particular interest, as the attainment of steel statically comparable with a nickel steel, in fact superior to it, even statically, combined with the ductility of mild steel and an infinitely greater power of

TABLE II.*

N. B.—All figures obtained under comparative conditions.

NATURE AND TESTS	1 Carbon "Axle" Stock	2 Nickel "Axle" Stock	3 Vanadium Axle Steel	4 Vanadium Crankshaft Steel	5 Vanadium "Continual Mesh" Gear Steel
<i>Static—</i>					
Yield point (lbs. sq. in.)	41,330	49,270	63,570	110,100	224,000
Ultimate stress.....	65,840	87,360	94,080	127,800	232,750
Ratio.....	0.62	0.56	0.66	0.87	0.96
Elongation % on 2 in..	42	33	33	20	11
Reduction of area.....	61%	58%	61%	58%	39%
Torsional twists.....	2.6	33	4.2	2.5	1.8
<i>Intermediate—</i>					
Alternating bends.....	10	12	18	10	6
<i>Dynamic—</i>					
Resistance to pendulum impact (ft. lbs.)	12.3	14	16.5	12	6
Alternating impact, number of stresses...	960	800	2,700	1,850	800
Falling weight on notched bar, number of blows	25	35	69	76	.....
Rotary vibrations, number of revolutions...	6,200	10,000	67,500	.....	.....

resisting fatigue, as evidenced by vibratory and alternating impact tests—such inference, I may say, is amply borne out by practical experience, puts a new phase on the "factor of safety" question in connecting rods, coupling rods, crankshafts and the like.

As a Component of Spring Steel.

In another grade comes vanadium spring steel, which has proved of enormous value, not only in enabling a spring to be

*Extract from a lecture delivered before the Central Railway Club, Buffalo, New York, by J. Kent Smith, Chief Metallurgist of The American Vanadium Company, Pittsburg, Pa.

made having twice the coefficient of safe working load (and thereby rendering possible the lightening of the spring itself), but at the same time one which is, so to speak, endowed with the property of "life" and does not "get tired" and break down as a pure result of service. Again, the value of such a spring is great in regard to the fact that it can safely meet "overload."

The subject of case-hardening is a fascinating one, and one that could with justice occupy half a dozen lectures itself. In a lecture such as this it would be impossible to go into detail. Suffice it to say, therefore, that no *tempering steel* should be case-hardened, owing to the inevitable brittleness produced in the core through the necessary operation of quenching. A special variant of vanadium steel is made for this process, utilizing the toughening action of vanadium on a quenched high carbon steel and the conferring of strengthening and fatigue-resisting qualities to the core of the article, thus enabling a result of wonderful value to be obtained.

Vanadium case-hardening steel stands on record as the finest material of its kind, as the result of very great numbers of practical experiences.

As a Factor in Steel Castings.

Vanadium has been very successfully used in castings. It is not advisable, from a practical steel-founding point of view, to use chrome in a "casting." We use plain vanadium, and we anneal the casting at about 950 degrees Centigrade. Then you will get a casting which, in resisting vibration, is very much like a good type of forged carbon steel; it is infinitely superior to the ordinary carbon steel *casting*. Of course, the ordinary steel casting in carbon does not stand vibration like forged carbon steel, but the vanadium steel *casting* will stand it like a carbon steel *forging*, while in its use in casting we are getting a combined static and dynamic action. We are increasing the static strength considerably, if not to the fullest extent, while we are increasing the dynamic qualities enormously. We use it in casting chiefly with a view of increasing "dynamics" and not "statics." I may seem to be a kind of a maniac on dynamic tests, but their importance has been borne on me so often in ordinary work. There is no doubt about one thing—you cannot adduce dynamic qualities from static tests any more than you can do the other way about; they are in two totally "different streets," to use an every-day expression.

Vanadium steels are no more difficult to forge than the ordinary corresponding steels. The only word of warning I would sound here is that vanadium steels must be treated as high-temper steels. That is to say, we must not go and plunge the heat into it all at once. Vanadium structural steel forges exactly like a 3 1-2 per cent. nickel steel. If you apply the heat and work to it at first reasonably gradually you will have no trouble afterward. The steel will stand as much heat as mild steel, but in heating any steel of high temper you are very liable to disintegrate the metal and you have to observe reasonable care and precaution. As regards the maximum contents of vanadium I have found myself, from experience, it is very seldom advisable to go above 2 per cent.; certainly never above 25 per cent.

Its Use in Other Special Services.

There is no doubt in my mind that the chief difficulty at present existing in the locomotive frame is the resistance through molecular disintegration. If we use vanadium there we cure it; there is no question about it. That has been a shining example of where "dynamics" came into play, almost exclusively; it is almost simply and solely a question of resisting vibratory molecular deterioration.

I hope that I have not given the wrong impression, I have harped so much on the question of dynamics to the seeming exclusion of statics. Do not think that I am sneering at the static tests or that I apparently dismiss the value of high

static strength and ductility. I do not. I attach great importance to them. But I speak from experience when I say that I am sure that we were beginning to lose ourselves in straining to get a high static strength that we really *did not want*, at the sacrifice of something that we *did want*, and therefore that we would have been better off if he had gone less for increased static strength and increased our dynamic qualities.

THE MARKET FOR AUTOS IN SOUTH AFRICA.

The following letter has also been received from Consul-General Lay at Capetown regarding the market for American automobiles in South Africa, and the lesson it conveys should be of considerable interest to American manufacturers:

Three or four years ago there were more American cars in South Africa than any other kind. They were not the best type of American cars, being principally runabouts, which were unsuited to the rough roads; consequently they did not last, and American cars got a bad name. It is only fair to state that the cars imported were of the cheap class, and were not fair specimens of American motor manufacture, and I do not think that any really good American car is at present in use in this country, though one would have thought that with notoriously bad roads in the States American cars would be more suited to South Africa than any other. As far as I can at present see, there is nobody attempting to push the trade, and yet I believe trade is to be done, though, owing to the depressed times, not to a very large extent at present; but obviously it is the best car for the money that will sell, and owing to the enormous standardizing in America I believe manufacturers in that country could really put an equally good car on the market at a lower price than English or French makers, though you must remember that there is a 3 per cent. preferential tariff in favor of English cars, the customs being 15 per cent. on foreign cars, with 3 per cent. rebate on English, which, considering cars cannot be manufactured in this country, is a most ridiculous charge.

It is difficult to tell you the cost of running a car per mile, as they vary so much; but if a man drives a car himself of, say, from 10 to 15 horsepower, which is quite sufficient in this country, where the roads will not allow of high speed, and allowing that it runs 5,000 miles a year, I think £100 (\$486.65) per annum is a fair estimate, this including the cost of tires, which is by far the largest item. I think it is more expensive to run cars in Johannesburg than here, because the roads are worse, and generally it is more expensive in South Africa than in any European country because of the enormous tire cost, owing to the rough surface of the roads.

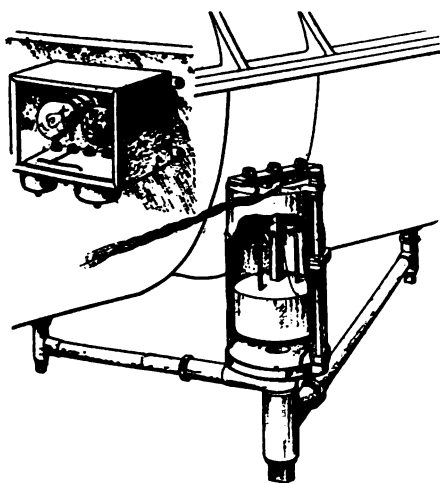
At present there are about 1,000 cars in South Africa. There is no reason why the number should not be doubled if any energetic man pushed the business and gave reasonable terms, and I think that among doctors and commercial travelers customers would be found. In time I think the farmer might be induced to use motor wagons, especially in districts where water is scarce, but it will take some time to educate the farmers up to anything so modern.

Mr. Lay also forwarded a copy of the Handbook of the Automobile Club of South Africa, of which Mr. J. M. P. Muirhead, P. O. box 1161, Cape Town, is the honorary secretary. This book gives chronological landmarks, road maxims, roadside troubles, first aid in accidents, night signals, patrol depots, and table of distances, and is on file for public reference at the Bureau of Manufactures, Washington, D. C.

Present tendencies of design where that most important essential of the power plant is concerned—the lubrication—are decidedly toward the much-desired goal of simplicity. When the automobile first came on the scene its maker found himself compelled to buy all his accessories in the open market, and as a result he had to buy many things that were totally unsuited to his purpose. Not the least of these were oilers—that is their generic title, and as such they were known in connection with the various kinds of machinery for which they had been designed and on which they had been rendering perfectly satisfactory service for years, but that machinery was not the automobile motor, nor anything like it. That became evident after a while and has been so ever since, and, fortunately for the automobile user, the builder recognized that fact long ago and set about making improvements without delay. The result is apparent in the many simple and self-contained systems of lubrication now in use.

TREND OF INVENTION IN OTHER LANDS

To what lengths an inventor may go in evolving a highly complicated device to serve a purpose that can be far better carried out by the simplest of arrangements, has seldom been better illustrated than by an instrument which has been given the euphonious title of "Oleometer" and which is shortly to be placed on the market in England. It is described at length in *The Autocar*, from which the accompanying illustration as well as the details of its operation are taken, though, as a matter of fact, the latter are obvious at a glance. It will be seen that it consists of a float chamber communicating with the oil pan of the crankcase, a float in the former carrying contacts making connection with a circuit in which two small incandescent lamps are placed on the dash. One is white and the other red, representing low and high level conditions of the oil in the crankcase and corresponding to the contacts already mentioned, so that when the float rises as a result of an excessive amount of oil in the engine base, the red light shows, and when it falls too low, the white light appears. That is, it does, if the switch under its containing case is pressed, so that the device is not automatic in any sense of



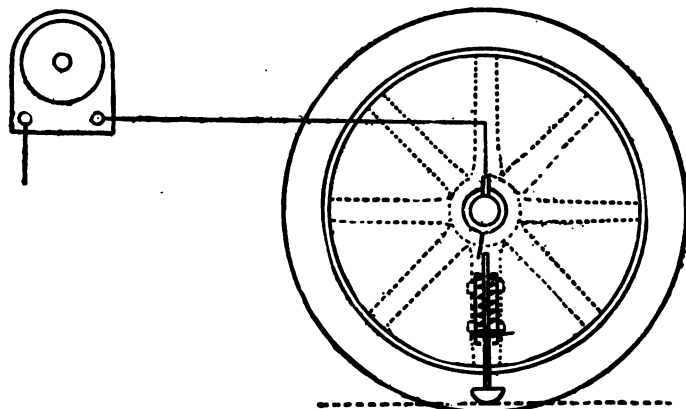
THE OLEOMETER AND ITS COMPLICATIONS.

the word, and pressing the buttons for high and low levels represents an operation which it takes all this complication to act as the substitute of looking at a gauge glass, which is an instrument not provided as often as it should be, or lifting one of the handhole covers off, and they are now made to come off readily in the majority of cars, and are as easily replaced. The Oleometer, on the other hand, relies upon the accumulators for its operation, and in order to be sure that both the latter and the circuits of the device are all in good order, a third button is provided to test them, this lighting both lamps simultaneously and independently of the float-contact apparatus. Such devices are interesting illustrations of what can be done in thinking up new and weird accessories with which to burden the car, but their utility is generally in inverse proportion to their complication.

To Give Warning of Tire Defections.

For some reason or other, the many devices that have been brought forth at one time or another for the purpose of apprising the driver of a car of the fact that one of the tires has suffered injury in order that it may be repaired before further damage is done, have received little or no attention on the part of the average autoist. With the far smaller tires and heavy cars of a few years ago, it was seldom necessary to provide any other warning than that given by the car itself, yet it has not been unusual even under such conditions to find that a tire has been completely ruined through lack of notice of its condition in good season. Both cars and tires have been improved to such an extent during the interim that it is now nothing unusual to have a tire go flat without the slightest notice of its demise, unless rough spots, car tracks or similar obstructions that cause the rim to come in contact with the ground are encountered, and not infrequently it is driven several miles in this condition. Some of the devices that were placed on the market a few years ago were the

very essence of simplicity, beside being well adapted to give the necessary audible warning of the tire's demise, but somehow or other they "fell flat" instead of the tires they were intended to protect. Now an English concern comes forward with an electrical device of the kind which is described and illustrated in



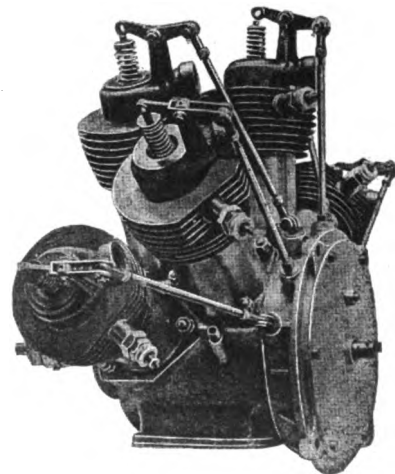
AN INGENUOUS ELECTRICAL FLAT TIRE ALARM.

Motor (London) as follows: "A short brass cylinder containing a plunger is clamped on to one of the spokes as shown. The rod of the plunger carries a boss or foot adjuster, so that it is depressed by the side of the tire on contact with the road when the tire is partly or wholly deflated. On the axle is clamped a metal collar carrying an insulated strip of brass, and when the plunger rod is pushed up it makes contact and completes an electrical circuit and rings a small bell on the dash. The plunger is in direct connection with the frame by means of a copper wire joining it to the hub flange." The battery and ground connections are not shown by the illustration.

As a whole it is so simple that the average autoist, with his knowledge of electricity, could readily set to work and devise something equally effective for himself with very little trouble.

A New Low Limit in Weight per Horsepower.

With a total weight of slightly less than 100 pounds the new 35-horsepower six-cylinder motor made by Pelterie for aviation, the accompanying illustration of which is taken from *Omnia*, would appear to set a new low limit in the weight of motors of this class that is apparently a very close approach to a possible minimum in this respect. Its arrangement is further unique in that the six cylinders composing it are mounted on a crankcase barely long enough to accommodate two of their size were they placed in the ordinary manner. This also greatly simplifies the engine by making possible



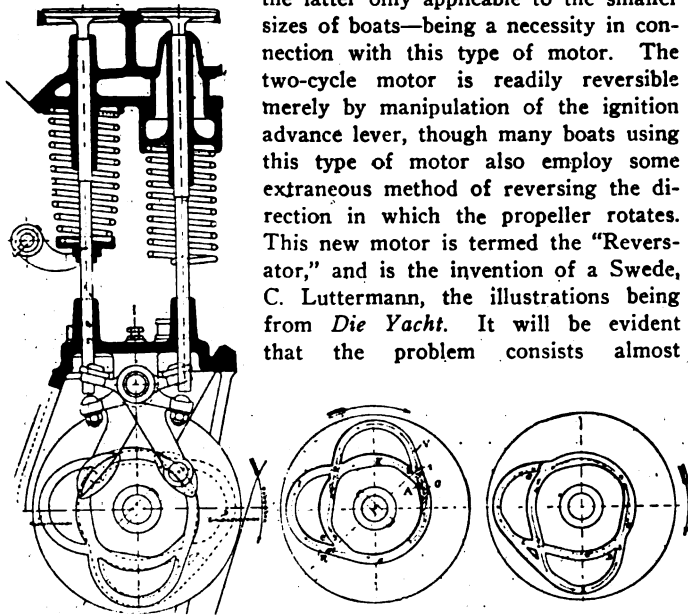
A 100-POUND, 35-H.P. MOTOR.

the employment of a two-throw crankshaft, each group of three cylinders acting upon a common crankpin. Air-cooling is employed, of course, and the cylinders, which are set at an angle of approximately 90 degrees to one another, are also staggered so that each one gets the full benefit of a direct

cooling current. Considerable ingenuity has, of necessity, been exercised in the arrangement of the valve-operating mechanism, the three push rods for the front group of cylinders being of the usual type employed in connection with rocker arms, while the other three are jointed and operate at an angle as shown, the inlet valves being of the automatic type. No details of the dimensions of the motor or of its speed are given, though the latter as well as the compression must naturally be high in order to produce its rating of 35 horsepower. It is of considerable interest as demonstrating to what lengths light weight and compactness may be carried where the internal combustion principle is applied to the design of a motor for aeronautical purposes.

Reversible Four-cycle Marine Motor.

Inventors and motor designers have long been engrossed in the study of the four-cycle motor for marine purposes with a view to devising some simple means of reversing the latter. At present a



VALVE MECHANISM AND CAM DETAILS OF REVERSATOR MOTOR.

reverse gear or a reversing propeller—the latter only applicable to the smaller sizes of boats—being a necessity in connection with this type of motor. The two-cycle motor is readily reversible merely by manipulation of the ignition advance lever, though many boats using this type of motor also employ some extraneous method of reversing the direction in which the propeller rotates. This new motor is termed the "Reversator," and is the invention of a Swede, C. Luttermann, the illustrations being from *Die Yacht*. It will be evident that the problem consists almost entirely of the matter of making provision for reversing the cycle of the engine, as is done in the steam engine, when the position of the valve is shifted by means of the reverse lever, thus making what would have been an exhaust stroke, an intake stroke and *vice versa*, as any four-cycle motor can be made to start in the reverse direction merely by advancing the spark sufficiently to cause a backfire, as is done with the two-cycle. The principle is thus the same as that of the steam engine, except that as every other stroke is an idle stroke in the four-cycle motor, the timing of the valves must necessarily be altered to a greater extent, or 90 degrees in a revolution, the inlet valve being advanced that much while the opening of the exhaust is retarded a corresponding amount, or the opposite where the change desired is from a reverse to a forward movement. To accomplish this, a disk with the proper slots cut in its face and in which sliding members work, transmitting the motion to the valve stems, are employed. These slots are cam-shaped, corresponding to the profile of the cams themselves, and the operation of reversing consists in shifting the position of the cam to the extent permitted by the slot. In the sectional illustration, the arrow indicates the direction of forward rotation, while the smaller view shows the exhaust and inlet cams. The lefthand set of cams are those of the exhaust, while the righthand are those of the exhaust valve, the position in which they are illustrated corresponding to that required for the normal forward movement, usually denominated "clockwise." Rotating them through 90 degrees causes the motor to reverse.

ONE WAY OF PREVENTING TIRE BLOW-OUTS.

BY A. D. HARD, M.D., MARSHALL, MINN.

Automobile users who have had experience on country roads know that the most severe wear on pneumatic tires comes from ruts. Hard, sun-baked roads that have been deeply rutted by horse vehicle travel while soft, quickly tear the rubber from the sides of the casings and expose the fabric to still more rapid disintegration until a blow-out report announces that your tire is almost worthless. This side wear is far more destructive than the tread wear, yet no satisfactory device has so far been placed upon the market to eliminate it. I have tried several plans for protecting the sides of my tires, and have settled down upon the one which I am about to describe as the best and cheapest, so I gladly give the benefit of my experience to the readers of *THE AUTOMOBILE* who may have occasion to use rough and rutty country roads, and they are doubtless legion.

Procuring for a song two discarded rim-cut tire casings of the same size that I used on my wheels from the junk pile of a tire repair shop, I removed the clincher flanges with a sharp knife, and also divided the casing square across. With a 1-4-inch punch I made 24 holes in the edges of the casing, equidistant, and 3-4-inch in from the edge. These holes will be almost exactly four inches apart. I then prepare twelve retaining wires for each side of each of my two casings as follows: A piece of No. 8 galvanized iron wire 10 inches long is bent in the shape of a "V" and the ends are bent into hooks at right angles with the plane of the "V," the hooks being 3-4 inch long. These retaining wires are now hooked into the holes in the casings so that the ends of the hooks shall be on the outside, and the hooks closed down upon the casing with a hammer, which will make a good job.

Jack the front wheel up, deflate the tire and place this prepared protector on over the casing. It will not reach all the way round, and a gap of four or five inches will have to be filled by fitting in a small section of the same kind of tire casing and retaining it by several double hooks 2 inches long made of No. 8 galvanized iron wire, with the ends of the hooks outward. When the protector is in place on the wheel the "V" shaped retaining wires should correspond with the spaces between the twelve spokes of the wheel. Now, with a piece of rawhide lace leather, 1-2-inch wide, the retaining wires are laced to the wheel spokes, the lace leather passing first around the spoke and then through the apex of the "V" shaped wire until both sides of the protector are firmly held to the sides of the tire. The tire is then inflated and you have a double casing on your front wheels with the sides well protected by the rows of iron hooks, which project exactly where the side wear comes from rutty roads. It will be noticed that I have directed that these protectors be placed upon the front wheels. The reason for it is as follows: The presence of this protector increases the diameter of the front tire from 1-2 to 3-4 inch, and when it has passed through a rut, the action of the protruding wires and the increased diameter leave the rut enlarged so that the rear wheel tire can pass through with little, if any, wear. This also obviates the retarding influence of the rut on the rear wheel, and greater propelling power is available. The front tires look a little clumsy, but the fact that they are almost absolutely free from all punctures, stone bruises, rim cuts, tread and side wear and blow-outs, combined with the fact that the rear tires are incidentally protected and given a good path to travel in, is satisfaction enough to offset almost any amount of clumsy appearance.

"The development of the internal combustion motor has not been so startlingly rapid as that of the steam turbine, but in one essential point it assumed a leading position, and it has retained that position over all other prime movers. I refer to the heat efficiency of the engine. The early gas engines of the now prevailing compression type had an indicated efficiency of about 16 per cent. This efficiency has been slowly increased, until at the present time gas engines are in regular use having an indicated efficiency of 35 per cent., and even a little over. No steam engine efficiency can be compared with these figures."—*Dugald Clerk*.

LETTERS INTERESTING AND INSTRUCTIVE

The Office of Contact Breakers and Tremblers.

Editor THE AUTOMOBILE:

[829.]—I have read a number of articles in "The Automobile" on the subject of magnetos, induction coils, and wiring in general, but I have not yet found any that explain the office of the circuit-breaker on the magneto and the vibrator on the induction coil. Will you please enlighten me?
A SUBSCRIBER.

Los Angeles, Cal.

The contact breaker on the magneto has two very important functions to perform. The type of high-tension magneto in general use is synchronized with the motor, that is, its operation keeps step with the latter and the working of the contact breaker is made to correspond exactly with the occurrence of the two impulses per revolution of the usual four-cylinder, four-cycle motor. Its other function is purely electrical. You are probably aware that the magneto with its H or Siemens type of armature, would generate four peaks, or current impulses per revolution, when revolved continuously. The second office of the contact breaker is to utilize but two of these current impulses per revolution, and also, which is the most important, to maintain the armature winding short-circuited upon itself except at the very moment that the current is needed to create the spark for firing the charge. In other words, the current under these circumstances is said to "build up" to the point at which the contact breaker opens, allowing the current to pass into the external circuit, this point corresponding with that of the peak of the alternating wave generated by the magneto. Thus the contact breaker's chief function is to hold back the current until it reaches its maximum value for ignition purposes.

Regarding the vibrator of the ordinary induction coil used for ignition, this is necessary to give the current the periodicity required to enable the coil to operate. A continuous current sent through the primary winding of an induction coil without the interposition of a trembler or vibrator would not produce more than a single secondary impulse at the terminals of the latter winding, so that when a repetition of this is desired, it is necessary to make and break the contact in order that the core of the primary coil may be successively magnetized and as rapidly demagnetized, the rapidity of the latter action within certain limits determining the efficiency of the coil.

As an alternating current fluctuates from zero to its maximum value in alternate cycles, no trembler is necessary when used with an induction coil, although promptness and more than either certainty of action are of paramount importance for ignition service.

What Is the Fuel Consumption of Various Sized Motors?

Editor THE AUTOMOBILE:

[830.]—Can you inform me the amount of gasoline a car should use in relation to the bore and stroke of its engine, as well as its rated horsepower, when running from 15 to 30 miles per hour?

Prince's Bay, N. Y.

H. V. ROTOPAN.

We have no such data at hand and to our knowledge nothing of the kind has ever been definitely ascertained and preserved. The condition you mention, *i. e.* running 15 to 30 miles an hour, is much too indefinite to base any calculations of fuel consumption on, as the latter would naturally depend on the load, this consisting of the car itself, whether the touring type or a runabout, whether it had a full complement of passengers or not and more than either of these, the condition of the road and the gradients as it will be readily evident that more than twice as much gasoline will be necessary to propel the same weight of car through deep mud and sand on a hilly road as would be required over a smooth and level surface. The light touring car of 20 to 30 horsepower is popularly considered as being capable of making twenty miles on a gallon of gasoline, while the heavy car of 45 to 60 horsepower requires a gallon for every ten to fifteen miles, these figures differing with the conditions and being based on the experience of a number of drivers during the past few years.

How to Place a New Valve on an Inner Tube.

Editor THE AUTOMOBILE:

[831.]—I find your Letters Interesting and Instructive very helpful, but there is a question that I am unable to find an answer to in any of the automobilizing books or papers, and I have not seen it discussed in your columns, though it may have been up in early numbers before I began to take "The Automobile." This is the matter of repairing, or putting in a new valve for the inner tube, when, as so often occurs, it leaks or goes out of business for other reasons.

The old valve is vulcanized to the inner tube. To attach a new one, do you cut out the old one at the base and attach the new one in the same place with the aid of an acid and cement solution, such as is used for patches, or in what way can the repair be made?

Does the flat base of the new valve go on the outside or the inside of the tube?

These may seem very simple questions to people who know, but it is just these simple little things that the new hand does not know, and that he is rather ashamed to ask his friends about for fear they may laugh at him for his ignorance. "A NOVICE."

St. Paul, Minn.

Doubtless the reason why you have never seen this request for information in our columns, as well as your not finding it dwelt upon in books concerning the automobile, is due to the fact that it is decidedly not a repair that comes within the province of the amateur. If you have any inner tubes that require new valves, we should recommend by all means that they be forwarded to the manufacturer or sent to one of the numerous branch depots scattered throughout the country and which are about the only places that have the proper facilities for doing work of this nature. The flat base of the new valve goes on the outside of the tube, but it requires an experienced hand at tire repairing to put it on properly, and we doubt very much if the ordinary acid and cement solution such as is used for making emergency patches will make a satisfactory job of such a repair. To our knowledge it is one that is seldom, if ever, attempted by the amateur, as it can only be satisfactorily done on the large automobile tires now in universal use by those experienced in doing such work and who have the proper facilities for carrying it out.

Some Questions Concerning a Motorcycle.

Editor THE AUTOMOBILE:

[832.]—How can the power of a 21-2-horsepower motorcycle engine be increased to 3 or 31-2 horsepower without altering the motor very much? Could this be done by lengthening or shortening the connecting rod?

(2) If a motorcycle engine were to be run as a stationary engine, would it be necessary to put another flywheel on the outside of the crankcase, beside the two on the inside?

(3) Can you give me some idea as to how the horsepower of an engine is found? An answer under the head Letters Interesting and Instructive will be appreciated.

A SUBSCRIBER.

Chicago, Ill.

We should not recommend attempting to increase the horsepower of a motor such as you mention, particularly when the increase desired is in excess of 50 per cent. of the original power. The power of a motor may be increased to a certain extent without any very radical alterations, but the result is never a certainty, and the change may involve unexpected complications that render the motor altogether worthless. An increase of compression is the expedient most frequently resorted to in order to increase a motor's output. The simplest way of doing this is to tap the inner side of the cylinder head and fasten a small cast iron plate to it in order to reduce the clearance space, but this must be carefully done, so as not to obstruct the valve ports. It can also be done by using a longer connecting rod, but this is not advisable, as the result is apt to be the destruction of the balance of the moving parts made by the original designer.

2. It would not be necessary to add a third flywheel to the motor when used for stationary purposes, but we doubt very much if there is any motorcycle engine on the market that is adaptable

to this service, as it is the extreme opposite to that for which it is designed. In fact, such engines usually have a very high compression and it is doubtful if they could be kept cool for more than a comparatively short time when running stationary and under load.

3. The horsepower of an engine is found by multiplying the mean effective pressure, usually written m. e. p., by the length of the stroke in inches, times the area of the piston head, times the number of power impulses per minute, this product then being divided by 33,000, which represents the equivalent of a horsepower in foot pounds per minute. For ordinary calculations the pressure, which is one of the most important factors, is usually assumed. The formula adopted by the Mechanical Branch of the Licensed Association of Automobile Manufacturers, after much study, is the following: $\frac{D^2 \times N}{2.5}$, where D represents the diameter of the cylinder squared, times N, or the number of cylinders, divided by 2.5, which is a constant computed from the known horsepower of a large number of the most representative American four-cylinder motors. The formula given above is usually written $\frac{\text{PLAN}}{33,000}$ and has long been employed in calculating the power of steam engines, the only change made in it being that N represents the number of power impulses per minute instead of the number of revolutions as in the steam engine. The brake horsepower is found by testing the engine on the brake, that is, applying an adjustable load to it with the aid of a dynamometer, the motor usually being coupled to a dynamo, the current output of which is measured while the speed of the motor is also taken. At the same time indicator cards are taken and with the aid of a planimeter, the exact m. e. p. of the engine is calculated.

Some Queries Regarding Extreme Offsetting.

Editor THE AUTOMOBILE:

[833.]—Presuming that you are conversant with the Ramsay crank mechanism, which has a connecting rod about 3 3/8 times the length of the crank, and a crank of ordinary design, having the shaft located off the axis of the cylinder a distance equal to the length of the crank, I would like to have you inform me, under Letters Interesting and Instructive, if the following conclusions drawn by the Ramsay people are, in your estimation, correct. If not, why not, and if so, is there anything not shown by the Ramsay people that could in your opinion seem to offset the following advantages, as claimed by them.

1. It increases the crank effort.
2. It applies energy to the crank during 192 degrees of crank travel, as compared with 180 degrees in the ordinary engine.
3. It reduces cylinder friction.
4. It gives a slower movement to the piston at the beginning of the return stroke, reducing back pressure and allowing for more thorough expulsion of the exhaust gases.
5. When the cylinder has become warm it decreases leakage during compression.
6. It makes practicable the use of splash lubrication for horizontal engines.

Last, but not least,

7. It makes an auxiliary exhaust port practicable without any of the existing disadvantages.

G. W. TYRELL, M.D.

Perth Amboy, N. J.

In our opinion, the Ramsay engine is merely an instance of carrying to an extreme a principle that has been found to be beneficial on a very limited scale. Some of the very old steam engines of the single-acting type were built in this way, but that is so long ago that but few in the present generation are aware of the fact. Of late years it has been found of benefit to design automobile engines with the center of the cylinders slightly off that of the axis of the crankshaft, the offset being to the side of the idle stroke in order to bring the connecting rod more nearly vertical on the power stroke. This reduces friction considerably by cutting down the angular pressure of the connecting rod against the piston, which in turn bears very hard against the cylinder wall and tends to cut down the power slightly in the ordinary engine. But it has long been recognized that carrying the principle to an extreme involved the very disadvantage that it was designed to obviate. That is, it introduced an excessive amount of angular pressure on the idle stroke, although the advantage of having an almost vertical position of the connecting rod on the

power stroke was obtained, thus continuing the application of the energy to the crankpin through a slightly greater portion of the crank circle. Accordingly, about the maximum offset found in automobile engines is 25 per cent. of the length of the stroke, and the average from 10 to 15 per cent.

We are more or less familiar with the engine in question, and while we have not made any particular study of it, still we cannot see that many of the claims you mention are based on a very substantial foundation, as, for instance, the decrease in the compression with a worn cylinder. Nor that of making practicable the use of splash lubrication in horizontal engines as it is already used in thousands of engines of this type with perfect satisfaction and in which there is no offset at all. The best example of the use of an auxiliary exhaust port is also to be found in an engine which is designed without any offset. We have not taken up the claims you enumerate in consecutive order, as we do not deem them of sufficient importance. Like many manufacturers who make engines, or anything else for that matter, of a special nature, it is probable that the makers of the Ramsay are prone to exaggerate its good qualities a bit, and overlook some of its faults.

Altering a Runabout to Ride More Comfortably.

Editor THE AUTOMOBILE:

[834.]—Will you please answer the following through your Letters Interesting and Instructive?

My 1906 Maxwell runabout seems to ride a little roughly of late. If I were to put full elliptic springs on it both front and rear and lengthen the wheelbase by placing the front axle further forward to the extent of making it come flush with the frame end, would the benefit be sufficient to warrant making the change, and would the longer wheelbase make it harder on the hills and in mud for the engine?

In equipping gas lamps with the "Royal Multiplex" electric burner, should the distance from the lens be changed? With the above named bulb, the lamp only throws a narrow shaft of light, but it goes much further ahead than with gas.

Verona, Ill.

FRANK STERNE.

We should certainly not recommend making the radical changes to your car that you mention in your letter. The fact that the car does not seem to ride as easily as it did formerly would appear to be due to the fact, either that the old springs are worn out—that is, they have lost their life to such an extent that they no longer respond, or something may have gone wrong with their adjustment, thus preventing their proper action. It would not be an easy matter to put full elliptic springs on a car the suspension of which had originally been designed for the semi-elliptic type, without making a study of all the requirements, and the latter would doubtless be found to involve other changes than the mere installation of the springs themselves. Nor should we recommend lengthening the wheelbase in the manner mentioned, as we doubt very much if the result would be of sufficient benefit to warrant the expense. In all probability, new springs of the same type as the car now carries will probably remedy the difficulty, or it may be that, as already mentioned, the only thing necessary is a little readjustment. If the latter is not found to provide the desired remedy, we should advise consulting the makers of the car before attempting any such radical alterations as you mention.

Not being familiar with the particular lamps that you carry, nor, for that matter, with the type of burner you mention, we are hardly in a position to make a definite reply to your second question, but it is evident from the changed character of the light produced that shifting the relative positions of the burner, or bulb, and the lens, until the proper focus is found, would be likely to produce a more satisfactory result.

How to Measure Coil Current Consumption.

Editor THE AUTOMOBILE:

[835.]—Will you kindly give me, through your correspondence department, a method for determining, with the aid of a small voltmeter, the number of amperes used by an automobile spark coil? The particular coil I have reference to is designed to operate at six volts.

"FAULTY SPARK COIL."

The small pocket meters in general use for testing batteries are not well adapted to this purpose, as they are not calibrated on a

sufficiently fine scale to make the reading of much value. To make such a test properly a low-reading ammeter is what is required. The scale of such an instrument only reads to two amperes by tenths of an ampere, and such special meters are now being placed on the market by a few manufacturers. The method of making the test is the same in either case, the connections being as follows:

Insert the meter in the primary circuit of the coil to be tested; that is, between the battery and the coil, so that the entire current will pass directly through the meter. Start the engine or turn it over quickly by hand and the reading given by the instrument will be a close approximation to the current consumption of that particular coil. A well-made six-volt coil, such as you mention, ought to give satisfactory service on from 0.5 to 0.75 ampere, and in no case should greatly exceed one ampere, any excess over this amount being indicative of faulty adjustment of the vibrator. When the meter is connected up as already referred to, in order to make the test the vibrator should be adjusted so that the coil is not consuming more than the amount of current mentioned unless it be found that satisfactory ignition cannot be obtained except with a higher reading. Each coil should be tested separately in the same manner, this always being done with the engine running, as an idle test is very misleading. You may be able to obtain a fairly good result with the ordinary pocket meter, but we doubt it very much, as the latter is usually calibrated with a total reading of at least 25 amperes. The divisions are accordingly very fine for the units representing one ampere, and as the hand jumps every time the current is sent through it it is almost impossible to make a close test with such an instrument. This is also a disadvantage of using any meter on this work, but with the engine turning over at its normal speed the hand of a low-reading meter will fluctuate comparatively little.

Is a Magneto a Good Investment?

Editor THE AUTOMOBILE:

[836.]—I have been a subscriber to "The Automobile" for a number of years and think it considerably more valuable since the publication of letters and inquiries has been made a feature. I would like to have a little information with regard to magnetos.

Do they give much trouble? That is, if they receive reasonable care.

Are they satisfactory if run with a friction wheel against the flywheel, using the same timer and coil that are already on the machine, and that have been used with dry cells? Is there any way to stop the noise in new planetary gears? I am using heavy grease as a lubricant.

OLD SUBSCRIBER.

West Branch, Ia.

What you refer to in your letter is really small direct current dynamo instead of a magneto, there being considerable resemblance, however, as some of these small generators are made with a permanent horseshoe field, the same as a magneto. They are, however, equipped with a commutator and are designed to generate a direct current. They are usually found to give satisfactory service in connection with the ordinary equipment of timer and coil as employed with dry cells, but they are most largely used in connection with stationary engines where the speed is more uniform than on an automobile. They may be run by friction from the flywheel, but require a good governor to take care of the sudden and extreme fluctuations of speed. They are not magnetos in any sense of the word, as the latter produce an alternating current and are generally designed to run synchronously with the motor, only generating the current just when it is needed to fire a charge in the cylinder. They give very satisfactory service with reasonable care and are very largely used. There are also special dynamo and battery outfits on the market which give good service.

It is more or less difficult to prevent the noise caused by a planetary gear when the latter is being used on the low speed or reverse, as under such circumstances a number of small pinions are in mesh and carrying considerable load. Such a gear, however, should occasion less annoyance on this account when new, the amount of noise created increasing with its age as the pinions wear. One of the chief causes of noise is the fact that the teeth

of the pinions are poorly cut and grind against one another, this also causing a loss of power. Grease should tend to lessen this somewhat, though the makers of a small car of which thousands were turned out a few years ago recommended that nothing but comparatively thin oil be put in the case of the planetary gear. We have known of a mixture of jewelers' sawdust and heavy lubricating oil being used with excellent results in a very noisy change-speed gear of the sliding type, and it might also prove efficacious in the planetary. The use of a heavy grease or paste in such close quarters necessarily introduces greater friction, but as the low gear and reverse are used comparatively little this would hardly be any great objection if it served the purpose of lessening the noise.

AN ENGLISH IMPRESSION OF THE GRAND PRIX.

Editor THE AUTOMOBILE:

[837.]—My impressions of the Grand Prix are mostly centered, naturally, round the two "Weigel" cars, and I should imagine that your readers would be anxious to know what was the fate of the two English competitors.

It was hardly a lucky day for England or for the Weigel cars. But the bad luck had nothing to do with either the cars or the men who drove them. Any chance that we may have possessed for victory was utterly ruined by the detachable rims we employed, which unfortunately we had not had a chance to try or we should have found out the error of our choice long previously. They only came into our possession on the Saturday before the race, when we were in France. Immediately we tried them we knew that any chance of success with them was out of the question.

As to my general impression of the race, I think it is the finest race ever been. On the day of the race itself the organization was perfect. The rules were carried out within their meaning, leniently yet sufficiently strict, and taking into consideration the fatigue of the men. I consider the officials were just and fair to everybody, no matter what their nationality. I can hardly say as much for the day of verification. My cars were not passed until close on midnight, and to have to wait till midnight to pass the cars, and start racing a few hours afterwards is distinctly unfair to the drivers. Everything was done correctly, but it was Bedlam let loose.

My impressions of the cars, borne out by the times, are distinctly that the Mercedes were the fastest on the course. Jenatz's wonderful lap proved that. The cars that gave me the best impression were the Dietrich cars, and they were unfortunate in losing. Duray's performance, in my opinion, was wonderful; he had Lancia at his mercy at the end of the first lap, and I believe could have passed him in the second one. Nazzaro's victory, in my opinion, was a piece of luck. At one time Wagner was miles ahead of him, and his other stable companions equally so.

We have been very unlucky in the Grand Prix, but we have had our lesson, and will take it to heart. Two cars will race in the Ardennes, and I believe they will be well placed. It must be taken into consideration that these are practically touring cars, being the mere coupling of two touring engines, and I have no hesitation in saying that these cars, with the exception of the three I have named, were the fastest on that course. Viewing this race as a whole, I have no hesitation in saying that France is still the center of motor car racing, and if British manufacturers wish to obtain a worldwide repute and not merely a local one they would be well advised to assist each other in entering cars for the Grand Prix, and I hope that next year there will be a good showing of English cars.

D. M. WEIGEL.

London, Eng.

REQUIREMENTS OF CANADIAN ENTRY.

Editor THE AUTOMOBILE:

[838.]—Referring to the letter on page 98 of the July 18 issue of "The Automobile," from "Subscriber," in reference to the conditions upon which an American car may be taken into Canada, I am enclosing herewith a letter received from the Chairman of the Touring Board, which I believe will give your "Subscriber" the information required.

F. H. ELLIOTT,

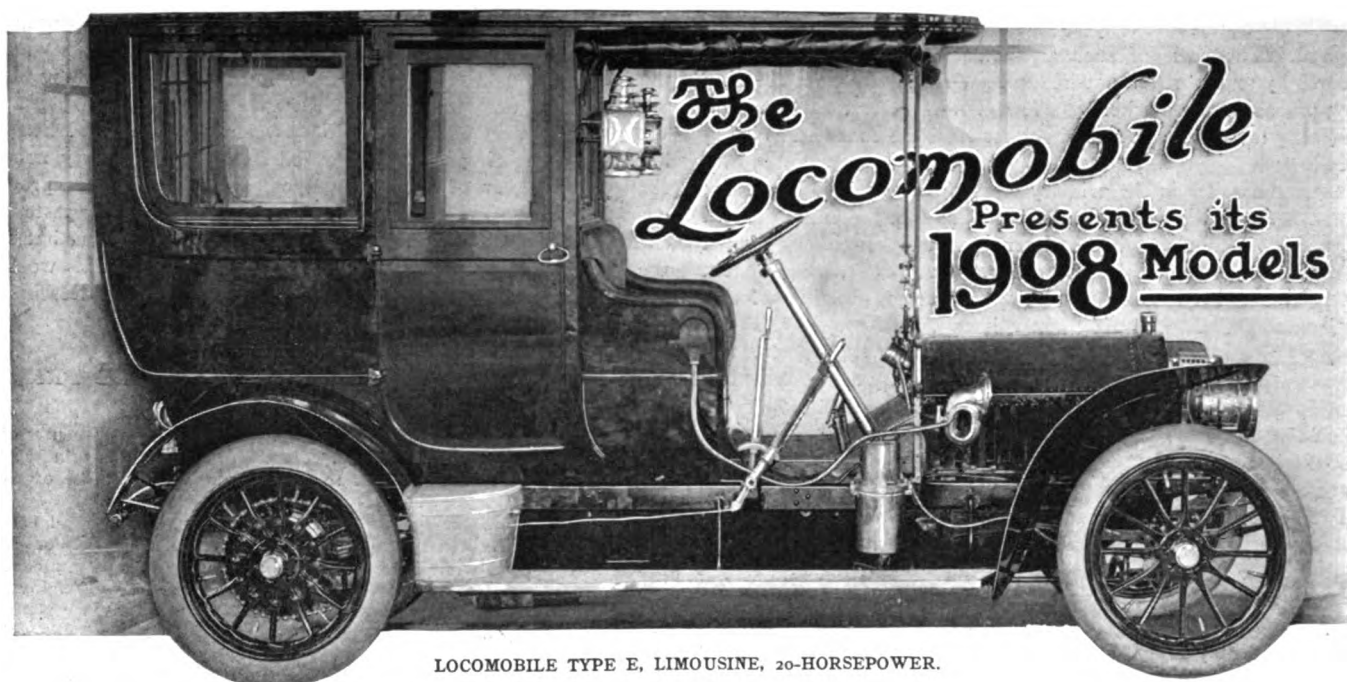
Secretary, A. A. A.

F. H. Elliott, Secretary, A. A. A.

Regarding the letter you received from the C. S. Warner Co., Niagara Falls, Canada, would say that the Warner people will bond an American car going into Canada for balance of the year 1907 for five dollars (\$5.00), and the Canadian license and markers to put on the car cost four dollars (\$4.00), so that the entire cost of passing in and out of Canada at will for the balance of this year is nine dollars (\$9.00), which is quite a substantial reduction from what it has been in the past.

FRANK B. HOWER,

Chairman, Touring Board, A. A. A.



LOCOMOBILE TYPE E, LIMOUSINE, 20-HORSEPOWER.

IN line with the policy followed by the American manufacturer to-day, the Locomobile Company of America, Bridgeport, Conn., announces the completion of its 1908 models as well as their readiness for the market, right on the heels of the closing of the 1907 season. The work of designing a new model, embodying the refined detail that the experience of the former year has suggested and the trying out of these new cars is no longer left to the close of the current manufacturing season, as was the case a few years ago. It is undertaken many months in advance, so that ever since last winter the work of building and delivering 1907 cars at the Locomobile factory has been carried on concurrently with the testing out of the 1908 models, which are now being turned out in number.

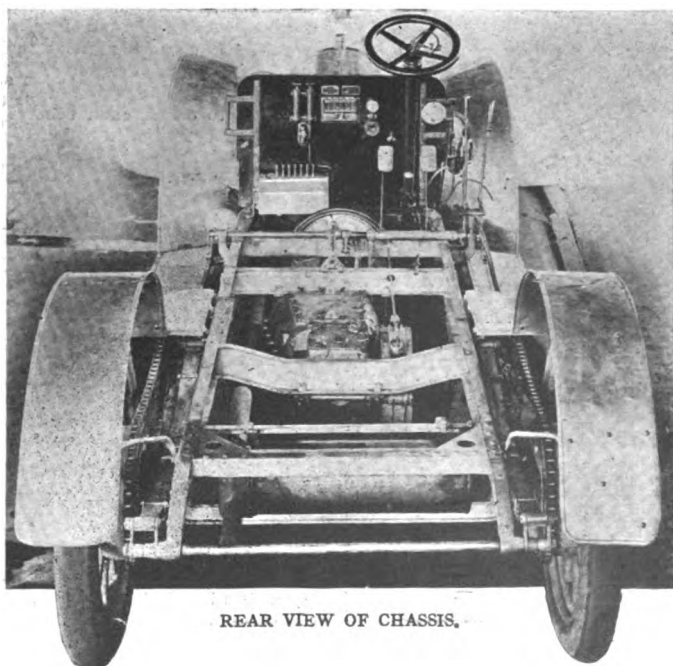
As has been the case in the past, there will be two Locomobiles for 1908, but so far as design, construction, materials and the like are concerned, both cars are practically identical. The smaller car will be known as Type E, and its rating will be the same as in previous years; that is, 20 horsepower, while the larger car, known as Type I, is equipped with a 40-horsepower motor. But, as already mentioned, the same distinctive features are common to both. While the attention of their builders is confined to these two chassis, either may be had as a runabout, touring car, limousine or landaulet, the smaller machine, Type E, also being furnished with a removable tonneau which is interchangeable with a rear deck carrying a rumble seat. All the fastenings consist of bolts and wing nuts, so that the transformation from touring car to runabout is very simple. When either type of body is in place, there is nothing to indicate that it is not permanently attached to the car, the nature of the fastening not being evident even upon inspection at close quarters.

The day when cars come forth each season in a new

guise have long since past, and now it is rather the maker who shows his faith in the system he has long adhered to by continuing it practically unchanged who begets the confidence of the purchaser, rather than the maker who is constantly striving for what are, after all, nothing more than talking points, in order to obtain public interest, so that it is now unusual to look for anything startling in the way of change on the new models of the old-established makers. Probably the greatest change to be found in the new Locomobiles is the adoption of a four-speed gear-set of the selective type on the smaller car, so that both are now uniform in this respect. A new feature of the engine is the use of a bronze plate covering a generous size opening in the cylinder heads. This communicates with the water jacket and it is designed to be utilized to give access to the latter for inspection and cleaning, the return connection of the circulating system being made through the plate. Other new features of the motor are to be found in the provision of flanges cast on the exhaust manifold, by means of which warm air is supplied to the carbureter. The latter, which is placed quite low down on the inlet

side, is practically the same as last year's model, but has been fitted with a new type of automatic air valve, while a flexible coupling has been placed on the pump-shaft to insure against binding, and facilitate the removal of the pump. The pump-shaft also carries a flange pulley for the fan-belt. To sum up, there are no sweeping changes in either model, the chief difference from the 1907 types being an increase of power on the Type I and the adoption of a four-speed gear of the selective type on the Type E in place of the three-speed progressive gear set formerly employed.

As already mentioned, both cars are so essentially alike, even in detail, that one description would apply equally well to both. The cylinders are cast in pairs and are mounted on a



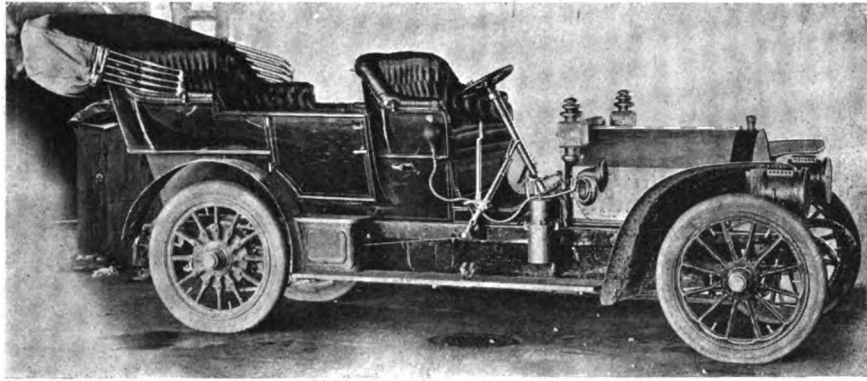
REAR VIEW OF CHASSIS.

manganese bronze crankcase—a peculiarity of construction which the builders of the Locomobile were among the first to adopt and to which they have consistently adhered ever since, as the heavier metal has given perfect satisfaction in service and the net increase in weight is practically a negligible factor owing to the smaller amount necessary.

The valves are oppositely disposed and mechanically operated, the cams and camshafts being made integral, while the inlet camshaft also carries the skew cams for the make and break igniters. These cams are laid out with a profile which enables the time of ignition to be altered by shifting the camshaft longitudinally, thus causing the trip-rods to lift sooner or later, as the case may be. All operating gears are forward and are thoroughly encased in a dustproof aluminum housing bolted directly to the front end of the crankcase. An extra pinion on the inlet camshaft serves to drive the magneto, while another on the exhaust camshaft drives the centrifugal pump situated opposite.

As has been the case for the past two or three years, the ignition is of the low-tension type and in the smaller car entire dependence is placed on the magneto. To facilitate starting the larger car a set of accumulators is provided as a part of the standard equipment. Compression relief cams are also employed on the large engine and are made integral with the exhaust cams. The centrifugal governor acting upon the throttle and arranged to be cut out by the pedal accelerator is also retained. The force feed lubricator, driven by a steel belt from the exhaust camshaft, is placed directly under the footboard and is located over a part of the exhaust pipe in order to receive the benefit of the heat from the latter, the usual sight feeds being placed on the dash. A hand pump is also provided, and on the large car, Type I, 14 pints of oil are carried in a tank hung from the frame and connected directly to the lubricator, so that no oil in cans need be carried.

Probably the painstaking thoroughness with which every detail

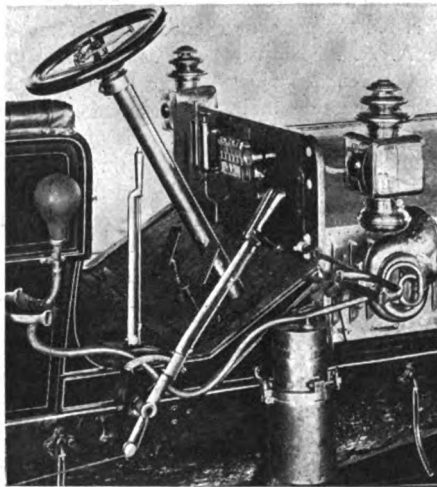


LOCOMOBILE TYPE I, STANDARD, 123-INCH WHEELBASE.

of the manufacture of the car is looked after by its builders may best be illustrated by the lengthy process through which the piston rings are put in finishing and which gives them a fit as close as that only obtained otherwise by quite a few miles of running. To effect this, after grinding the rings are placed in a holder in the same position as they occupy

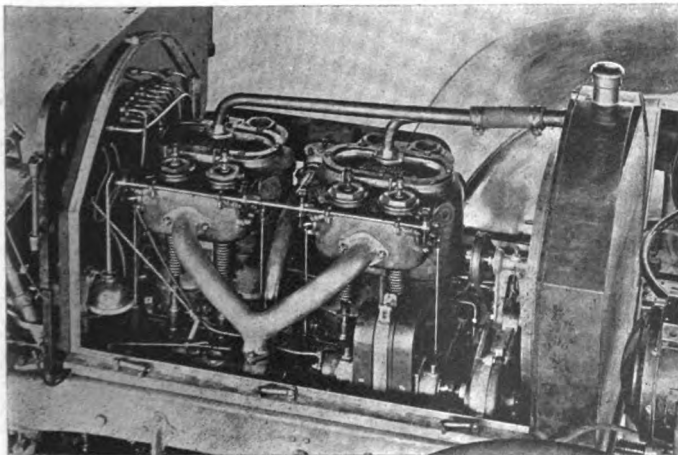
on the piston, and this is then run in a cast-iron tube of exactly the same size as the engine cylinder, the running-in process being facilitated by the use of a little abrasive.

The clutch is of the standard conical type, faced with heavy leather backed by flat springs and having the spring-thrust self-contained when the clutch is engaged. The housing of the four-speed sliding transmission is of manganese bronze, with cover plate of aluminum alloy. All shafts run on Hess-Bright ball bearings, as is also the case with the differential, bevel drive and countershaft; the direct drive is on the fourth speed. The countershaft also carries a generous-sized drum for the running brake, while the emergency brake consists of drums bolted to the rear wheels and with which the driving sprockets are made integral. Both axles are single piece I-beam drop forgings. The steering gear is of the worm and sector type and the transverse rod is placed behind the front axle. The wheelbase of the smaller car is 102 inches, or 116 inches as a limousine, while the large car in the touring car has a 123-inch wheelbase. The frame construction is noteworthy in that the rear ends of the main pressed-steel frames are connected by a steel bar passing through openings in the forgings, the

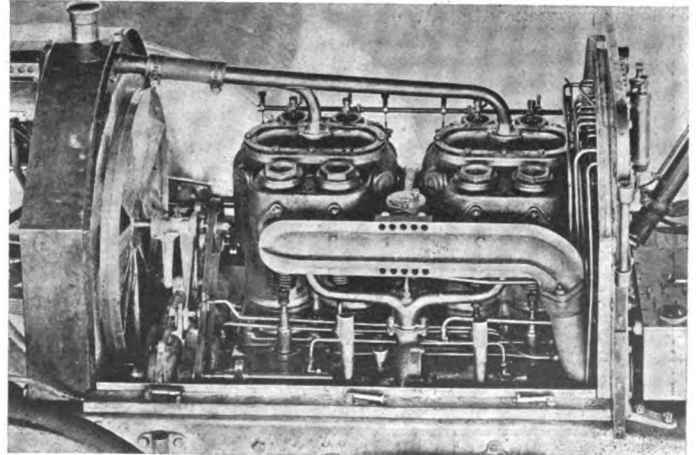


OPERATING LEVERS AND DASH.

outer ends of these bars being utilized to carry the spring shackles. At the forward end of the frame is a dropped member or cradle designed to support the radiator so that the latter is not dependent upon either of the side members of the frame for support and is thus relieved of all torsional strains ordinarily set up by the latter. In accordance with modern practice the axis of the radiator and the front axle coincide, giving an excellent weight distribution.



ADMISSION SIDE OF 40-HORSEPOWER LOCOMOBILE MOTOR.



SAME MOTOR AS VIEWED FROM THE EXHAUST SIDE.



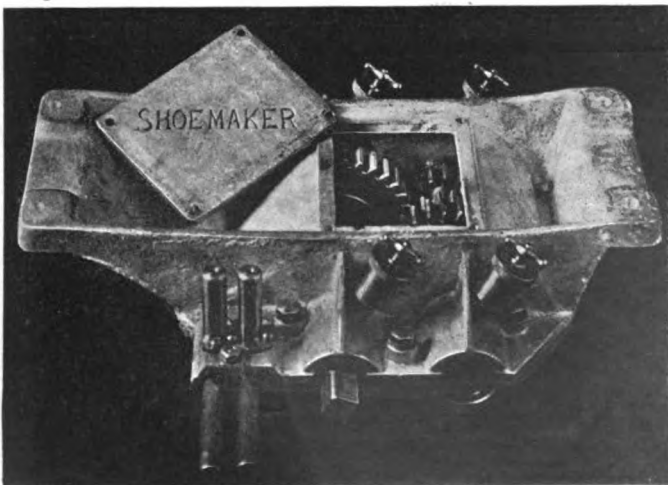
GENERAL VIEW OF THE CHASSIS OF THE NEW SHOEMAKER CAR.

It is quite evident that the makers of the new Shoemaker car, the Shoemaker Automobile Company, Freeport, Ill., are quite confident that it is capable of putting up as creditable a performance under the most strenuous conditions as are those of far older makes and well-established reputation, as its first bid for publicity is as an entrant in the gruelling tour of the A. A. A. for the Glidden Trophy, the wearied competitors in which reached New York yesterday. For the present the makers are devoting their entire attention to the manufacture of a single type known as Model C touring car.

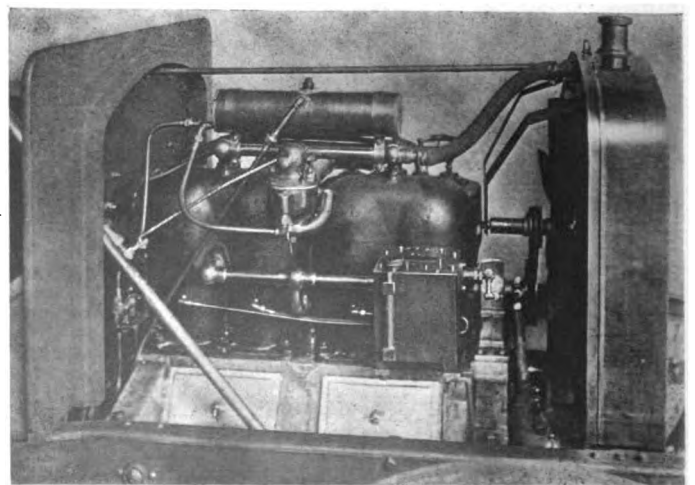
This is equipped with a four-cylinder motor of the standard type, the dimensions of which are 4 1-2-inch bore and 5 1-4-inch stroke, the rated output being 35-40 horsepower at a moderate normal speed. The valves are all placed on the same side and operated from the same camshaft. A noticeable departure is evident in connection with the carbureter, which is placed on a level with the top of the cylinders and is fed by gravity from an auxiliary gasoline tank placed over the motor—a feature that is of particular value in hill-climbing where a gravity system of fuel feed is employed, as it insures a constant supply to the carbureter regardless of the angle at which the car may be placed. The tank above the motor is fed by a positive plunger-pump, operated by an eccentric on the timer shaft, the pump being in communication with the main fuel tank low down at the rear of the chassis, while any excess from the carbureter itself is led directly back to this tank through a special overflow pipe. Ignition is of the high-tension type, the timer being mounted vertically directly over the flywheel and in front of the dash from which it is readily accessible by means of a removable panel placed in the latter. Lubrication

is by means of a Hill Precision oiler mounted alongside the motor while the cooling system consists of a vertical tubular radiator, the circulation being by means of a gear-driven pump, an eccentric being placed on the same shaft that drives the pump to operate the mechanical force feed oiler, while on the extreme front end of the same shaft a pulley is fixed to take the belt for the fan, this being the only accessory that is not gear driven.

The makers call particular attention to the change-speed gear, which is of the sliding type with selective form of operation, providing three speeds forward and the usual reverse, with a direct drive on the high speed. Chrome nickel steel of the highest grade is employed in all the pinions and their supporting shafts, which in turn are carried on 3 1-2-inch phosphor bronze bearings, lubricated by flooding with oil in addition to which four compression grease cups are provided, as shown in the illustration depicting the gear set and its housing. The pinions are of one-inch face and six pitch and are all thoroughly case-hardened. The cut gives some idea of the extreme of compactness the makers have attained in the design of this gear-set, which only measures 6 7-8 inches between bearings and tips the scales complete at but 55 pounds. A self-contained multiple disk clutch forms the connecting link between the change-speed gear and the motor, the latter being formed of an aluminum disk faced with cork inserts which is retained between two large cast-iron disks, supported by four substantial lugs screwed into the flywheel. The disk rotating with transmission shaft only weighs 5 1-2 pounds, thus eliminating the tendency to spin the latter and facilitating the movement of the gears. Final drive is by propeller shaft, designed to be practically a horizontal plane when running with a normal load in the car.



THE COMPACT GEAR-SET WITH ITS GREASE CUPS.



SHOWING AUXILIARY FUEL TANK AND CARBURETER.

HOT WEATHER ACTIVITIES OF THE AUTO CLUBS

Canadian Motoring League Becomes Active.

TORONTO, ONT., July 22.—At the last meeting of the board of directors of the Ontario Motor League it was decided to affiliate with the Royal Automobile Club of Great Britain. Official headquarters have been established in the Stair building, where the secretary will be permanently located. In connection with the office a touring bureau has been established, patterned after those maintained by American clubs, and a large file of road maps will be kept, other assistance also being rendered in the way of supplying information regarding customs and the like.

The league has adopted a comprehensive good roads policy, which, if approved by the Government, will mean the expenditure of a large sum on road improvement throughout Ontario, the plan simply being to petition the Government to grant one-half instead of one-third of the cost, as at present, under the Good Roads Act. Considerable has already been accomplished toward the betterment of the lake shore road between Toronto and Hamilton, and \$12,000 is now being raised to improve the worst stretch of six miles near here. Work was started a fortnight ago and is being pushed rapidly. The league has also completed its road guide of Canada, supplying reliable information covering 111 routes, all of which have been covered by a car in the preparation of the work.

The league has also found time to engage in other activities and last week supplied twenty-five cars for a charitable mission, by giving some seventy odd of the patients of the Home for Incurables a pleasant day's outing, the chief feature of which was a drive through High Park.

Minnesota Auto Association's Run to Mankato.

MINNEAPOLIS, MINN., July 22.—Seventeen machines participated in the first run of the season held under the auspices of the Minnesota Automobile Association, and every one of the cars came through with flying colors from the eighty-four mile trip to Mankato, which was unanimously voted a huge success by all concerned. It had been originally planned for a fortnight earlier, but was postponed owing to the bad condition of the roads. The sole object of the jaunt was the opening of the active campaign for good roads, which Minnesota autoists are now undertaking. On arriving at Mankato, the association members held a business meeting at which the subjects of good roads, signs, road maps, legislation and the holding of a race meet in connection with the Minnesota State Fair in September were discussed at length. It was voted to offer \$5,000 in prizes for the races, which will be divided into three general classes, for professionals, dealers and amateurs, in addition to which there will be three classes adopted from the American Automobile Association's horsepower standard instead of by a price limit. The star features will be a free-for-all at fifty miles and a twenty-five-mile event in three classes, for which a \$1,000 purse is to be hung up.

Bronxville Has a New Automobile Club.

NEW YORK, July 23.—As the result of the efforts of F. H. Elliott, secretary of the American Automobile Association, Bronxville, New York, now has an automobile club, which takes its title from the name of the town. H. Ward Leonard, one of the pioneer members of the Automobile Club of America, was elected president; Frederick P. Ackermann, vice-president, and Harry Burt, secretary and treasurer. J. J. Lannin, proprietor of the Gramatan Inn, was one of the organizers, and the new Bronxville Automobile Club will probably make its quarters temporarily at the inn. The club starts with quite a number of charter members, at least twenty-five of whom are at present owners of cars, while the remainder are prospective purchasers.

New York Auto Club Meets and Elects Officers.

A special meeting of the New York Automobile Club, until recently the City and Country Motor Club, was called at the town club headquarters, 306 West 109th street, on Thursday last, at which the following officers and directors were chosen for the ensuing year: Dr. Edgar T. Weed, president; Andrew J. Cobe, vice-president; James Stuart Blackton, treasurer; I. E. Roskam, secretary; directors, Commander U. J. Sears, U. S. N., Edwin Churchman, Bart G. Faulhaber, Samuel T. Myer, C. Ledgwick Levy, David C. Goodman, Conrad Hubert, Elbridge G. Snow, W. Woods, David J. Power, Samuel Steinfield and the officers.

A committee was appointed to make arrangements for a road run as well as several races for the Quinn trophy. Application has been made to Secretary Elliott for admission to the American Automobile Association, and also to the New York State Automobile Association. It is expected that favorable action will be taken on the former at the next meeting of the A. A. A.

Kansas Division, A. M. L., to Hold Meet on Labor Day.

LINDSBURG, KAN., July 22.—At the meeting of the executive committee of the Kansas Division of the American Motor League, recently held in Topeka, plans were made for the holding of the annual meet, which will take place at Lawrence, Kan., on Monday, September 2, Labor Day. The events will be confined to gymkhana "stunts" and probably a hill climb. The members present at the meeting were: A. E. Agrelius, Lindsborg, who is chief consul for Kansas; G. L. Knight, Lawrence; James G. Blaine, Pratt; George W. Crane, Arthur Capper and George W. Stansfield, Topeka. The Topeka and Kansas City divisions are expected to send at least fifty cars each to the races, and it is thought that with favorable weather there will be a representative gathering of autoists from all parts of the State.

A. C. of Germantown Holds Its Annual Meeting.

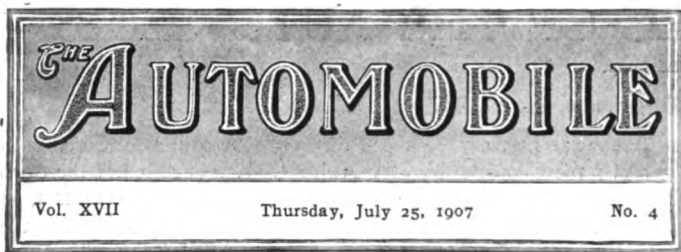
PHILADELPHIA, July 22.—At the annual meeting of the Automobile Club of Germantown last week the following officers were elected: Thomas B. Prosser, president; Charles H. Thompson, vice-president; Mark B. Reeves, secretary; Robert P. Hooper, treasurer. The following board of governors was also elected: John D. McIlhenny, S. B. Ferguson, William F. Helme, Prescott Adamson, Robert P. Hooper, Clarence B. Collier, Harry K. Duffus, Mark B. Reeves and G. Dunbar Shewell. President Prosser named the following finance committee: S. B. Ferguson, chairman; Charles H. Thompson, Clarence B. Collier and Robert P. Hooper. The club now has a membership of 162.

Clevelanders' Sealed Bonnet, Utility and Efficiency Trials.

CLEVELAND, O., July 22.—The Cleveland Automobile Club will hold a series of contests shortly, all of which will be run during the latter part of August. There will be a sealed bonnet contest for gasoline and steam machines, a utility test for commercial vehicles and an efficiency trial for electric cars. George H. Bowler will be in charge and data relating to these contests may be obtained by addressing him at the club. It is proposed to make a national event of these trials and numerous promises of entries have been received from all parts of the country.

Maryland Club Acquires Permanent Quarters.

CARONSVILLE, MD., July 22.—The recently organized Automobile and Driving Club of this city has just leased the Yearley property on Wilkins avenue for club purposes and will remodel the old mansion and improve the grounds, making an up-to-date clubhouse of the former.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
L. R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union (including Canada) - - - - - One Year, 3.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hilfe & Sons, Limited, 20, Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second class matter.
The Automobile is a consolidation of The Automobile (monthly) and the
Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October,
1903, and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905,	- - - - -	730,000
" " in 1906,	- - - - -	791,000
" " This Issue	- - - - -	16,500
" " Since January 1,	- - - - -	488,150

Successful Termination of the A. A. A.'s 1907 Tour. Whatever may be the decision of the judges in awarding the Glidden and Hower trophies, that of the competitors and of the industry at large must be to the effect that the event just closed has been the most successful of its kind. Were it not for the unfortunate mishap and its fatal termination that marked the second day of the run, there would not be a blemish to mar its success as a whole. Of course, there will be dissenting voices from this dictum, and such a state of affairs is inevitable. Circumstances are bound to arise that make it not alone expedient, but render it imperative, for those in charge to subordinate the personal convenience or individual welfare of some of the competitors to that of the general good, and, under the stress of trying to attend to every one of the thousand details that arise on such occasions, personal wants and personal appeals for aid may not receive that prompt and painstaking attention that the applicant generally thinks the dignity of his position warrants.

With the injustice of a fancied grievance rankling in their minds, it will naturally be impossible for some of the competitors to view the tour in the same impartial light as becomes the disinterested observer. That is, not at the present. Time wipes away the taint of petty annoyance, and then we are able to take a broader view of what was at the moment overshadowed by personal bias. And viewed from this standpoint, the tour must be conceded to have been a great success. Not that it was perfect, by any means; hotel accommodations might have been better, rules and regulations might have been improved, and there were a dozen

and one things that doubtless each one of the competitors thought he could have done better had he been in charge; but above all this stands out to the credit of those who did the work that it was carried out *far better* than it has been in any previous year, and as a result the 1907 tour marks a closer approach to the fulfillment of the purpose for which it was instituted than has previously been the case. Considered as a whole, the performance of the cars is highly creditable to the American automobile and the American industry.



Does Thirty-six Inches Represent the Wheel Limit? It is now a little more than two years since the tire-maker succeeded in convincing the automobile manufacturer and the autoing public in general that large wheels were of necessity the first step toward the solution of the tire problem, which was at that time far more pressing than it has been since, due to the adoption of the suggestion of those who were in an excellent position to know. In fact, the advance in size has been so general that it is not difficult to determine a car's age by the size of its wheels, few of the heavier cars now carrying anything less than 36-inch rolling supports, while there has been an almost universal advance to 34 inches on the part of the makers of lighter cars. The change has been so uniform that the question naturally arises: Is 36 inches the limit in this direction? and it is rather apropos at the moment, in view of the announcement by its maker that one of the low-priced two-cylinder cars for 1908 is fitted with 36-inch wheels.

The man who pays a high price for his machine looks for features that are lacking on lower-priced constructions, and the maker usually responds to this demand. Will this alone be sufficient incentive for the builders of expensive cars to make a still further increase in wheel sizes? The question is wholly one of cost. Rubber costs more to-day than it ever did, and skilled labor is still an expensive commodity, while the increase in the cost of making such tires would probably not be entirely proportionate to the difference in size, but would be apt to be greater. With the greatly increased manufacturing costs that characterize the production of the modern automobile, due to the vastly better grade of materials used in its construction, there can be little doubt that the manufacturer is not anxiously seeking means to cut down his profits by the adoption of such a substantial percentage of increased cost as would be involved in tires of a larger size, say 38 inches. There is another equally important side to the question: Would the autoist care to foot the bills for replacing such tires and deem himself better off in the end, in view of the improved service they would render?



New Jersey Repudiates the Vanderbilt Race. With characteristic short-sightedness the aptly-named "foreign land" on the west bank of the Hudson has decided that it will have none of automobile racing. The bill rushed through the lower house is constitutionally defective and Governor Stokes, who has had his ear to the ground since first lending enthusiastic support to the proposed holding of the Vanderbilt Cup Race, has detected an ominous rumble, and now says nay most emphatically—he never even thought of such a thing.

Through his own carelessness one of Jersey's citizens met his death on Long Island last year. The spectators were so utterly oblivious to their own safety that the marvel is more did not meet the same fate. But that says nothing against automobile road-racing, which as a sport has proved not a whit more dangerous than many another. Scores of people have met their deaths watching a well-ordered baseball game, but on one has denounced it as a crime against society, and the same is true of yacht racing, which can show a long list of fatalities. New Jersey has distinguished itself in other ways by its mediæval attempts to repress the automobile, so that the spirit manifested on the present occasion is not surprising, while the Jersey conception of a racing car as a man-eating monster is ludicrous.

BOSTON AUTOISTS TO CELEBRATE HOME WEEK.

BOSTON, July 20.—The executive committee of local automobilists, which is in charge of the automobile features of Boston's Old Home week celebration, July 28 to August 3, has about completed the program for "Automobile Day," which will be Thursday, August 1. Circulars will shortly be sent out to the automobilists of the city and vicinity asking them to participate in the automobile tournament, which will include a parade through the streets of the city and gymkhana events on Boston Common.

When the subject was first broached it was suggested that a road race or a hill climb, or both, would be interesting to the visitors as well as the inhabitants of the city. Owing to the great crowds that are expected the committee at once discarded the race proposition. The hill climb was also abandoned on account of the crowds, and because no suitable hill is available within easy reach of the center of the city. All efforts, therefore, will be concentrated upon the parade and the gymkhana games. J. H. MacAlman, manager of the Columbia branch, and president of the Dealers' Association, is chairman of the parade committee, while K. M. Blake, manager of the Locomobile branch, is chairman of the committee on Gymkhana games; F. A. Hinchcliffe, of the Winton branch, is treasurer of the executive committee, and Chester I. Campbell is chairman.

Those in general charge of the Old Home week celebration appropriated \$1,000 for the use of the committee, and with this money prizes will be purchased which will be awarded both to parade and to Gymkhana contestants. In the parade five prizes will be offered as follows: for the best appointed touring car, the best appointed runabout, the best appointed car driven by a lady with lady passengers, the best decorated car and the most grotesque car. The parade will be a short one, and, though the route has not been decided upon, probably will cover some of the down-town streets as well as Back Bay and park roads. It will assemble about 11 o'clock A.M. Thursday, and will finish at the Common in time for the Gymkhana events.

In the gymkhana events, which will be of the usual order of such sports, prizes will be offered. In both parade and gymkhana every effort is being made to interest private owners, so that there will be a large number of entries. It is hoped to make the parade the largest ever held in New England, if not in the country. The committee points out that the parade gives an excellent opportunity to show the extent of the local industry.

MADISON, CONN., STARTS A TRAPPING GAME.

"Kindly warn your readers that a trap is being maintained in Madison to catch the unwary," writes Walter S. Schutz, one of the Hartford attorneys who was largely responsible for the new Connecticut law recently enacted. "I defended one case there last Saturday, and though the evidence of the prosecution was extremely slim, my client was convicted and fined \$50 and costs. An appeal has been taken to the Superior Court, and we mean to see it through. Several courses purporting to be 1,400 feet in length have been measured off in the town, and the local constables and similar highwaymen are stationed behind stone walls on Sundays and holidays, ready to trap anyone who goes more than twenty miles an hour."

CHICAGO TO HAVE ANOTHER TWENTY-FOUR.

CHICAGO, July 22.—Walter White's challenge to C. A. Coey, winner of the recent 24-hour race at the Harlem track, for a similar event between a White steamer and Coey's Thomas, having been accepted, Labor Day will see a repetition of the round-the-clock grind that was part of the entertainment planned for the A. A. A. tourists. The event is to be started at 5 P.M. Sunday in order to finish at the same time on Labor Day, and it is said Coey will wager \$2,000 on his chances, while the backers of the White will post a side bet of \$1,000 on the result. The course will be specially prepared for the star event which will be preceded and followed by short distance races.

QUAKER CLUB TO SUPPRESS BUCOLIC GRAFTING.

PHILADELPHIA, July 22.—Driven to desperation by the high-handed manner in which the rural authorities are mulcting good and bad alike, the Quaker City Motor Club has undertaken an active campaign for the suppression of this type of blackmail and intends to put an effective quietus upon it. Headquarters have been established at the Hotel Majestic, and immediately upon traps being reported warning signs are posted. The victims of hold-ups are urged to refuse to pay fines, even at some personal inconvenience, the cases being defended by the club's attorneys. The Pennsylvania law requires the horn to be sounded at all crossroads and an alleged failure to do so is now the most usual pretext on which parties are apprehended, as the majority now very disobligingly refuse to drive fast through the traps. The club has issued instructions in which autoists are warned to keep within the 20-mile limit and to sound the horn at the slightest provocation, winding up with "when arrested, turn your case over to the club's attorneys."

Interesting developments have also taken place recently in the toll road situation. The Montgomery pike parallels the Lancaster pike, and the former has been collecting but three cents a mile to the latter's five, so that the former decided to get some of the easy money, and jumped the rate from the city line to Bryn Mawr from 15 to 34 cents for a touring car, the Lancaster rate being 26 cents. But local autoists who know all the ins and outs have stirred themselves to activity by publishing maps in all the local dailies, showing how the majority of the toll gates can be circumvented, and the toll roads are taking in less money than ever.

PLACING A BAN ON THE RECKLESS DRIVER.

BOSTON, July 20.—The Safe Roads Automobile Association, an organization recently formed in this city for the purpose of preventing the improper use of automobiles and prosecuting reckless drivers and those who do not obey the law and the rules of the road, is conducting a very active campaign, and has already made its influence felt by securing the revocation of several licenses and registrations by the Highway Commission. The Association is composed largely of private owners of automobiles, and it employs agents whose duty it is to investigate cases of reckless driving that may come to the attention of the association, collect evidence, and prosecute the cases. The association justifies its existence by pointing out that in a period of twenty-six days ending July 10, there were ninety-two accidents in Massachusetts in which automobiles were involved; forty-three pedestrians were injured, and there were forty-nine collisions between automobiles. Nine people have been killed and thirty-four injured. To aid in its work the association has just made an offer of \$50 reward for evidence which shall lead to a conviction in cases of infraction of the automobile law.

ALGONQUIN HILL-CLIMB SET FOR AUGUST 9.

CHICAGO, July 22.—Owing to the fact that the tour of the American Automobile Association for the Glidden trophy interfered with the date originally set for the annual hill climb of the Chicago Motor Club and the Chicago Automobile Trade Association, it has been postponed until Friday, August 9, on which date it will be contested at Algonquin, Ill. This action was taken at a meeting of the committee, consisting of Charles P. Root, F. W. Cornish, H. P. Branstetter, B. C. Buxton and J. V. Lawrence.

One more event was added, a free-for-all, which will allow of the competition of steamers. The basis of classification also was changed. The cars will be classified according to piston area instead of price. In the first five events only gasoline cars will contest.

In the free-for-all the winner will be the car making the fastest time, but in the other events the cylinder capacity of the car, multiplied by the time in seconds, divided by the weight of car with driver, will be the basis of competition, this rating having been adopted with a view to reaching a more equitable result.

BROOKLANDS MEET PROVIDES TAME SPORT.

LONDON, July 8.—The first race meet at Brooklands has hardly proved the big success anticipated and big alterations will have to be made in future events to sustain public interest. All the elements of success were present at Saturday's meeting—a representative collection of cars, good weather and a perfect track—but the easy wins together with the withholding of times in order to enable the committee to frame future handicaps greatly bored the spectators once the novelty had worn off. The attendance was itself below expectations. But 14,000 turned up for this opening meet, and it will be necessary for this to be increased in future if the track is to pay. The members' and £1 inclosure contained a select gathering of society notabilities and no less an accession to the sport of motor racing was to be found in the humble half-crown section, where the horsey betting men warily laid the odds against the favorites.

The very magnitude of the track prevents success from a spectacular point of view; it is impossible to see the whole run distinctly, and if close sight of the fast swing round the banked curves is desired, view cannot then be had of the finishing straight. Add to this complaint the fact that the cars were insufficiently numbered and that the vari-colored umbrella coats of the drivers—in most approved jockey style—proved impossible of easy recognition, and it will be seen that the universal grumble was well justified. Unofficial timing on Saturday showed that speeds of well over ninety miles an hour were reached, yet at no time did the apparent gait reach a mile-a-minute standard—to such an extent did the huge size of the track dwarf speed by comparison with the flying spots on it.

The first race failed to arouse much excitement, after two preliminary heats the final of the Marcel Renault Memorial Plate of £550 being won by the 40-horsepower Napier. Excitement was soon warmed up in the 15-mile run for the Gottlieb Daimler Memorial Plate of £650, the limiting engine dimensions being 120 to 135, based on the new formula adopted by the Royal Automobile Club recently. The two Daimlers had an easy run for first and third places, Huntley Walker coming second on a Darracq after three of the other competitors had been eliminated by accidents, including a broken valve on the Minerva, water shortage on the Napier and a loose bonnet that flooded Sangster's face with oil on the Ariel. The excitement aroused by this event culminated with a magnificent finish of the race for the Byfleet Plate of £550. Before half of the ten miles had been covered, the race resolved itself into a neck-and-neck contest between Jarrott's De Dietrich racer and the stripped Napier driven by Newton. For the whole of a three-mile lap the two cars remained wheel to wheel until the finishing straight was reached. Jarrott gained about ten yards, but when just on the line the Napier seemed to make a leap forward and the judges gave the result as a dead heat, rather an unexpected decision for such a high-speed event. Huntley Walker came in third on another of his innumerable Darracqs.

For the Montague cup for the high stake of £2,100 both Nazzaro and Duray were booked to appear and their absence caused much disappointment. Hutton's 120 Mercedes was placed first, with Okura, a Japanese motorist, second on a 100-horsepower Fiat. The final event was run on a price basis, cars listed at £600 to £700 racing for the Stephenson cup over a distance of two laps or six miles. Huntley Walker's Darracq this time managed to come in first with the Marquis de Saint Mars at the wheel; Sangster's Ariel took second place.

ONTARIO TOWN TO HAVE A 'BUS LINE.

STRATFORD, ONT., July 22.—A project to operate an automobile 'bus service here is already well developed. Three cars will be employed for passenger service, each having a carrying capacity of 12 to 20 passengers, and will be run regularly for a five-cent fare over any part of their route. Other cars will be employed to carry factory operatives to and from the plants in the suburbs, and will be rented during the afternoons for parties.

LONGMEADOW A FIT SUCCESSOR FOR LEICESTER.

SPRINGFIELD, MASS., July 22.—It would appear as if the mantle shed by Barber Quinn, of Leicester, who made the name of that town a stench in the nostrils of autoists throughout the East, has fallen upon the shoulders of one Henrattie, an ex-brakeman of a freight train who was recently appointed a special officer at Longmeadow, a hamlet just to the south of here. With the usual equipment of a cheap stop-watch he has marked out an appropriate scene of operations and is hard at work. His prey is haled to the Springfield police court and it is said that the records show no instance of an acquittal, despite the fact that this modern Dick Turpin has testified to performing such fantastic tricks as catching an automobile by "jumping onto the rear hub and from there to the running-board" while it was going 34 miles an hour, bearing witness to such performances with no little pride. A Springfield autoist has offered \$50 for a repetition of the performance provided he be not saddled with funeral or other incidental expenses, but there has been no attempt to lift the purse so far.

The Springfield Automobile Association posted a number of warning signs, but the selectmen did not appreciate this interference with the business of trapping and had them removed, beside publicly approving of the conduct of their chief trapper, stating that they are "pleased with the officer's success." The matter is assuming the proportions of a public scandal, for, in addition to the marvelous feats of the man who can keep his eye on a car and the stop watch at the same time, snap the latter when the car passes and then sprint after it, the action of the police judges is far worse, as they fine defendants even when the latter testify to having been warned of the trap and were going slowly, beside which they are subjected to abuse and vituperation by the attorneys for the prosecution in their cross-examination.

TOLEDO AND VICINITY IN A BROIL.

TOLEDO, O., July 22.—This town is in a state bordering on anarchy where automobile laws are concerned and the city council is in a quandary. Not long ago the special motorcycle policemen detailed to see that the mile-in-six-minutes ordinance was not violated reported that it was impossible to do so unless every machine carried a license tag. The council moved, passed the required ordinance and purchased 500 tags. There were not enough to go round by several hundred, so that the law cannot be enforced any better now than before, and considerable red tape must be unwound before the remaining tags can be provided. The situation is further complicated by the practice some have started of turning the tags upside down, and several are said to have escaped arrest in this way. Another law provides against the driving of cars by persons under 15 years of age, but it is a dead letter and is violated daily.

Outside of Toledo the farmers appear to have declared open war on the automobile, their hatred taking the form of dangerous obstructions, log barriers and the like placed in dark spots on the roads, which have resulted in numerous accidents and frequent narrow escapes. It is little short of marvelous that no fatalities have been reported on this account, as the barriers have been placed with every evidence of the most diabolic ingenuity in concealing them that could be expected of a train wrecker.

DALLAS THINKS EIGHT MILES FAST ENOUGH.

DALLAS, TEX., July 20.—This city is being governed by a commission nowadays in place of its former mayor and council, and in order to demonstrate to the new governing body just what traveling at eight miles an hour in an automobile means, all five of the commissioners were taken riding by autoists recently, the purpose also being to demonstrate the poor condition of the streets, which are extremely hard on a car.

But the trial did not have the desired effect, as after it was over Commissioner Doran observed, "I believe eight miles an hour downtown, and a *little faster possibly* out in thinly settled and traveled streets would be about right for the speed limit."

PUTTING MASSACHUSETTS' LAW INTO EFFECT.

BOSTON, July 22.—The Massachusetts Highway Commission this week enters upon the arduous task of reregistering all of the automobiles in the State in accordance with the law passed by the last Legislature. This provides that the registrations of all automobiles in the State shall expire on August 1, and that to renew them until January 1, 1908, shall cost \$5, and that the registration fee thereafter shall be \$5 annually for automobiles and \$2 for motor cycles. It is estimated that there are in use something like 15,000 automobiles and 500 motor cycles, and to reregister all these the Highway Commission has been obliged to secure a much larger force of clerks, and will go to an expense estimated roughly at \$5,000 during the next two or three weeks.

The individual owners will be inconvenienced as little as possible, as they will be permitted to retain their old number plates and registration numbers. Each owner of a car will receive a bundle of documents from the commission. These he is expected to read, and there are also blanks for him to fill in. The blanks are to be returned to the Commission with the amount of the fee, and a new certificate of registration will then be issued. The work probably will not be finished until after August 1, so the commission is trusting to the discretion of the police in holding up cars for a week or two.

It is estimated that the registration this summer will bring in to the State's coffers a total of \$84,000 in fees, and on January 1 next there will be another \$84,000 or more, providing \$168,000 as a road fund. Three-fourths of this is to go for State roads and the other fourth for the upkeep of the parkways and boulevards of the Metropolitan Park Commission.

CONTINENTAL CLUBS TO ADOPT RULES.

PARIS, July 16.—With a view to coming to some agreement regarding a standard code of regulations to govern automobile racing all over the world, representatives of English, French, American, Dutch, Belgian, Austrian, Italian, Swiss, Hungarian and German clubs are to meet at Ostend to-day. Some of the delegations have made known in advance the stand they wish to advocate, Italy favoring the elimination of a horsepower standard and desiring the privilege of optional weights. A difference of opinion exists between the general committee and the racing committee of the A. C. F., the former favoring four-cylinder cars having a minimum bore of 160 mm. and a minimum weight of 1,108 kilos, while Marquis De Dion, of the racing committee, who is one of the delegates, proposes a minimum weight of 1,300 kilos and a minimum fuel consumption of 20 liters per 100 kilometers.

GERMANY TO INSTITUTE A NEW CLASSIC.

LONDON, July 16.—As is well known, the rules under which the Herkomer Trophy is competed for call for the holding of that event in England for the next three years, so that there is already considerable talk in German automobiling circles of instituting another event to be held at home next year. Nothing definite has come to light as yet, but it is reported that Prince Henry of Prussia will donate a trophy and the event will be placed on an international basis, part of the route being laid in Austria. Miss Dorothy Levitt, who received a gold plaque for her driving in the last Herkomer tour, expects to give an exhibition of her skill on the Florida beach next winter. According to present reports, the running of the tour this year shows a substantial profit.

MOTOR BOAT RACE FOR THE COUPE DE PARIS.

PARIS, July 21.—The high speed attained by the gliding boats was the feature of the "Paris à la mer" motorboat race, which started from Auteuil bridge this morning. The race to Suresnes lock for the Coupe de Paris was easily won by the Panhard-Tellier, the Rapiere being second and the Lorraine-Dietrich third. Fournier handled the Itala II. and Perignon steered the Dietrich.

NEW BOOKS PERTAINING TO AUTOMOBILING.

Motoring in Fiction.—A new automobile romance by C. N. and A. M. Williamson, has appeared in the July issue of *Lippincott's Magazine*. It is entitled, "He Who Stole and Rode Away." The hero, Captain Laurence O'Hagen, late of the British army, finds himself in such an extraordinary position that he is obliged to run away with another man's automobile. The heroine is Mona Eversleigh, a young heiress whom a pair of titled Australians are seeking to entrap into a marriage whereby they can get control of her fortune. It is the kind of story in which there is "something doing" on every page.

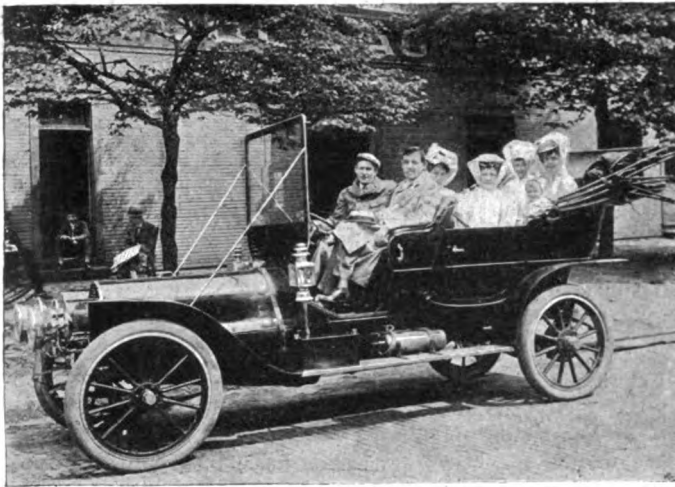
Touring Club of Italy's Road Book.—Remarkably good work is being done by the Touring Club of Italy in the publication of information on touring conditions in that country, the efforts of the past few years having made Italy only second to France for convenient touring. In their *Annuario dell' Automobilismo, 1907*, just published, the tourist has a complete guide in Italian to regulations, laws, taxes and routes in Italy and a number of other European countries. The new volume contains maps of all the race circuits in Europe, with large colored maps showing how to reach them from distant points. The book, which has more than seven hundred pages, is published by the Touring Club of Italy, 14, Via Monte Napoleone, Milan.

A Book of Foreign Wanderings.—Francis Miltoun's "The Automobilst Abroad," just from the press of L. C. Page & Company, Boston, will please in proportion as the reader has become imbued with the dilettante automobile spirit. Certainly the speed maniac who retires disgusted when road or mechanical conditions prevent the addition of another figure to his best record will have little sympathy with the work; nor is the inquisitive statistical and historical-bloated traveler likely to find the tone altogether sympathetic. But the man who experiences a real joy in studying the moods of an engine, who can appreciate good roads and take bad ones stoically when they come, who likes to linger over well-supplied tables and sip the best wines of the country of his temporary adoption will find the perusal of the book a real pleasure.

Abroad to Francis Miltoun practically means France—the Elysium of the motorist. Through smiling Touraine, around romantic Carcassonne, the wildness of the Pyrenees, in Languedoc and Old Provence, along the banks of the turgid Rhone, or through the more sober but no less interesting Seine and Oise, the writer leads his guests, picking out resting places that he would fain never leave, giving pictures of old world customs untarnished by modernity and supplying useful touring hints as far removed from the stereotyped guide book as it is possible to imagine. The land of dykes and windmills, the roads by the Rhine, the stretches of pavé in Flanders, as well as that cyclist-auto pilgrimage from Land's End to John O'Groats form a part of the travels of the automobilst abroad; but it is evident that Francis Miltoun is more at home in the land of the tricolor, and whenever absent hankers after its unique conditions. There are interesting chats on an "Appreciation of the Automobile," "Roads and Routes," "Hotels and Things." A number of colored plates and half-tone illustrations embellish the volume.

AN ECHO OF ORPHANS' DAY FROM THE WEST.

SPRINGFIELD, ILL., July 22.—The Sangamo Club of this city may have been somewhat belated in celebrating orphans' day, but the fifty-three waifs from the local Home for the Friendless who were given the treat lost nothing by waiting, as the aristocratic members of the club did the thing up in style. They were given a ride about the city in the cars, then taken to the Country Club, where they were feasted, topping the good time off with a visit to the White City. Twelve cars were in the procession and part of the route lay through Washington Park.



AN OHIO FRANKLIN AGENT AND HIS SIX-CYLINDER CAR.

In the tonneau are Chief Justice Day's daughter and son, Mrs. James Kimbark, wife of the treasurer of the Timken Roller-Bearing Axle Company, Miss Daisy Trout, and Mrs. R. J. Diebold. In the front are R. J. Diebold, the Canton, O., agent for the Franklin, and Dilbert Warder, driver for H. H. Timken.

HOT WEATHER NEWS FROM THE QUAKER CITY.

PHILADELPHIA, July 22.—As chairman of the contest committee of the Quaker City Motor Club, E. C. Johnson is very well known locally, but it was through his assistant managership of the local White branch house that he had attained fame. Indeed, Johnson and White had become synonymous terms. Imagine the surprise of the local automobile world last week when the announcement was made that Johnson had renounced steam and all its works and had taken up gasoline as exemplified by the Keystone Motor Car Company, which handles the Packard here. The same company also represents the Buick locally, and has secured "Eddie" Wilkie, formerly of the Spencer-Wilkie Company, to take care of that branch of its business.

Four business days were practically chopped out of the calendar of the "Row" establishments last week. The big reunion of the Elks and the parades through the Court of Honor in front of their places of business drew such crowds that the police officials ordered vehicles of all kinds off Broad street from 7 A. M. to 11 P. M., much to the detriment of demonstrations. Many of the dealers returned good for evil by loaning one or more cars to the Elks Entertainment Committee for the entire week. These machines were used mainly for sightseeing tours.

Oshkosh, Wis.—Preparations have commenced for the erection of a modern garage for the Krueger Automobile Company on Jefferson avenue and Merritt street. Dimensions are 112 by 55 feet, the building to consist of three stories.

A PROSPEROUS SEASON FOR DETROIT'S TRADE.

DETROIT, MICH., July 22.—That the present season has been the most successful in the history of the industry for Detroit and Michigan makers of automobiles and accessories is universally conceded. Backward weather and the slump in Wall Street had a tendency for a time to beget pessimism, but the clouds have rolled away and a glance back over the past twelve months indicates a gratifying condition of affairs.

A careful canvass discloses some interesting facts regarding the growth of the industry and the imposing proportions attained. During the season practically closed there were made in twenty factories in Detroit and Michigan not less than 21,500 automobiles, ranging all the way from runabouts to five-ton trucks, although the commercial vehicles cut a small figure numerically. The selling value of these cars on a conservative basis totals, approximately, \$32,000,000.

Of this number Detroit produced more than 12,000, the rest being divided among seven factories throughout the State. The total value of Detroit's production was \$17,000,000 or approximately 60 per cent.

One year ago there were engaged in Detroit factories devoted exclusively to the manufacture of automobiles 3,500 skilled mechanics. Within the past twelve months this number has been increased to 5,000. Just how many are employed in the factories outside of Detroit cannot be determined, but they number thousands. On a conservative estimate, not less than \$10,000 is paid out daily in wages to toilers in Detroit auto factories.

But this is only part of the story. Detroit is recognized as one of the greatest centers in the country for makers of parts and accessories. In this line, including the production of tires, of itself an item of importance, not less than 5,000 persons are employed. Taking the same average wage as prevails in the automobile industry, it will be seen that another \$10,000 is disbursed daily. Combining these two, \$20,000 is put into circulation in wages alone every day during the busy season, and this means practically the entire twelve months just closed. Added to this is the amount paid out for similar purposes in factories outside of Detroit, bringing the total for the year in wages alone well up toward the ten million mark.

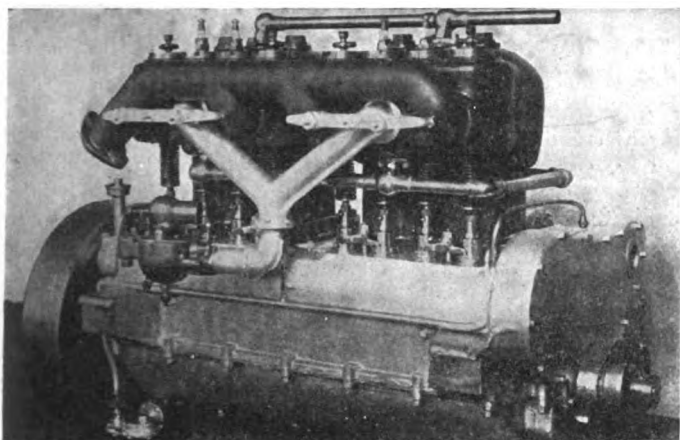
It is interesting to note that three concerns produced more than one-half Detroit's entire output, three more out in the State furnishing 80 per cent. of the 9,500 contributed by the State.

At least four Detroit concerns did an aggregate business in excess of a million dollars, two approaching the \$5,000,000 mark. Five out of seven scattered through Michigan also exceeded the million dollar mark, one reaching \$5,000,000 and two others getting past \$3,000,000.

With the tag ends of last year's business out of the way, most of the local concerns are already busy with plans for the coming season. The Packard Company has had its 1908 model out for some time, and several others are nearing completion, everything pointing to an earlier start than has been customary in the past.



THE CLUBHOUSE AT DEL MONTE, CAL., ON THE OCCASION OF THE SECOND ANNUAL LUNCHEON AT THE RECENT MITCHELL MEET.



INLET SIDE OF THE NEW WAUKESHA MOTOR.

NEW MODELS OF WAUKESHA MOTORS FOR 1908.

In bringing out its line of motors for the season of 1908, the Waukesha Motor Company, Waukesha, Wis., have made a self-contained system of lubrication a feature of the $4\frac{1}{2} \times 5$ and the $4\frac{3}{4} \times 5$ -inch sizes, in response to the general demand. These motors are of the well-known Renault type, and embody all the best features of design consistent with practical simplicity. The cylinders are cast in pairs with all the valves on one side, while the cooling-water circulation enters just below the valves and leaves through a brass manifold running along the top of the cylinder heads, the valves thus being amply water-jacketed. The cylinders are ground to exact size, and the pistons, of the same grade of iron as the cylinders, are provided with four compression rings, split diagonally and ground to 4-1000 undersize at the bottom and 6-1000 at the top. The brass water pump is of the centrifugal type and is driven from the same shaft as the magneto, while a timer for battery ignition is placed vertically at the flywheel end of the motor and driven by the camshaft through hardened steel miter gears, encased and running in oil.

From the same shaft a small oil pump, forming the chief feature of the lubricating system, is driven, oil being constantly pumped from an oil-well below the crankcase to the main bearings and cylinders, thence draining to the crankcase oil-pan, where it is utilized for splash lubrication, constant-level drain holes being provided to take care of any excess and conducting the latter directly back to the special oil chamber beneath. A straining and filtering device is fitted between the pump and crankcase, and is easily removable for cleaning, while the pump itself and the small amount of piping necessary are both on the outside of the crankcase in an accessible position, so that the system is extremely simple and reliable, it only being necessary to maintain the supply in the oil chamber. High-tension ignition is employed, the valve-chamber plugs being tapped for standard $\frac{1}{2}$ -inch plugs, while provision is made for any standard magneto.

From the foregoing, as well as the following specifications, it will be evident that the design of these motors is the result of long experience in this field and that nothing has been omitted to make them represent as close-cut and compact unit power plants as are obtainable on the market. Both the connecting rods and the crankshaft are drop forgings, the latter being of .45 per cent. carbon steel, while the split bearings of the former are bushed with Parson's white bronze, the dimensions of these main bearings being $1\frac{3}{4}$ inches in diameter by 3 inches in length. The piston pin is hollow, and measures $1\frac{1}{4}$ inches in diameter externally and $\frac{3}{4}$ inch internally. It is hardened and ground, and gives 4 square inches of bearing surface on the piston lugs. The crankshaft is offset 1 inch from the axis of the cylinders, and it is forged integral with a flange to take the flywheel, the latter being finished all over and assembled with the crankshaft. All the connecting rods and all the pistons are made of exactly the same weight, thus giving perfect mechanical balance.

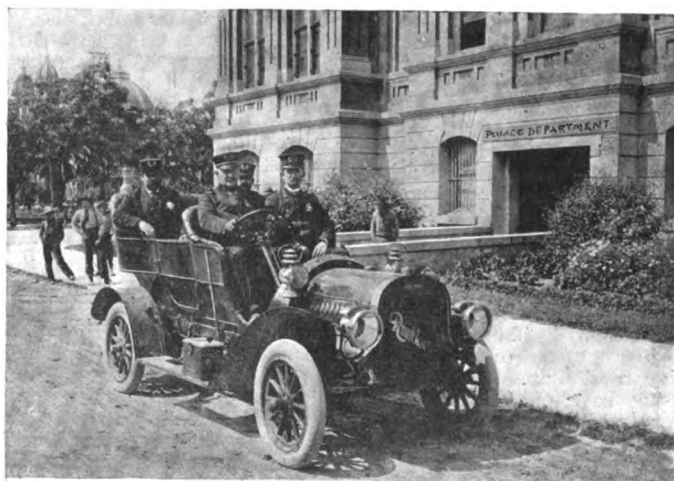
KNOX COMPANY TO INCREASE ITS CAPITAL.

SPRINGFIELD, MASS., July 22.—As a preliminary step in a plan looking to an increase in the capital of the Knox Automobile Company, and as a means of forestalling any ill-advised or hasty action by a large creditor, the latter to-day made a voluntary assignment for the benefit of its creditors, Alfred N. Mayo being appointed trustee. The position of the company and its reasons for taking the step are fully explained in the statement made public by President E. H. Cutler, which is as follows:

The Knox Automobile Company, having found itself embarrassed by lack of ready money and having consulted some of its larger creditors, has upon their recommendation made an assignment for the benefit of all creditors to Alfred N. Mayo, of Springfield, and it is expected the company will continue its business by securing additional working capital. The company has this year done an increased and profitable business, and its product is remarkably successful. The difficulty is due largely to the fact that the capital is too small to handle the large business under present conditions. The inventory just taken shows that the assets are nearly double the liabilities, and sales this year have been larger than the previous year, but, owing to the exceptionally bad spring weather, they have been smaller than was expected. With a splendid car, increasing business and a surplus, together with a reputation for good workmanship and fair dealing which has earned the goodwill of both its customers and creditors, it would seem that the plans already on foot for reorganization with largely increased capital cannot fail to succeed and that there will be practically no interruption of business.

FIRST RAMBLER MODELS FOR 1908.

Soon the whole fleet of new Ramblers of all sizes and types for 1908 will be in the hands of the Rambler agents and branch houses, the Model 31, which is the two-cylinder representative, or at least one of them for 1908, being the first to put in an appearance. The differences between it and Model 21, which was its 1907 predecessor, are slight. The controlling devices are now placed over the steering wheel in response to the general demand, the forward portion of the footboard has been given more of a slant and the rake of the steering wheel has been increased somewhat, while the pedals are so arranged that there is no possibility of dirt finding its way through the floor. The most important change is to be found in the adoption of 36-inch wheels, shod with 3 1-2-inch tires front and rear, the power plant being practically identical with this year's machine, except for a slight improvement in the valve-operating mechanism. Though the new model has been put through the usual thorough testing-out process, H. M. Vale, the Rambler representative at Beloit, Wis., will drive one of the new cars about a thousand miles through lower Wisconsin.



A RAMBLER IN THE SAN JOSE, CAL., POLICE SERVICE.

Realizing the value of the automobile as an aid to the maintenance of proper police service, the municipality of San Jose, Cal., placed an order for a Rambler Model 21 with F. H. Bush, the local agent. The accompanying photograph shows Chief of Police Carroll at the wheel.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

The Camden Auto Exchange, of Camden, N. J., has been incorporated with a capital stock of \$25,000, and George W. Smart will be the local manager. The concern will deal in automobiles and supplies.

According to mail advices from France received by the American Locomotive Automobile Company's branch in New York, the Berliet is achieving victories of no less value in Europe than in this country. At the Saltburn races in England a 22-horsepower Berliet won the Rowland Cup and a gold medal by defeating a field of twelve of its own power, and in a strenuous endurance test an 80-horsepower Berliet was victorious, both achievements having been attained in competition with the best makes of foreign cars.

A special round tread racing tire is the latest product of the Michelin et Cie, the French tire makers, and it is coming in for an unusual amount of favorable comment at the hands of its users. It is made with more fabric and with a heavier tread than usual, and though especially designed for racing purposes has also been found equally well adapted for touring, particularly on heavy cars. E. Lamberjack & Co., the local Michelin agents, have had an unusual demand for the new tire during the three months that they have handled it.

It was erroneously reported that Lytle's accident at Detroit on July 4, when his Pope-Toledo went through the track fence, badly smashing the car and spoiling his chances of winning, was due to a bursted tire, as the Hartford Rubber Works Company, Hartford, Conn., took pains to ascertain the true cause of the accident, and found that it was due to the breaking of the staybolt on the detachable rim that was employed, the tire, which was one of the Hartford-Midgley treads, being found in perfect condition after the accident.

H. J. Edwards, chief engineer of the Stoddard-Dayton Company, Dayton, O., who has been largely responsible for the great success of the cars of this make, was given a surprise by C. G. Stoddard, vice-president and general manager of the company, last week. In celebration of the completion of the Type 8F touring car—the latest addition—a dinner was prepared in Mr. Edwards' honor without his knowledge, and he was presented with a huge silver loving cup, which, according to report, was filled with Stoddard-Dayton "enthusiasm."

After several months' work by one of the foremost experts in the country, and at an expense of several thousand dollars, the Hartford Rubber Works Company have just gotten out a most comprehensive road map. It covers all of the territory east of Cleveland and Pittsburgh, north as far as Toronto, showing the best roads in this entire territory to and from the Jamestown Exposition. The map has been made thoroughly up-to-date, for which the latest and most complete touring information has been utilized. Copies will be sent gratis on application to the Hartford factory.

Two additional buildings are shortly to be erected by the Crawford Autom-

bile Company to increase the facilities of its plant at Hagerstown, Md., in order to take care of the large demand for 1908 cars of this make. R. B. Crawford, president of the company, and a member of the Standardization and Technical Committee of the American Motor Car Manufacturers' Association, states that the working force will be increased 40 per cent, and the Crawford output doubled next year. One of the new buildings will house the body building department, and the other the tool room and additional machinery.

The Monarch Motor Car Company broke ground for its new factory at Chicago Heights, just outside the Windy City, on Monday last. The main building, which will be used principally as a machine shop, will be of fireproof construction and have a floor area of 21,000 square feet. It will have a saw-tooth roof and will have metal window frames throughout. Pending the completion of the new building, which has been made necessary through the destruction by fire of the former plant, the company is located in Chicago Heights, about half a mile from the new works.

D'Arcy Scott & Co., San Francisco agents of the Dragon Automobile Company, Philadelphia, have wired that a Dragon car is now on the way to New York in an attempt to break the coast to coast record, now held by the Franklin car, which made the trip in eighteen days. The Dragon, which is on its way, is the same one that broke the 100-mile round-the-bay record in 3.26, or 23 minutes better than the previous performance. Since that time it has been run 2,500 miles. The same crew that handled the car in its former run are now making this latest attempt on the transcontinental figures.

Allegheny County is one of the hilliest in the East and likewise its roads are of the worst, but it is about to set out to make them the best, and, as a preliminary, the commissioners of the county advertised for an automobile. In order to make certain that no mistake should be made in the choice, extended demonstrations were had over some of the worst roads, and the process of elimination ended the other day by the selection of a Winton, the choice probably being influenced by James F. Burke, one of Pittsburgh's pioneer autoists, who represents Allegheny County in Congress, and who swears by the Winton.

J. D. Maxwell, of the Maxwell-Briscoe Motor Company, in an interview, thinks that the standard touring car of the future will be a medium-powered touring car of from 22 to 26 horsepower, and that, although there will always be a demand for very high-powered and fast cars, the average man will think a 24-horsepower sufficient for his requirements. "In fact," says Mr. Maxwell, "horsepower in itself is not so much of a factor as having a car that is efficient in every sense of the word. The power losses between the engine and transmission should be reduced to a minimum, and the weight kept down as low as is consistent with strength."

A business man, residing in Hartford, Conn., and doing business in New Haven, makes from one to three round trips a

day in his 45-horsepower Columbia, and states that he not only makes the trip faster than by train, but he enjoys it as well. Another Columbia owner, a market gardener, used his car to transport his produce by removing the tonneau and substituting a large box, and still another Columbia owner uses his car for transporting merchandise for the firm with which he is associated, and does it far cheaper than it could be done by horses. The above only serves to illustrate that the automobile is the most resourceful vehicle extant.

O. W. Powers, who is one of Utah's leading democratic citizens, came to Peoria, Ill., recently, accompanied by Mrs. Powers and Powers, Jr., to take delivery of a 1907 40-horsepower Glide, in which they left last Tuesday on a 7,000 to 8,000-mile tour of the United States. The Bartholomew Company supplied one of their experts to take charge of the car. From Peoria their route lies across Illinois to Toledo, thence to Cleveland, Buffalo, New York, Alexandria Bay and the Thousand Islands, where some time will be spent. Returning, the route will be via Albany, New York, Philadelphia, Pittsburgh, Cleveland, Chicago, Peoria, Des Moines, Omaha, Denver and Salt Lake City.

Cloud Cap Inn is perched at an elevation of 7,500 feet up on the side of Mount Hood, and, for the first time in the history of automobiling in Oregon, an automobile has succeeded in making the climb. The feat is all the more marvelous as it was accomplished by a single-cylinder machine—the 10-horsepower Cadillac. Several attempts have been made previously without success, and the recent test was made with a view to determining whether it would be practical to install an automobile stage service to the inn from the Hood river. The car was driven up by Howard M. Covey, of Portland, and he thinks that after the road has been put in good condition the run will be an attractive one for tourists from Portland.

Bulletins just issued by the Dayton Electric Manufacturing Company, descriptive of the Apple dynamo storage battery system of "Floating the Battery on the Line," are entitled 1C, 2A, and 5A, and contain a full description of the accessories made by this concern, which has long made a specialty of direct current ignition apparatus. Bulletin 5A is devoted entirely to a description of various attachments for using electric lights in oil lamps, gas lamps, etc., as well as illustrating a full line of lighting fixtures. Copies will be sent gratis on application.

As a result of the confusion that has arisen over the so-called twenty-four-hour records, in some of which several cars have been used, while the entire distance has been made by a single car in others, such as the performances of the Autocar and the Lozier at the Point Breeze track, Philadelphia, the makers of the latter car are endeavoring to have the rules for the Brighton Beach twenty-four-hour race framed so as to cover this point definitely. Those which are to come off on August 9 and 10 are supported by the manufacturers who are attempting to demonstrate the staying

qualities of their cars and the awarding of a prize to a car that may have been on the track but a few hours of the twenty-four is a result of a very unsatisfactory nature in the opinion of the Lozier people.

The Adams & Elting Company, Chicago, Ill., have just completed the purchase of the entire paint, kalsomine and paint specialty business of the Rubber Paint Company, of the same city. This purchase also includes the taking over of the Eureka Elastic Paint Company, a subsidiary concern of the Rubber Paint Company. The latter company was established in 1868, and has made a national reputation, some of its best known lines being rubber paint, Naples velvet finish and Mirror Back paints, all of which will continue to be manufactured under the same formulæ and sold under the same brands as formerly. The officers of the enlarged company are William Porter Adams, president; Joseph Gale, vice-president; Phillip L'F. Elting, general manager and treasurer, and Howard Elting, secretary, no change having been made on account of the consolidation.

NEW AGENCIES ESTABLISHED.

According to a recently published list of automobile dealers in the United States, the H. H. Franklin Manufacturing Company, Syracuse, N. Y., are represented by no less than 106 firms throughout the country. There are 12 in New England, 35 in the Middle Atlantic States, 15 in the Southern, Gulf and Central States, 21 in the Northern Central States and 23 in the Western States, making a total of 106. Work is progressing rapidly on the new concrete addition to the plant and more attention is being paid to the production of commercial vehicles for the season of 1908.

Further evidence of the aggressive campaign being waged by the Corbin Motor Vehicle Corporation, New Britain, Conn., is shown by the number of recent additions to their agency forces, the following well-known dealers being the latest to take on the representation of the "full-jeweled" Corbin: Dupont Garage Company, Washington, D. C.; H. O. Harrison Company, Los Angeles, Cal.; J. Archie Hess, Seattle, Wash.; Ford Latham, Schenectady, N. Y.; Frank P. Moshier, Jr., Greenwich, Conn.; Park Garage Company, Allegheny, Pa.; David L. Parker & Co., New Bedford, Mass., and the Sawyer Carriage Company, Lowell, Mass.

PERSONAL TRADE MENTION.

S. A. Campbell has just resigned as manager of the accessory department of the E. T. Kimball Company, Boston, and will announce his new connection in the near future.

E. Favary, who has been identified with the automobile industry in this country and abroad for the past twelve years, has just severed his connection with the Automobile Auction Company of America and will for some time devote his attention to perfecting several devices connected with the automobile on which he holds patents.

G. L. Lloyd, for the past fifteen years connected with the Avery Stamping Company, Cleveland, O., has just joined the forces of the H. H. Franklin Manufacturing Company, Syracuse, N. Y., and will form a member of the selling staff.

The travelers of the company are now on vacation, immediately at the end of which they will assemble at the factory for annual instruction and preparation for the 1908 selling season.

J. Arthur Hittle, late superintendent of the Marion Motor Works, Indianapolis, Ind., and Charles S. Crawford, of the Lozier Motor Works, Plattsburg, N. Y., have just joined the forces of the Speed Changing Pulley Company, Indianapolis, Ind. Mr. Hittle assumes the position of general superintendent of the rapidly growing engine department of the firm, while Mr. Crawford succeeds F. D. Carrico as mechanical engineer.

THE BOOK OF PACKARD THIRTY.

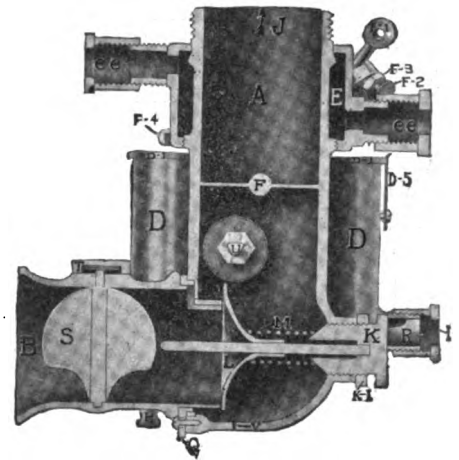
What is without doubt the most artistic example of the printer's and engraver's arts that has ever taken the form of an automobile catalogue is represented by "The Book About Packard Thirty," just issued by the Packard Motor Car Company, Detroit, Mich. It is apparent at a glance that its *raison d'être* is not so much to sell Packard cars as it is to show why they sell themselves. This gem is enclosed in a fitting receptacle of natural veneer bearing the "P 30" escutcheon as well as the name of the recipient in gilt, and the unfolding of a second cover emblazoned with the familiar outline of the car's radiator front and the name Packard across it, is necessary before the jewel itself is revealed.

The cover gives a veined parchment effect, while the body of the work is printed on an appropriate dull cream paper. The frontispiece, consisting of a reproduction of an oil painting by Henry Thiede, entitled "On a Long Road with Many Charming Miles," and depicting a Packard Thirty runabout in a very attractive setting, gives an inkling of the style of what is to come. The brief foreword telling the life history of Packard Thirty and its predecessors, is followed by two heavily illuminated pages in medieval style, setting forth the Packard Ideal. This is followed by several pages appropriately illustrated and describing the various types of bodies supplied. The subject then changes to "The Factory Progressive," a number of pages being devoted to the painstaking methods employed in the Packard plant, while this in turn is followed by a brief two pages entitled "Fifty Thousand Miles," telling of the Packard testing campaign. Several pages descriptive of the mechanism of the Packard Thirty, appropriately illustrated, conclude the work, which is from the pen of E. Ralph Estep, the illustrations and ornamentation being by Henry Thiede and a number of others.

INFORMATION FOR AUTO USERS.

The Hall Carbureter.—The accompanying sectional illustration depicts the construction of the Hall carbureter, manufactured by the Charles E. Hall Company, Buffalo, N. Y., who are successors to the Union Manufacturing & Specialty Company. In placing this carbureter on the market no attempt has been made to evolve a device on revolutionary lines of design, but rather to produce a carbureter that should be the result of close study of the problem, supplemented by experience in the requirements of this most essential function of the automobile motor. The supply of gasoline enters at the point I, filling the float chamber D, the float P being made adjustable on its stem. The necessary

amount of air for normal operation enters at the intake B, which is constantly open, except for the "strangling" valve Q, which regulates the amount of air that enters the mixing chamber. At slow speed the automatic air valve L remains closed, thus



SECTIONAL VIEW OF HALL CARBURETER.

closing the air port, except that portion controlled by the strangling valve just referred to, which causes a partial vacuum in the mixing chamber. As the motor speed increases this vacuum becomes correspondingly greater, causing the automatic air valve L to open, supplying the extra air needed and thus maintaining the character of the mixture constant.

Acetylene Gas Tanks.—Under the title of the Boston Autolight Company, a company has begun the business of manufacturing the "Boston" gas tanks, headquarters being established in the Motor Mart, 224 Pleasant street, Boston, Mass. George S. Atwater, the manager of the company, has been identified with the manufacture of acetylene lamps and generators for bicycle and automobile use for the past ten years, while his associates in the company are men experienced



BOSTON AUTOLIGHT ACETYLENE TANK.

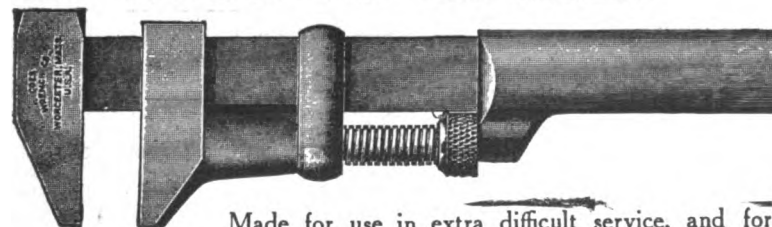
in this line of work. The Boston gas tank is manufactured along standard lines of acetylene gas tank construction and contains a high grade of asbestos packing saturated with chemically pure acetone in such proportion as to give the tank a capacity of 60 cubic feet, the tank dimensions being 6 by 24 inches.

"Waterweb" is the name of a thin, chemically-prepared rainproof fabric which is being manufactured by the Robert G. Wallace Company, 496 Washington Street, Boston, Mass. It is intended chiefly as a hat protector over which it is worn like a veil, though not intended to shield the face. It is made in the shape of a hat and is large enough to protect any headgear from the rain or dust, at the same time being so light and thin that it can be rolled up and tucked away in milady's waist or shopping bag when not in use.

INDEX TO ADVERTISERS

Acetylene Gas Illuminating Co. 50
Acme Motor Car Co. 54
Adams Co. 54
Add-Wear Tire Sleeve Co. 48
Aerocar Co. 54
Ajax-Grieb Rubber Co. 70
Akron Pneumatic Tire Co. 74
Allyne Brass Foundry Co. 73
American Motor Car Co. 103
Anderson Forge & Machine Co. 52
Arc Toledo Spark Plug Co. 50
Ashtabula Carriage Bow Co. 51
Aster Co. L. 50
Atlas Mfg. Co. 48
Atwater-Kent Mfg. Works. 48
Atwood Mfg. Co. Cover
Auburn Automobile Co. 54
Auto and Power Appliance Co. 48
Auto Goods Co. 49
Auto Improvement Co. 96
Autocar Co. 108
Automobile Supply Co. 52
Automobile Trade Directory. 46
Autoshine Co. 49
Avery Portable Lighting Co. 65
Badger Brass Mfg. Co. 65
Bailey & Co. C. J. 84
Baldwin Chain Mfg. Co. 82
Barnett Drop Forging Co. 91
Bartholomew Co. 65
Barton Mfg. Co. 51
Bay State Auto Co. 54
Bay State Stamping Co. 48
Beaver Mfg. Co. 64
Beeler & Robb. 62
Bemus, T. Alton. 52
Berkshire Motor Car Co. 54
Bethlehem Steel Co. 77
Billings & Spencer. 47
Blasler Mfg. Co. M. E. 51
Bliss-Chester Co. 48
Blomstrom Mfg. Co. 95
Blomstrom Motor Co. C. H. 54
Bloomer, R. E. 61
Blue Book. 63
Boker & Co. H. 62
Borbeln Auto Co. 61
Bosch, Robert. 99
Boston Auto Gage Co. 69
Bowser & Co. S. F. 56
Boyle & Co. John. 98
Brennan Motor Co. 67
Bridgeport Vehicle Co. 51
Briscoe Mfg. Co. 62
Brownell-Trebert Co. 57
Buckeye Jack Mfg. Co. 64
Buckeye Mfg. Co. 100
Bullard, J. H. 59
Buob & Scheu. 61
Cadillac Motor Car Co. 104
Cast Iron Brazing Co. 63
Central Body Co. 51
Chadwick Engineering Works. 54
Champion Co. A. 67
Charter & Co. 86
Chelsea Clock Co. Cover
Chicago Portable House Co. 68
Clair, J. C. 48
Clark, E. S. 48
Cleanola Co. 56
Coes Wrench Co. 44
Colgan Co. J. W. 102
Colt Runabout Co. 100
Connecticut Steel & Wire Co. 58
Conn. Tel. & Elec. Co. 69
Conover Motor Car Co. 68
Continental Auto. Mfg. Co. 108
Continental Caoutchouc Co. 49
Continental Motor Mfg. Co. 57
Corbin Motor Vehicle Corp. 110
Corcoran Lamp Co. 62
Cornish-Friedburg Motor Car. 102
Covert Mfg. Co. 49
Cowles & Co. C. 51
Crawford Automobile Co. 54
Crawford Inn. 63
Crescent Parts Co. 79
Cullman Wheel Co. 50
Daimler Mfg. Co. 54
Darracq Motor Car Co. 54
Dayton Electrical Mfg. Co. 73
Dayton Motor Car Co. 58
Def. & Buffalo Steamboat Co. 52
Diamond Chain & Mfg. Co. 56
Diamond Rubber Co. 86
Diets Co. R. E. 57
Dixon Crucible Co. Joseph. 55
Dolson Automobile Co. 54
Dorris Motor Car Co. 94
Dover Co. Geo. W. 47
Dow Portable Electric Co. 81
Dragon Automobile Co. 64
Duplex Coll Co. 71
Eastern Carbon Works. 66
Eco Mfg. Co. 69
Edmunds & Jones Mfg. Co. 49
Eldredge Electric Mfg. Co. 55
Electric Vehicle Co. 108
Elmore Mfg. Co. 107
Empire Automobile Tire Co. 61
Empire Wheel Works. 58
Excelsior Supply Co. 48
Firestone Tire & Rubber Co. Cover
Flisk Rubber Co. 93
Ford Motor Co. 54
Forest City Motor Car Co. 94
Franco American Auto Supply Co. 50
Franklin Mfg. Co. H. H. 54
Fry, T. C. & W. L. 69
G & J Tire Co. 71
Gearless Transmission Co. 94
General Accumulator & Battery Co. 76
Gibney & Bros. Jas. L. 49
Giesler Bros. 68
Gilbert Mfg. Co. 75
Goodrich Co. B. F. 88
Goodyear Tire & Rubber Co. 49
Gray-Hawley Mfg. Co. 66
Grout Bros. Auto Co. 54
Gumelastie Tire Co. 65
Ham Mfg. Co. 59
Hancock & Heller. 68
Harburk Tire Co. 49
Hardy Co. The R. E. 58
Harrington Lubricant Co. 48
Harris Oil Co. A. W. 65
Hartford Rubber Works Co. Cover
Hartford Suspension Co. 82
Hatcher Auto Parts Co. 64
Havoline Oil Co. 60
Haynes Automobile Co. 54
Healy Leather Tire Co. 49
Heath Dry Gas Co. 50
Heitger Carburetor Co. 74
Heinze Electric Co. 70
Hercules Auto Specialty Co. 78
Hercules Electric Mfg. Co. 50
Herschell-Spillman Co. 48
Hers & Co. 53
Hess-Bright Co. 52
Hicks Speed Indicator Co. 95
Hoffecker Co. 59
Hoffman, Geo. W. 50
Holley Bros. Co. 97
Holsman Automobile Co. 108
Hopewell Bros. 70
Hotchkiss Mfg. Co. 48
Hotel Crawford. 63
Hotel Cumberland. 63
Hotel Garde. 62
Hotel Greenbrier. 62
Hotel Kuloff. Cover
Hotel Lafayette. 63
Hotel Niagara. 62
Hotel Rudolph. 63
Huntington Automobile Co. 65
Hydraulic Pressed Steel Co. 52
Idum Metal Co. 61
Indestructible Steel Wheel Co. 66
Jackson Automobile Co. 54
Jeffery & Co. Thos. B. 115
Jersey Brake Co. 55
Johnson Sporting Goods Co. I. 51
Kimball Tire Case Co. 55
Kimball & Co. C. P. 53
Kinsler-Bennett Co. Cover
Kirkham Motor Mfg. Co. 49
Kokomo Electric Co. 71
Konigslo, Otto. 87
Lamberjack & Co. E. 55
Lavalette & Co. 76
Lear Automobile Co. Oscar. 54
Leather Tire Goods Co. 111
Limousine-Carriage Mfg. Co. 51
Lipman Mfg. Co. 51
Lobe Pump Co. 50
Locke & Co. 67
Locomobile Co. of America. 113
Logan Construction Co. 47
London Auto Supply Co. 67
Long Mfg. Co. 59
Long & Mann Co. 71
Lozier Motor Co. 103
M. & M. Mfg. Co. 66
McCord Mfg. Co. 59
Malone, F. E. 62
Manhattan Electrical Sup. Co. 49
Manhattan Lamp Works. 55
Manhattan Storage Co. 76
Maple City Mfg. Co. 55
Martini Import Co. 61
Marvel Motor Co. 94
Mason, John A. 51
Mason Motor Car Co. 95
Matheson Motor Car Co. 105
Mayo Radiator Co. 52
Mendenhall, C. S. 56
Merkel Motor Co. 50
Merritt & Co. 48
Midgeley Mfg. Co. 52
Miller Bros. 61
Miller, Chas. E. 72
Mitchell Motor Car Co. 54
Modern Tool Co. 101
Moline Automobile Co. 54
Moon Apex Brake Co. 72
Morgan & Wright. 77
Mosler & Co. A. R. 62
Moss Photo Engraving Co. 49
Motor Car Equipment Co. 58
Mots Clincher Tire & Rubber Co. 68
Muller, Albert. 51
Muttly Co. L. J. 51
Myers Auto Top Co. 51
National Brake & Clutch Co. 61
National Construction Co. 101
National Motor Vehicle Co. 109
National Oil Pump & Tank Co. 49
Neustadt Auto & Supply Co. 95
New Process Rawhide Co. 66
N. Y. & N. J. Lub. Co. 66
No-Match Electric Mfg. Co. 50
Nordyke & Marmon Co. 54
Northern Motor Car Co. 105
Nuttall Co. R. D. 52
Nutting Machine Co. 67
Ofeldt & Sons. 50
Old Colony Light Co. 50
Olds Motor Works. 80
Oliver Instrument Co. 65
Ovington Motor Co. 48
Packard Electric Co. 48
Packard Motor Car Co. 114
Pacific Tucking & Mfg. Co. 48
Page-Storm Drop Forge Co. 47
Pantasote Co. 48
Parish & Bingham Co. 52
Parker, Stearns & Co. 64
Pease & Sons. S. C. 51
Pedersen Mfg. Co. 50
Penna. Auto Motor Co. 60
Peugeot Freres. 89
Pfanstiehl Elec. Laboratory. 67
Pierome Hide Co. 49
Pierelli & Co. 86
Pioneer Brass Works. 52
Pope Motor Car Co. 107
Post & Lester Co. 50-57-65
Powell Muffler & Timer Co. 49
Precision Appliance Co. 98
Premier Motor Mfg. Co. 76
Prest-O-Lite Co. 78
Progressive Mfg. Co. 78
Prosser & Sons. Thos. 52
Quinby Co., J. M. 51
Quincy, Manchester. Sargeant Co. 51
Raimles & Co. 59
Rainier Co., The. 55
Ranger Motor Works. 95
Reeves Pulley Co. 61
Remy Electric Co. 49
Renault Freres. 102
Richardson Co. 62
Richardson Eng. Co. 58
Robert Instrument Co. 48
Roberts Motor Co. 49
Rose Mfg. Co. 58
Ross Gear and Tool Co. 52
Royal Battery Co. 72-106
Royal Equipment Co. 50
Royal Motor Car Co. 100
Rushmore Dynamo Works. 74-75
St. Louis Car Company. 110
St. Louis Motor Car Co. 55
Salsbury Wheel Co. 50
Samson Leather Tire Co. 55
Sanford Mfg. Co., F. C. 49
Schraeder Sons, A. 73
Shawver Co. 60
Skinner & Skinner. 100
Smith Mfg. Co., R. H. 56
Snow, H. N. 51
Speed Changing Pulley Co. 97
Spicer Universal Joint Mfg. Co. 49
Sollitdorf, C. F. 78
Soragus Umbrella Co. 64
Springfield Portable Construction Co. 65
Standard Battery Connection Co. 61
Standard Co. 70
Standard Roller Bearing Co. 49
Standard Welding Co. 87
Stanley, John T. 73
Steam Carriage Boiler Co. 55
Stearns Co. F. B. 54
Stevens-Duryea Co. 101
Stewart & Clark Mfg. Co. 83-57
Stitch-in-Time Vulcaniser Co. 60
Streit Machine Co. 57
Success Auto Buggy Co. 55
Sullivan Oil Co. 76
Supplementary Spiral Spring. 60
Swinehart Clincher Tire Co. 61
Syracuse Alum. & Bronze Co. 52
Syracuse Auto Supply Co. 48
Teel Mfg. Co. 56
Thomas Auto-Bi Co. 102
Thomas Motor Co. E. R. 104
Thompson, J. P. Sons Co. 56
Timken Roller Bearing Axle. 89
Traver Blow Out Patch Co. 61
Trebert Gas Engine Co. 55
Trident Tire Co. 50
Tucker, C. F. 48
Turner Brass Works. 61
U. S. Fastener Co. 70
Uncas Specialty Co. 60
Vacuum Oil Co. 72
Veeder Mfg. Co. 91
Walker Carriage Co. 51
Walker Co., E. C. 56
Walker & Co., Geo. H. 49
Warner Instrument Co. 92
Warner Pole & Ton Co. 51
Waukesha Motor Co. 109
Weber Co. O. F. 48
Weed Chain Tire Grip. 76
Welch Motor Car Co. 55
Western Malleable Steel Co. 52
Western Tool Works. 95
Weston Elec. Instrument Co. 50
Wheeler & Schebler. 59
White Co., The. 49
Whitlock Coll Pipe Co. 49
Whitney Mfg. Co. 70
Winchester Speedometer Co. 60
Wing, Chas. 51
Winton Motor Carriage Co. 116
Witherbee Igniter Co. 79
Wyckoff Lumber & Mfg. Co. 99
Wyman & Gordon Co. 47
York Motor Car Co. 54

The Wrench Par Excellence



Made for use in extra difficult service, and for exposure where heat or damp would injure a wood handle. Special adaptation to automobile use, and made and guaranteed by the most renowned wrench manufacturers in the world.

COES WRENCH CO., Worcester, Mass.

COES STEEL HANDLE MODEL WRENCH. Includes a star logo with the number 91.

THE AUTOMOBILE

What the AAA Tour Gave in Results

Besides Telling Forcibly
of an Industry's Great
and Permanent Progress



TOUR'S END, CENTRAL PARK, NEW YORK CITY.—TROPHY DONOR GLIDDEN, CHAIRMAN HOWER, AND A. A. A. SECRETARY ELLIOTT.

ONE judges more clearly something which is not so close at hand. A week ago, when the annual tour of the A. A. A. ended in New York City, with participants sun-blistered and weary, and cars dust-browned and shaking from restricted attention and the effects of the most strenuous endurance tour since the beginning of the industry, it was hardly possible for those who had figured actively in the affair to stand aside and properly appreciate the convincing proof that had accumulated in establishing the worth of the motor-driven vehicle. There always will be flaws in the conduct of any momentous event, and defects unquestionably existed in the running of the joint contest for Glidden and Hower trophies. But after those who had made the long journey had had opportunity of regaining cleanliness, putting on fresh clothes and enjoying a good night's rest, their vision cleared and they truly marveled at what had been accomplished by the sturdy vehicles which survived such a trying examination into their qualifications for appealing to the automobile buying public.

The consensus of opinion among those who circulated in and about the Hotel Astor, where the concluding features of the tour were enacted, was that next year there should be early and complete preparation for a prolonged endurance contest and those engaged should be made fully aware from the outset that the item of pleasure was minor and of the most incidental sort.

A rule calling for the naming of an observer by every entrant is the first demand of those who want a contest and are now thoroughly convinced that a combination of a contest with a pleasure tour won't mix any better than oil and water.

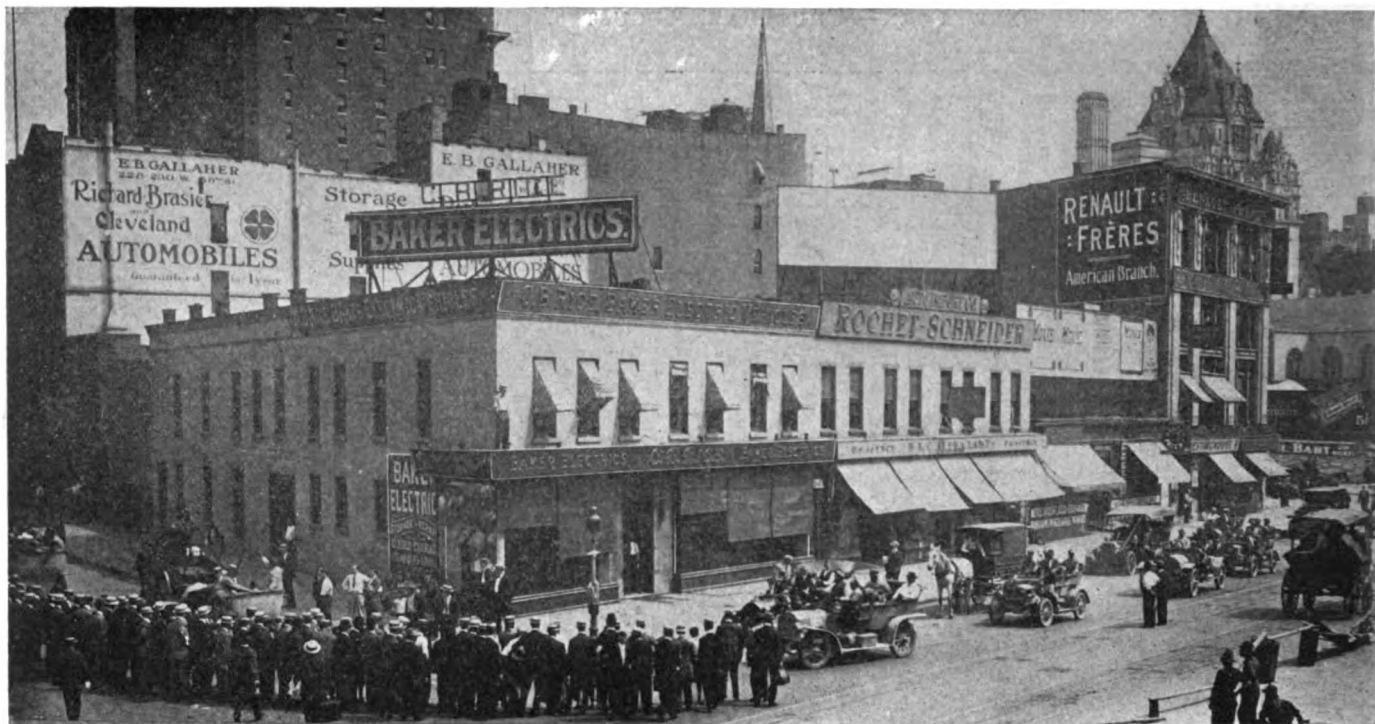
Some insist that everything which is done in the way of work on the car during the entire tour, in addition to keeping

an exact record of the time taken, should be noted in order that the rules shall cover every possible contingency that might arise.

Since the next annual election of A. A. A. officers will take place in December, and those elected will assume office at the beginning of the new year, it should be possible for the incoming administration to get to work immediately on the events of the next twelve-month. It will be remembered that this year the newly elected officers were not in power until the first of March, which meant a delay of a couple of months on the year's work. As a result there was some tall eleventh-hour hustling on A. A. A. tour matters, and while Chairman F. B. Hower worked most industriously, his board could have made good use of the extra weeks which will be available another year. The chairman is now taking his well-earned rest in Colorado.

It was to be expected that there would be some criticism of the management of the tour. Every tour that has been held has received considerable attention from the critics, some of whom deal very fairly, while others seem inclined to search with a microscope for mistakes hardly worth mentioning. To those who had been through the mill of experience, it could not be other than amusing to listen to the complaints and criticisms of those who were having their initiation. Varied in nature and innumerable in number were the tales of woe that emanated from the tyros of the tour, though it must be admitted that there were things which could have been better, and which undoubtedly will be improved upon the next time.

It is the misfortune of every amateur organization that it seldom retains its best workers for more than a year so that they can profit by their mistakes. Perhaps not a few are disinclined to accept a retention of office when they discover that



THE DUST-BROWN CARAVAN TURNING OFF BROADWAY AT WEST 58TH STREET, IN THE HEART OF THE AUTOMOBILE DISTRICT.

the sum total of their efforts oftentimes receives less publicity than the few errors which are certain to be committed by the most painstaking official in his conscientious direction of an affair, the foundation of which has to be invariably built up from nothing.

One of the lessons of the tour was not wasted upon the thousands of farmers who observed with a mixture of opinions the more or less flying progress of the new users of the highway. One tourist who took opportunity whenever occasion offered to chat with the agriculturists met with on the route found an Indiana farmer who expressed the belief that the time was not far distant when the old National Highway would be equally divided between motor-driven and horse-driven vehicles.

"Then you automobilists," said he, "can drive as fast as you want to and get the full worth out of your car with all safety."

"No," he continued, "I do not believe the farmer will be able to buy automobiles for some time in any great quantities; surely not until the price gets more within his means. We have got to keep horses for plowing and other farm work, and when you add an article, the greatest purpose of which is to carry you to town, it is something of too much luxury."

When told that a well-known automobile manufacturer had in mind the early making of a car of the tractor sort, which the farmer can attach to his plow or reaper and utilize in other similar ways, his interest was immediately aroused, and he announced that he would be ready and waiting when it appeared.

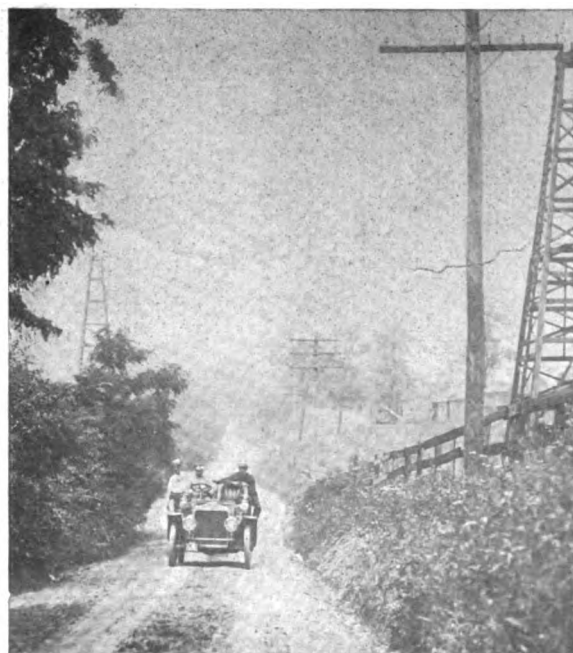
Of paramount importance to the automobile industry is the building of roads, and this subject, according to the observation of those on the tour, is destined in the early future to occupy an extraordinary amount of the public's attention.

Of the seventy-nine automobiles which left Cleveland in connection with the A. A. A. tour in any capacity whatever, 64.5 per cent. arrived at destination with the main group. In noting the relatively high percentage of apparent failures, nearly 36 per cent., it should be stated that two or three, having set out with the intention of obtaining a clean score, dropped out of the run as soon as their record was marred, when they were certainly in a position to continue to the end. Three withdrew as the result of road accidents in no way imputable to the car; one abandoned on account of business, and one absentee was caused by the illness of the driver, with no substitute possible.

Some Interesting Statistics of the Tour.

Dealing only with those cars competing for trophies or certificates, nineteen of the forty-eight touring machines, or 39.5 per cent., finished the run with an absolutely clean score. In view of the strenuousness of the ordeal, the proportion is thoroughly satisfactory. Sixty-two and five-tenths per cent. of the competing touring cars finished the run as contestants, leaving 37.5 per cent. which were obliged to abandon owing to mechanical defects, road accidents, or continue as non-contestants from a disinclination to face the trying test any further. The mere fact of being penalized does not of necessity imply mechanical inferiority, and in addition to the nineteen cars with perfect scores five others having each less than 100 points penalization, giving a total of exactly 50 per cent., finishing the tour in an honorable position.

Among the runabouts contesting for the Hower trophy three out of twelve starters, or 25 per cent., officially finished the run. In view of the fact that many of these machines were duplicates in chassis



RECOLLECTION OF PENNSYLVANIA'S OIL COUNTRY.

construction of those carrying touring bodies, the mortality by the way is remarkable, and can only be regarded as one of the little inconsistencies of a practical test. Logically the runabouts, with their lighter load, should have found the tour an easier affair than did the touring cars with four passengers and full load of baggage.

Engine Weakness Was Trifling.

It will be a matter of satisfaction to the general automobilist, the man who uses a car for pleasure or utility, that but three machines, or less than 4 per cent., had to abandon the run as the direct result of engine weaknesses. This proves most conclusively that the present-day automobile motor has reached an exceedingly high stage of efficiency, for the test to which the engines were put on the heavy ground and in mountain districts was of more than ordinary severity.

When attention is turned to transmission and drive, a less satisfactory state of affairs is found, for 58.6 per cent. of the cars, touring and runabout, which failed to finish officially, were eliminated by defective transmission, springs or axles. If deduction is made of withdrawals as the result of road accidents, it will be found that in nearly every case failure to finish was due to these causes.

Four-cylinder Engines Predominated.

Examining the thirty-nine machines of all classes which made the best records in the tour, 82 per cent. had four-cylinder vertical engines, 10 per cent. were two-cylinder opposed type and 8 per cent. were six-cylinder engines cast in pairs. The use of magnetos, of both high and low tension type, shows an ever-increasing tendency, for of the thirty-nine machines under examination 74.3 per cent. were thus equipped. This proportion is certainly not general among American automobiles, for the A. A. A. tour was



TOLL GATE KEEPERS MOVED LIVELY TO GET THE MONEY.

favorable to the high-power automobiles, and our calculations are based only on those cars having made a satisfactory showing. It is suggestive, however, as showing the opinion in matters of ignition of the leading constructors of high-grade machines. On 68 per cent. of these cars, a high-tension magneto was used; 32 per cent. only had the low-tension system with make and break. If only one car from each maker were taken in arriving at these figures, the two systems would be found to be pretty evenly divided, for one firm figures with seven machines and another with four fitted with high-tension magneto, while the opposite school has in nearly every case but one competing machine per constructor.

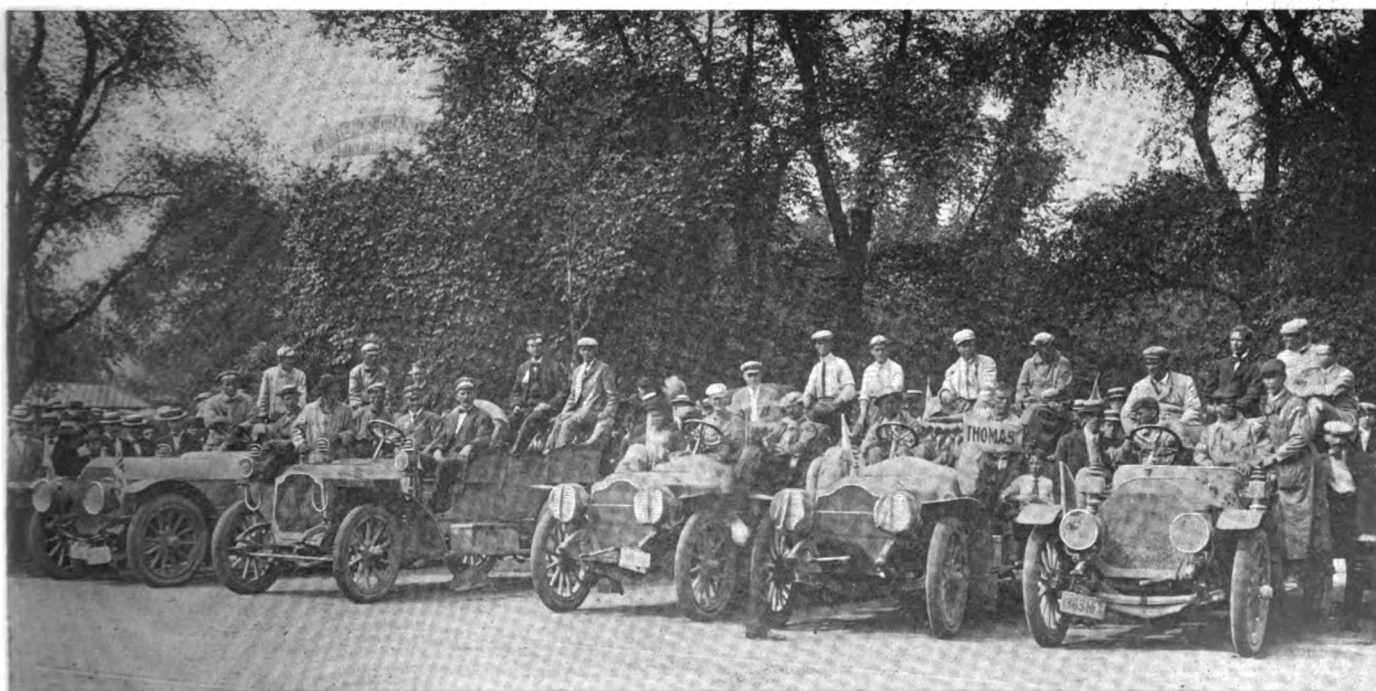
Sliding Gear Predominated.

Sliding gear transmission prevailed throughout, with the exception of a couple of small 16-horsepower machines. Crediting each maker with one machine, the proportion of those having selective type of transmission was 57.8, compared with 42.2 per cent. adhering to the progressive type. Final drive by propeller shaft prevailed in the proportion of 75 per cent., crediting each successful maker with but one machine; 20 per cent. had double side chains and 5 per cent. only used the single chain drive.

Leather-faced cone clutches were employed by 47.4 per cent. of the most successful makers. Grouping all multiple disc and kindred types of metallic clutches, they are responsible for the proportion of 52.6 per cent., which would show that, although the classical cone is no longer dominant, it is still popular.

Those That Just Fell Short.

In emphasizing the importance of the clean-score automobiles it should not be overlooked that a certain number of cars, while failing to obtain a position on the honor roll, have a perform-



BUFFALO'S TEAM, WHICH WON THE GLIDDEN TROPHY, NO. 17 PIERCE, NO. 44 PACKARD, NO. 9 THOMAS, NO. 11 THOMAS, NO. 27 PIERCE.



WHEN THE GOING WAS VERY ROUGH.



WHEN TRAVELING WAS SMOOTH.



THIS HOMESTEAD WAS WELL PATRONIZED.

ance to their credit which entitles them to some special mention. The Gaeth and the Oldsmobile, for instance, which each lost three points owing to road obstructions on the most difficult stage of the journey, are worthy of equal credit with the clean scorers.

Maxwell No. 58 suffered a loss of but 12 points, and Pierce No. 21 and Packard No. 44, which lost respectively 90 and 91 points, would certainly have finished perfect but for road accidents in which the machine was not at fault.

In the runabout class there was one contestant, A. E. Hughes, driving Pierce No. 100, who, through frequent punctures, just fell short of a perfect performance.

VICTOR OF FORMER YEARS NOT IN EVIDENCE.

LOS ANGELES, CAL., July 26.—Percy Pierce's familiar figure was missing from the tour of the American Automobile Association which ended last week, and many of the contestants wondered at his absence. It was explained by the fact that he is at present in this city and has been on the Pacific Coast for some time past in the interest of the bicycle department of the George N. Pierce Company, Buffalo, N. Y., of which he is the head. He has been making his headquarters with John T. Bill & Company, Tenth and Main streets, while in Los Angeles, and has expressed great admiration for Southern California.

A. A. A. OFFICERS SATISFIED WITH OUTLOOK.

The affairs of the A. A. A. are progressing most favorably, according to the reports presented at the July meeting of the Executive Committee, held Tuesday last at the headquarters of the Association, No. 437 Fifth avenue, New York City.

Chairman Charles T. Terry, of the Legislative Board, made an exhaustive report regarding the national registration measure which the Association has introduced in Congress and which will be vigorously pushed at next winter's session. The passage of this measure will greatly facilitate interstate automobiling, and

at the same time make identification much less difficult and thereby appeal to the general public as excellent legislation.

Chairman Robert P. Hooper, of the Good Roads Board, reported concerning recent sessions of the committee composed of representatives of all the various organizations throughout the country interested in road building. Mr. Hooper was instructed to have his Board co-operate with the other organization.

Acting Chairman A. R. Pardington, of the Racing Board, regretfully reported inability to secure a properly guarded course for the Vanderbilt Cup race, stating that a conference between Chairman Jefferson deMont Thompson and Cup Donor William K. Vanderbilt, Jr., in France had resulted in the decision to postpone the race for this year. A vote of thanks was tendered Mr. Pardington for his conscientious endeavors to bring about the holding of the race.

The report of F. B. Hower, chairman of the Touring Board, will not be presented until September, at which time the entire Board of Directors will meet. It was stated that the tour would result in a surplus. A year ago there was a substantial deficit at the conclusion of the tour.

Secretary F. H. Elliott reported that the membership was steadily increasing, and the figures of the treasurer, G. E. Farrington, showed the treasury to be in such condition as to insure the carrying on of the general work of the organization for the ensuing year.

President William H. Hotchkiss presided at the session, the others present including First Vice-President L. R. Speare, G. E. Farrington, A. G. Batchelder, Chairmen C. T. Terry and R. P. Hooper, and Secretary Elliott.

Prince Henry of Prussia has presented a new trophy in place of the Herkomer (which will henceforth be run off in England), and has informed the Imperial Automobile Club of the terms of the gift. The contest will be run for three consecutive years, with Berlin as the starting point and the finish at Frankfort-on-the-Main.



NEW JERSEY'S BIG CLUB WELCOME IN NEWARK.



AUTOGRAPHS ACCUMULATED.



DAI LEWIS PARTAKES OF JERSEY CITY HOSPITALITY.

WHITE BEATS STODDARD-DAYTON IN RUNABOUT TIE

TO settle the tie between the White steamer and the Stoddard-Dayton runabouts, which finished the A. A. A. tour with perfect scores for the Hower trophy, the two cars were sent away from the Automobile Club of America's garage on Monday morning of this week for a run of unknown length. On the completion of the A. A. A. tour the two perfect-score runabouts were locked up to prevent the possibility of replacements or adjustments, pending the decision of the tour's executive committee.

That body decided on an additional run, first to Cleveland, with stages at Albany, Syracuse and Buffalo, then forward over the Glidden tour route until one of the cars was penalized.

E. L. Leinbach again took the wheel of the gasoline car and H. K. Sheridan, of the Cleveland Automobile Club, continued to pilot the White steamer.

Secretary Dai H. Lewis, of the A. A. A. Touring Board, has charge of the tour, preceding the contestants by three hours on a Stoddard-Dayton confetti car, driven by W. W. Macdonald, and each of the contesting cars carries



STODDARD-DAYTON TIE PERFORMER.

an observer. Walter White is accompanying the contestants.

ALBANY, N. Y., July 29.—The result of the first day's run of the two clean-score runabouts was that both machines reached Albany with their perfect record unbroken. The run of 150 miles was planned on a schedule of 17.2 miles an hour, and was

covered by the contestants in 8 1-2 hours, roads being in excellent condition. From here the Stoddard-Dayton and White will run to Syracuse on a schedule calling for twenty miles an hour in the open country and ten miles an hour in towns.

SYRACUSE, N. Y., July 31.—No change has yet occurred in the tie for the Hower trophy, the Stoddard-Dayton and the White steamer having reached here with their clean records unbroken, and will start forward this morning with Buffalo as their evening destination. Although detours were made necessary as the result of road repairs, increasing the distance to 155 miles, H. K. Sheridan's 30-horsepower White and G. S. Smith's 35-horsepower Stoddard-Dayton accomplished the journey within the schedule time of 7 hours 45 minutes, and experienced no trouble en route. Drivers report road conditions as fair. On the weighing in of the observers—appointed by the rival party—it was found that the official on the Stoddard-Dayton car tipped the scale at 268 pounds.



WHITE STEAMER TOP NOTCHER.

Dai H. Lewis, of Buffalo, precedes the contestants in a confetti car and has charge of the supplementary test.

BUFFALO, July 31.—The White Steamer is the winner. It reached here with a clean score, meeting the 163-mile schedule of 8 h. 30 m. At 5 p. m. the Stoddard-Dayton was still missing, being then a half hour late.

WHAT ONE AIR-COOLED MAKER THINKS OF THE A. A. A. TOUR

Editor THE AUTOMOBILE:

Considerable comment has been appearing in the automobile press of late regarding the absence of air-cooled cars in the 1907 Glidden Tour. One well-known manufacturer went so far as to say, in the columns of "The Automobile," that this absence might be taken as proof of the superior worth of the water-cooled theory. He might have gone even further and stated that the scarcity of entrants this year was due to the fears of a large number of manufacturers that did not participate. Such a statement would have been equally correct—and equally incorrect.

Speaking for the Marmon, we feel that our perfect score in the 1906 tour will have to be sufficient for the time being. Those who were on the 1906 tour know that the air-cooled motors stood the hard work with less annoyance from heating than the water-coolers, and the files of the automobile press of a year ago will corroborate it. This was all we sought to prove, and the rules,



ONLY "AUTOMOBILE" READ AT BEDFORD SPRINGS.

either this year or last year, would permit us to prove nothing more. In common with many other manufacturers, we have reached the opinion that there is scant glory to be had in an event where there are so many winners—13 out of 67 last year, and 19 out of 47 this year. Had it not been for the heavy rains this year the perfect list would have been even larger. It required only one reading of this year's rules to foresee the result. With the 1908 season about

to open and the shows coming early, we did not consider it worth while to deprive our manufacturing and sales departments of important men for the tour.

We hope the A. A. A. Tour will be different next year. We know of many manufacturers who would be glad to participate in a real test, with severe conditions, official observers and a touring committee that would enforce rigid rules without fear or favor. Until such a test is arranged we shall probably stay in the shade with the wise ones and keep cool.

NORDYKE & MARMON CO.
Indianapolis, Ind.



AT PONT L'ÈVEQUE, ON THE NORMANDY COURSE, THE SCENE OF NEXT WEEK'S PRESS CUP RACE.

SPEED FINAL TEST IN FRENCH TOUR.

PARIS, July 23.—The only touring event directly organized by the Automobile Club of France this year will commence on August 2 and finish five days later. During four days 994 miles must be covered, partially over mountain roads, under ordinary touring conditions, at an average speed of 24.8 miles an hour, with four passengers on board, the full weight of the car, including passengers, not to be less than 3,630 pounds. A rigorous system of parking will be observed at each control, running time to include all attention to motor, tires, filling of tanks, etc. For the four-day touring event the cars are only required to conform to certain overall measurements, height of seats and length from dashboard to rear wheel. When this test has been successfully undergone, a final race will be held in which the fuel allowance will be 4.1 gallons per 62.1 miles.

In the equipment of the cars it is stipulated that the gasoline tanks, which must be of an approved type, and capable of containing 17.6 gallons of fuel, shall be placed either directly behind the front or behind the rear seats. Being fully in view, any attempt at fraud will at once be apparent. Beyond the fact that passengers may be changed at controls if desired, and that dismountable rims may be used and fresh supplies of rims and tires taken up anywhere en route, the touring event will not differ from the usual run of such affairs.

At the end of the fourth day's run one hour will be allowed for changing tires and putting the machines in condition for the fast run. No essential parts, however, must be changed, and it is absolutely forbidden to make any alteration in the gearing of the machines, the intention being to run the race with the cars in exactly the same condition as for the touring test. Before the start of the tour from Paris the gasoline tank, piping, carbureter and all organs by which fuel might be introduced, will be sealed in the manner adopted for Grand Prix racers, the tank

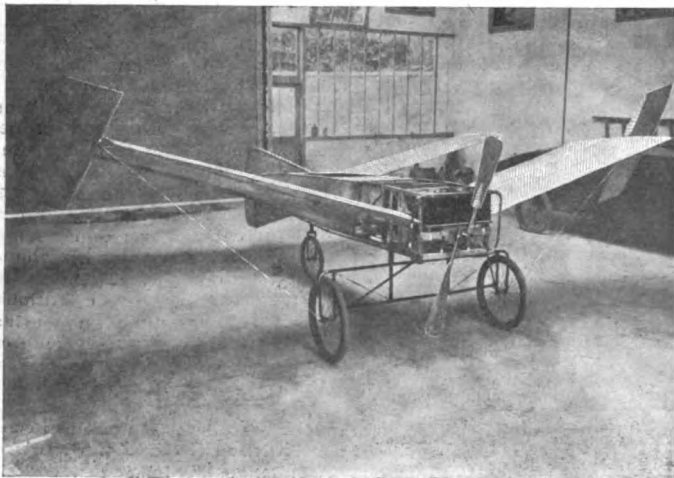
cap alone being left open until the last day. After the regulation supply of gasoline has been given, this will also be sealed down. At any time during the test the gearing of the car may be verified by the committee and the minimum weight must be maintained during both touring and race days.

The Lisieux circuit, which has been chosen for the final race, is one of the fastest to be found in Normandy; the naturally good roads have been specially prepared for the speed test and will be guarded on the day of the race by 2,500 troops. Though a double-barreled event, the result of the race will alone determine the winner, only those machines being allowed to start in the final which have accomplished the four previous stages on schedule time and without replacements.

Forty-four cars have entered for the Criterium and the Press Cup, the large majority of them French. They are: Gladiator 2, Peugeot 3, Mercedes 1, De Dion-Bouton 3, Vinot & Deguingand, German Chainless 2, Dietrich, Gobrin-Brillie, Aries 2, Cottin & Desgouttes 3, Cornilleau & Sainte-Beuve 3, Argyll Motors, Limited, Mors 3, Martini 2, Gillet-Forest, Motobloc, Martin & Lethimonnier 2, Regina Dixi 3, M. R. G., Eugene Brillié, Rebour, C. G. V., and Westinghouse.

BLERIOT PRODUCES NEW AEROPLANE.

PARIS, July 22.—After experimenting on an aeroplane having the form of a wild duck, M. Bleriot, the French aeronaut, has produced a new and original model of flying machine of the Langley type. Chassis construction consists of a square section frame narrowing towards the rear, mounted on three bicycle wheels, with coil springs between the front axle and the frame. At the forward and rear end of the chassis are a pair of wings, the outer edge of each forward wing having a pivoting rudder. A 24-horsepower Antoinette motor installed at the fore end of the frame operates a two-bladed propeller. The driver's position is in the center of the frame, his head only being visible. The necessary levers for controlling the engine, the rear rudder and the two wing rudders, which may be operated either simultaneously or independently, are conveniently brought to his hand. Initial experiments on the Bagatelle polo ground near Paris, with three different sets of propellers, failed to cause the machine to leave the ground, the defect of the aeroplane being that it is too heavily weighted forward. The frame will be lengthened in order to give greater bearing surface forward, but it is not expected that very good results will be obtained until the new 50-horsepower Antoinette motor is installed.



NEW BLERIOT AEROPLANE WITH ANTOINETTE MOTOR.

FRANCE TO TEST WRIGHT BROS.' AEROPLANE.

PARIS, July 27.—Immediate developments in connection with the Wright brothers' aeroplane mystery are expected as the result of the arrival of Orville Wright, of Dayton, who joined his brother here yesterday. It is declared that the Wright brothers' machine is now in France, and that a flight will be arranged shortly under conditions which will safeguard the inventors' secret.



A NOON-DAY CONTROL ON THE BELGIAN TOURING COMPETITION, WITH CARS PARKED IN FRONT OF MALINES RAILROAD STATION. †

TOURING AND RACING IN BELGIUM.

OSTEND, BELGIUM, July 22.—Belgium, from north to south and from east to west, is alive with automobiles and buzzing with automobile interest. The Criterium, a five-barreled event comprising a regularity test, a kilometer flying and a mile standing race, a ten-kilometer race and a five-kilometer hill climb, opened the proceedings at Spa. While bustling officials occupied themselves with weighing-in, verification of cylinder areas, and details of organization, energetic gendarmes earned universal disgust by holding up every automobilist passing over rain-sodden and deserted Avenue du Marteau.

Seven classes were provided for the 34 entrants, commencing with 75 millimeters bore and a minimum weight limit of 1,540 pounds, and increasing by stages to 145 millimeters cylinder bore, the increase of weight being 35 pounds for every millimeter above 75. A couple of 15-horsepower four-cylinder Ford runabouts figured in a class by themselves with a total weight, including two passengers, of 1,698 pounds. French and Belgian cars of an equal cylinder bore weighed as high as 3,300 pounds.

During the three-day stop-over at Ostend, racing cars, as well as the tourists engaged in the Criterium, took part in the ten-kilometer speed tests over a five-kilometer track, a standing start being given in each direction and the times added. Rigal, driving one of the Grand Prix Darracq machines, made the fastest burst of speed in 5:6 3-5; Baron de Caters (Mercedes) came second in 5:34 3-5; Hyeronimus, also on Mercedes, was third in 5:35 4-5; Christiaens, driving a Sporting Commission Darracq, came fifth, and De Langhe, on the Darracq racer with which he won the Sporting Commission Cup, finished last. Giuppono, on a Peugeot motorcycle, was the fastest of his class, in 6:34, against a small field of competitors.

Despite the hot weather, which was the cause of considerable tire trouble, the touring event was more of a pleasure jaunt than a tour, practically all the competitors accomplishing the stages at 18.6 miles an hour according to schedule; interest, therefore, centered entirely around the speed tests. The Franchomme Cup, for the best performance on a seven-kilometer hilly road, was awarded to Wery, driving a Belgian Nagant car. Awards were made according to a point system which gave every competitor, of whatever class, an equal chance. In actual speed the Nagant was also the winner, his average being 62.9 miles an hour.

For the Prince de Caraman-Chimay Cup, which comprised a three-kilometer straightaway, a mile on a slight grade and 300 meters on a 14 per cent. grade, the same system of classification by points for all classes was adopted, Servais, on a chainless Germain, proving the winner, with Cissac, on a single-cylinder Alcyon, a good second.

Three Distinct Races for Classic Ardennes Course.

Owing to the multiplicity of regulations, three distinct races have been arranged over the Ardennes circuit on July 25, 26 and 27. The first day will be for machines competing under the German Emperor's Cup rules, the second day the Liedekerke Cup will be

held on a limited cylinder area, and the third event, open to all, will unite principally Grand Prix racers. The present entry list for the open race is three Lorraine Dietrich, the two British Weigals built for the Grand Prix, a Darracq to be driven by Huntley Walker, and Jenatzy and De Caters each with a Mercedes. The Mercedes to be driven by Baron de Caters is the one with which Hemery secured ninth position in the Grand Prix. It is expected that the full Bayard-Clément team and one Porthos will join before the final closing.

According to an incomplete *Herald* cable report from Bastogne, the Ardennes race under the German Emperor rules was won by Moore Brabazon, 17 seconds ahead of Koolhoven, with Guinest 1:8 behind second man. The distance, 372.6 miles, was covered by the winner in 6:14:15. There were twenty-three entries.

CHRISTIE'S FAILURE DUE TO UNPREPAREDNESS.

Chairman Jefferson De Mont Thompson, writing from Paris, where he has been staying in expectation of being able to make arrangements for the Vanderbilt Cup race, states that Walter Christie's failure to make a showing in the Grand Prix was due to his late arrival on the course and small opportunity for practice. French experts agreed that the "Blue Streak" was fast, well designed and carefully built, but was unable to show its qualities through unpreparedness. American racing constructors, according to foreign belief—which pretty near approaches a certainty—are slow to learn that early preparation is half the battle. Christie was keenly disappointed, but will try again.

Mr. Thompson, as A. A. A. representative, did all that was possible to assist the American driver before the race, and was present at the starting line to give Christie and Strang a send-off. Mr. Thompson is now touring in Germany, and will not return until August.



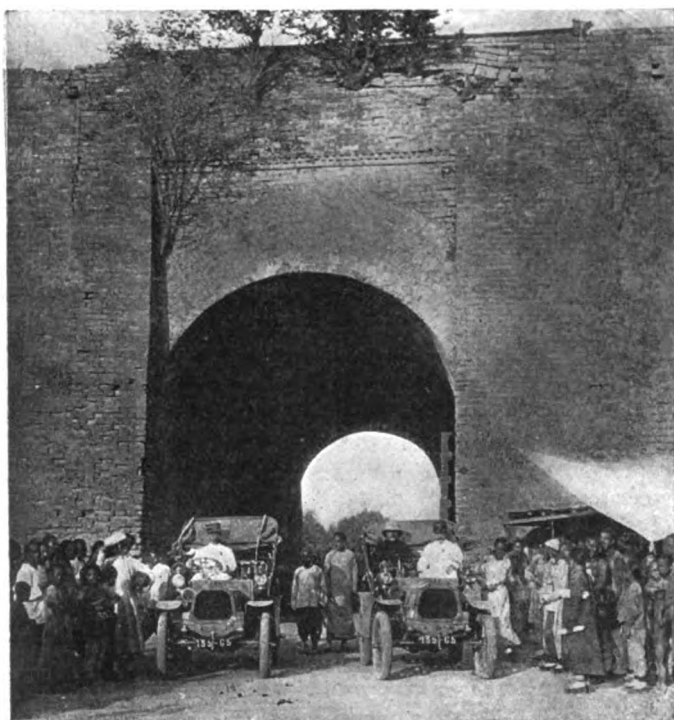
CHAIRMAN THOMPSON WISHING CHRISTIE GOOD LUCK.

PEKIN-PARIS ELIMINATES ONE.

Nobody will deny that there was a more than ordinary amount of pluck in the attempt of the three French, the Dutch and the Italian chauffeurs to run their automobiles entirely by their own power from Pekin to Paris. Judging from the reports which are to hand from the small procession, four of the cars will accomplish the colossal feat and will in a few weeks' time be in the French capital again.

Cormier and Collignon, two veteran European tourists, took charge of a couple of 8-horsepower De Dions, Godard mounted a 16-horsepower Spyker of Dutch origin. Prince Borghese equipped an Itala of 40-horsepower for the fray, and Paul Pons looked to a Contal tricar of Parisian origin for his means of locomotion over a continent that had never seen an automobile.

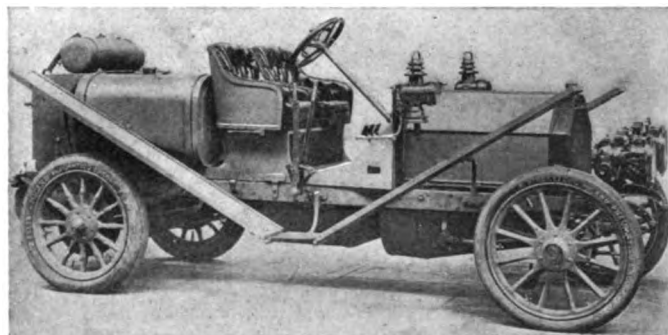
Starting from the French legation at Pekin, the five kept together for about a third of the journey, when the Contal tricar had reluctantly to abandon the tour, the heavy equipment necessary for camping out, fording streams, bridging ravines, etc., being too heavy a load for a three-wheeler. Although provision had



LEAVING PEKIN FOR PARIS, DE DIONS IN FOREGROUND.

been made for a supply of gasoline to be placed along the line of march, the stages were widely spaced and it was necessary for the cars to be able to carry an exceptionally large quantity along with them. The illustration of the Itala will show how special storage room was obtained, this Italian machine having a large tank securely fastened behind the two seats. The Itala, as well as the Contal, had portable bridges, those of the Italian car doing duty as mud guards on ordinary running. Contal's bridges, which were carried on stays at each side of the driver, had a triple use—they acted as mud guards, they formed tent supports and they could be braced up for getting across a stream or a ravine.

Undoubtedly the most hazardous portion of the journey was the 700-mile trip across the sandy wastes of the Gobi desert. One hundred miles from Udde and four hundred miles from Ourga, the Spyker found itself stranded without a drop of gasoline in the tank, the Itala miles ahead and the two De Dions wandering no one knew where. Fortunately, the French machines caught sight of the fuelless Dutchman, calculated the amount of gasoline they would need to the next supply station, gave the rest to their companion and, when they reached the welcome tanks, shipped a supply back to the wanderer by a camel caravan. Over desolate,



ITALA: SPECIAL TANK, PORTABLE BRIDGES, PIRELLI TIRES.

rocky wastes, with not a soul in sight, up mountain sides, down precipitous slopes, then again up impossible grades, the five plodded on until Ourga was reached, and the director of the Russo-Chinese bank welcomed them to a joyous fete.

From the thousand-roofed golden palace, where the "Little God" of Lhasa had taken refuge since the British occupation, a message came for the Pekin-Paris travelers. The "Little God" had an automobile, a fragile little thing that never had run; would the great travelers come and animate its silent organs? But the "Little God's" automobile was irreparable, and when the party moved forward it was left behind to an eternal silence.

Grades of 15 to 20 per cent., tracks of thickly wooded country, heavy rain which transformed the land into a huge bog, streams which could only be forded by the aid of ox-teams, are the themes of the letters describing the going, until Kiakta, the outpost of European civilization, was reached. From this point the telegraph takes up the story, more graphic in its simplicity than any flowery word-painting. This is what Cormier has to say:

"Prince Borghese is crossing the Baikal by boat. We were more sportive and intend to get around by our own power. Discovered, however, that the rivers flowing into the lake are too numerous, too deep and lacking in bridges for us to do it. Forced at last to come back to Misovaia and take the boat, as the Prince had done.

"[LATER]—Have changed our plans. Boatmen ask an exorbitant price, and we shall cross the Baikal by train.

"Have covered 320 miles in two stages. Reached Nyneulinsk. Country more civilized now, but raining continuously.

"Covered 200 miles in two days. Had rained continuously for eight days. Are worried by squadrons of mosquitos. What next?

"Covered 150 miles last stage. Spyker having magneto troubles; intends to come by train to Tomsk for repairs, go back and start again. *Matin* has cabled that taking train will disqualify.

"Traveled 115 miles to Atchinsk. It has stopped raining. Roads are a bog, but we are still going on.

"Reached Marinsk, covering 125 miles to-day. Nothing but mud; but the roads are better than those of China. We are making progress."



DISSEMBARKING SPYKER CAR AT PEKIN RAILROAD STATION.

GRAY CAST IRON IN AUTO CONSTRUCTION*

By THOMAS J. FAY, E.E.

It would be a great boon if this product could be eliminated from automobiles, but it is almost the exclusive material for use in cylinders and pistons, and it is occasionally used for crank-cases in "double-opposed" motors and for "planetary gear" housings.

There are cars employing this material for wheel hubs, compensating gear housings and brakedrums, but such cars have no claim on the affection of users of automobiles and never will have. The dominant idea is to get rid of castings of all kinds, and especially gray cast iron, because it has not the one advantage rightly claimed for aluminum, in other words, cast iron is *not light*, whereas aluminum is.

In a general way, cast iron is stronger than aluminum and under certain conditions will do what aluminum is not suited for, nevertheless, as before stated, cast iron does not hold out as much promise as one could hope for, but for piston packing rings, good gray cast iron seems to have no equal, and for that purpose it is a commendable product.

From time to time attempts have been made to produce cylinders and pistons of steel forgings, but such enterprises were confined to racing car work, and as yet such efforts have not amounted to very much, although the few cylinders the author has been enabled to examine looked all right, even after a goodly amount of service.

The main trouble lies in being unable to so design cylinders as to produce them in forgings, at a cost to be tolerated in cars for commercial purposes. In racing cars, cost is not considered if only the cars can be made to excel. Pistons could be produced in steel forgings very well indeed, but if cylinders are of cast iron, pistons should be of the same material, this being one case in which similar metals work together without showing bearing distress.

At the present time "gun steel" forgings are being experimented upon for cylinders and pistons and, if the shapes can be suitably modified, there are prospects of success, for gun steel is a very good product for just such purposes. Figure 3 illustrates a turning from L. B. R. Krupp gun steel that in itself shows a remarkable product, but, contrary to the general belief, gun steel is not of extraordinary strength, as the test CVII will show.

For the present, at any rate, gray cast iron must be tolerated, and if so, to get all there is in it, a study must be made of its characteristics and its vagaries must be mastered, else "wasters" will be a-plenty and casualties in service will be numerous.

Gray cast iron, in the sense that it is referred to here, is a remelt, in a cupola, of suitable grades of blast furnace pig iron. The gray variety of cast iron is that holding such an excess of graphite as to conceal the iron from view in the fracture. It is a foundry problem to arrive at any desired result by mixing the material for the charge to the cupola in such proportions as to afford cast iron holding requisite qualities for any given purpose, and for cylinders as used in automobile motors. This problem is one out of the ordinary and to it may be said success is rarely assured.

The low limit of total carbon in cast iron can be set down as 2.20 per cent., although, having done so, it means very little to the automobile engineer because the limits for cast iron of the requisite qualities in cylinder work are very well defined. The components in cast iron are iron, silicon, sulphur, phosphorus, manganese, combined carbon, graphitic carbon and more or less "slag." While this latter compound is not desired, it does abound more or less in castings and must therefore be taken into account.

Unlike in steel, the components sulphur and phosphorus are held at a fairly high limit for reasons that will be explained, although, as in steel, these elements have their painful influences on the strength and endurance of the product.

In general, the limits to be put on the elements entering into the castings for cylinder and piston work can be set down once for all, viz.:

Combined Carbon, Maximum.....	0.75%
Silicon	1.20%
Sulphur	0.085%
Phosphorus	0.50%
Manganese	0.75%
Slag and Oxides... ..	nil.

It will be understood the components range at variance with these maximum values, and in fact silicon generally exceeds the

SUBJECT: GRAY CAST IRON

NUMBER: 1 MARK: _____

FROM: EUREKA FOUNDRY

NEW YORK, 4-17-07

THE COMBINED CARBON WAS VERY LOW.

THE MANGANESE WAS LOW.

THE SILICON WAS HIGH

THE SULPHUR WAS WITHIN THE LIMIT.

THE PHOSPHOROUS WAS WITHIN THE LIMIT.

30 H.P. CYLINDER 4 1/2" BORE
5 1/2" STROKE 5/8" WALLS

THE CYLINDER FAILED TO PASS.

CHEMICAL COMPOSITION		
CARBON	TOTAL	3.262
	COMBINED	0.137
	GRAPHITE	3.125
	FERRITE	
	PEARLITE	
	CEMENTITE	
Cr.	Ni.	
V.	W.	
Mn.	Si.	2.46
Al.	Cu.	
S.	P.	0.81
Sn.	Zn.	
Pb.	Sb.	
As.		
PHYSICAL PROPERTIES		
T.S.	LBS. PER SQUARE INCH	16500
E.L.		
EX.	PER CENT.	
CO.		
PROOF	DIAM. "	
	LENGTH "	
FRACTURE		
RATING	U.	
	H.	
TREATMENT		

limit set as desired, notwithstanding the fact it tends to a lowering of tensility but it also affords fluidity which is a much needed quality in cylinder irons. It will be no surprise then to discover higher silicon than that desired in cast iron for cylinders and, as a matter of fact, it generally ranges between 1.40 and 3.25 per cent., although this latter value augurs an inferior product.

In fairly good castings the silicon content is likely to run about 1.60 per cent., but even this value will show on the tensile strength, although good sound castings must rank first, and it is customary to assume that gray cast iron for cylinders should have a minimum value of the tensile strength of 18,000 pounds per square inch, which value can be expected in good, sound castings even with silicon at 1.60 per cent.

Right here, it may be well to point out that claims of even 35,000 pounds per square inch are frequently made for cylinder castings, and few will admit that the strength should be less than 26,000 pounds per square inch. At all events, it matters not what the strength may be in isolated cases since none will guar-

*Extract from Chapter II, "Gray Cast Iron," "Materials for Automobile Construction," by Thomas J. Fay, E.E., published by the Class Journal Publishing Company, New York. Owing to lack of space but few of the illustrations or tests referred to are inserted.

CHEMICAL COMPOSITION		
CARBON	TOTAL	3.92
	COMBINED	0.50
	GRAPHITE	3.42
	FERRITE	
	PEARLITE	
	CEMENTITE	
Cr.	Ni.	
V.	W.	
Mn.	Si.	1.80
Al.	Cu.	
S.	P.	0.33
Ba.	Zn.	
Pb.	Sb.	
As.		
PHYSICAL PROPERTIES		
T.S.	LBS. PER SQUARE INCH	
E.L.		
EX. CO.	PER CENT.	
PROOF	DIAM. "	
	LENGTH "	
FRACTURE		
RATING	U.	
	H.	
TREATMENT		

SUBJECT: GRAY CAST IRON.
 NUMBER: VIII MARK: _____
 FROM: FULTON FOUNDRY &
 MACHINE C^o NEW YORK 4-17-07
 USED IN THE ELLSWORTH
DIRECT-COOLED MOTORS
 THE LIMIT OF PHOSPHOROUS
 IS 0.50%. - SULPHUR SHOULD
 NOT EXCEED 0.005%. - SILI-
 CON SHOULD NOT EXCEED 2%
 MANGANESE SHOULD NOT EX-
 CEED 0.75%.
 IN THIS CYLINDER THEN
 THE SULPHUR IS EXCESSIVE,
 AND THE SILICON IS ALSO IN
 EXCESS, ALTHOUGH SILICON
 OFTEN TIMES EXCEEDS THE
 DESIRED MAXIMUM
 CYLINDERS OF THIS MIXTURE
 GAVE TROUBLE, AND CHANGES
 IN THE MIXTURE WERE FOUND
 TO BE DESIRABLE

(c) The governing conditions as drawings, patterns, cores, fixtures, etc.

The desired condition of the castings from the point of view of the chemical composition and the micro-structure can scarcely be elaborated upon in the manner common to the treatment of this subject. Fixing limits of the components is by no means fixing anything, because limits as fixed, rarely, if ever, obtain in the actual castings, although it is well enough to have in mind the fact that excesses of one or the other of the contents will tend in directions that can be set down.

It is the relation of the elements that truly counts for good or for evil, and it is this relation that is shrouded in mystery, although advanced writers have endeavored to lucidate the subject, but have failed alternately to impress an audience which, however, is to the discredit of the audience, rather than due to lack of effort on the part of the doctors.

As a general rule the question of the condition of the elements and their relation is quite beside the discussion, and the whole matter is resolved into a simple statement of the percentages of the elements present and a guess—in the dark—as to what should result under such conditions.

Sanveur, Howe, Harboard, Fol and other metallurgists, have repeatedly pointed out that the carbon condition is paramount and that the total carbon is a secondary matter for discussion, or better yet one of the factors. How fruitless it is then to merely fix upon the total carbon or the combined carbon on the one hand and the graphitic carbon on the other, what the carbon combines with, how it combines and the combinations so formed, would seem to be of extreme importance, but from all accounts these matters are in many instances, at any rate, left out or given but scant attention.

Quite recently Robert Fol, for the *Cycle and Automobile Trade Journal*, December 10, 1906, reported on some thirteen cylinders and gave photo micrographs to sustain his position. While the report is only of passing interest here, the prime fact is worthy of much consideration in that of the whole number of cylinders investigated none was above criticism and all but two of them were quite below any standard of usefulness that should obtain in automobile work. Some of these cylinders were made abroad and they offered no advantage that anyone would care to copy.

If one should take all of the evidence to be had on every hand and judge accordingly, it would be to say that cast iron is by far too irresponsible to use in automobile work at all, but on the other hand cast iron is used, quite to the exclusion of any other product for cylinders and pistons and in most cases the cylinders and pistons so made do serve the purpose.

Gray cast iron, unlike steel, holds graphite as one of the carbon conditions, and it is the presence of this same graphite that makes the difference for the most part between cast iron and steel. The graphite is simply present as an excess over and above the quality of carbon that will combine to form cementite, pearlite-ferrite or such other product as may be developed under the several conditions possible to bring about.

If, in gray cast iron, the total carbon is upwards of four per cent., it is at once plain that graphite will be present in considerable excess, because, in the nature of the product, combined carbon will be far below the point of chemical absorption of all the carbon present.

The graphite present is indirectly an indication of softness in proportion as the graphite shows in excess, but it is something of a fallacy to attribute this softness directly to graphite. Softness and ability are due to a small amount of cementite and relatively a large amount of ferrite rather than to a large excess of graphite.

If, then, the total carbon is a constant, the soft iron will show a large excess of graphite because the total combined carbon will be low, and if this condition obtains, the ratio of ferrite to cementite will be more nearly in accord. True, graphite itself is of low strength, and an excess of graphite enmeshed in the matrix must have its weakening effect, but the difference between cast iron and steel lies in this fact. Steel holds little or no

antee every casting to be up in any such values, and safety demands that the minimum value be taken as the maximum in practice.

To illustrate the extent to which slag and oxides will defeat the aim to procure good sound castings, the author only needs to refer to a single recent experience as follows: It was desired to procure four cylinders for a motor and the first forty-nine cylinders procured—to get four—were so imperfect as not to be used. By changing the mixture, the methods of gating and other changes besides, it was finally possible to procure thoroughly good castings.

In this instance the pattern could not be claimed as at fault in any essential particular, nor was the pattern changed, excepting to eliminate a little extra metal from one or two places and to add a little extra finish to the valve seats. The castings were porous, spongy, and had blow-holes or other defects, but the defects did not persist in showing up in any one zone. When the castings finally came out good enough to use, they looked good and undoubtedly the "mixture" had much to do with the final success, as well as the series of preceding failures.

This instance of persistent failure is but one of many coming to the author's notice from time to time, but this case was a little unusual because the foundry was one fitted up for this class of work and, as a rule, its product is thoroughly good as cylinder castings go. This illustrates one other point, i.e., a new pattern always offers new problems and is likely to engender complications in diverse ways. Nor can the foundry be expected to produce good cylinder castings directly. Some fitting out must be done; hence, to realize the best results, cylinders must be ordered in quantity, this enabling the foundry to break in core-makers and moulders.

To reach a good understanding of the wants of the automobile engineer the matter of gray cast iron for cylinders and pistons must be elaborated on a basis involving three points of view, viz.:

(a) The desired condition of the cast iron, taking into consideration its micro-structure.

(b) The design of the castings, taking into account the desired strength and the needed shape as well as the foundry problem.

graphite, hence the matrix is not laminated with graphite and the strength of the matrix then holds rather than the strength of the laminations of graphite and the matrix as in cast iron.

When liquids solidify, the freezing process involves a "eutectic," an excess or an unsatisfied liquor, and it does not seem to matter what the compound may be, the phenomena are common to all; iron and steel are no exception to the rule and, in the main, it is possible to predict what will be the structure, if only one may know the composition and control the process.

A product holding 0.90 per cent. carbon will resolve itself into pearlite if the "teemed" mass is allowed to freeze unrestrained. This, then, is a gauge point ever to be kept in mind. If, however, the total carbon is less than 0.90 per cent., there will be an excess of ferrite and lowering the carbon increases the ferrite and diminishes the pearlite in direct ratio as follows:

$$90 : Y :: 100 : X.$$

When

90 = the total points of carbon in a pure eutectic of iron and carbon.

Y = the points of carbon in a hypo-eutectic mass, that is to say, a mass holding less than 90 points of carbon.

100 = the percentage of pearlite—a carbon condition—in a mass holding 90 points of carbon.

X = the pearlite present with Y points of carbon.

As for example. Steel, holding 0.45 per cent.—45 points of carbon—would hold pearlite as follows:

$$90 : 45 :: 100 : X = 50 \text{ per cent.}$$

Since only 50 per cent. is pearlite, the balance must be something besides, and in a hypo-eutectic, the balance is ferrite, and that balance must be: 100 = pearlite-ferrite and 100-50 = 50 per cent. ferrite.

If, on the other hand, the eutectic is hyper instead of hypo, that is, if the total carbon exceeds 0.90 per cent., the excess over and above the pearlite present will be cementite under slowly cooling conditions in the freezing process, and then it may be said, all that is not pearlite will be cementite in the hyper-eutectic, just as it may be said, all that is not pearlite is ferrite in the hypo-eutectic

Cementite responds to the formula Fe₃C and satisfies the derivation, Cementite = $\frac{3 \times 56 + 12}{12}$ in a hyper-eutectic,

When

12 = the atomic weight of carbon.

56 = the atomic weight of iron.

Hence,

$$\text{Ferrite} = \frac{3 \times 56}{12} \text{ in a hyper-eutectic.}$$

For each one per cent. of cementite in the matrix can be resolved as follows:

$C = \frac{1 \times 12}{56 \times 3 + 12} = 0.0667$ per cent. carbon per one per cent. of cementite. Whereas of cementite it may be said the carbon therein may be found as follows:

$$\text{Fe}_3\text{C} : C = \frac{12 \times 100}{56 \times (3 + 12)} = 6.67 \text{ per cent.}$$

Pearlite, the name given a certain formation involving carbon products as steel and cast iron, consists of ferrite and cementite in certain proportions. Pearlite is said to be the sole product of steel under normal conditions of freezing, if the carbon content is 0.90 per cent. Carbon is, therefore, present in this pearlite in the cementite and ferrite formation, and according to Howe, the cementite of the pearlite formation holds at about $0.90 \times 15 = 13.5$ per cent., and if pearlite is a name for the condition obtaining with the micro-structure in mind, the ferrite portion must be $100 - 13.5 = 86.5$. (Howe: Iron, Steel and Other Alloys, Second Edition, p. 183.)

In the hypo-entecloid product, excess ferrite holds in the proportions as before stated, but in the hyper-entecloid formation it is excess cementite that will be found. Considering the hypo-eutectic a little further, it will be well to point out that whilst the

relation of excess ferrite to pearlite may be resolved by direct proportion, yet even so, the matter is acceptable of lucidation in what might be termed a more satisfactory way as follows:

Total carbon $\times 15 =$ cementite; with the cementite, ferrite will be associated, cementite $\times 6.4 =$ ferrite, in the form of pearlite, and the sum of these equals the pearlite, whilst the remainder from 100 per cent. will be excess ferrite.

An example of this will make the matter more clear which, for illustration, 0.45 per cent. total carbon in steel may be taken, hence:

$$45 \times 15 = 6.75 = \text{cementite.}$$

And

$$6.75 \times 6.4 = 43.20 = \text{ferrite.}$$

$$6.75 \times 443.20 = 49.95 = \text{pearlite.}$$

Now

$$100 - 49.95 = 50.05 \text{ per cent.} = \text{excess ferrite, usually taken as 50 per cent.}$$

Right here attention may be called to the very reason why in cast iron it is the condition of the combined carbon and the total thereof that renders the cast iron soft to work and reliable in service, although, as before stated, the graphite will be a maximum for a fixed total carbon content, under the very conditions that render the excess ferrite equal or nearly equal to the pearlite.

It has been said that the fixed carbon in the cast iron for cylinder work should not exceed 0.75 per cent., and it will be obvious that any increase in the fixed (combined) carbon will be at the expense of excess ferrite because excess ferrite decreases as the total combined carbon increases, which to illustrate, an example may be taken involving, say, 0.75 per cent. total combined carbon.

Hence:

$$.75 \times 15 = 10.25 \text{ cementite.}$$

And

$$10.25 \times 6.4 = 65.60 \text{ ferrite.}$$

Therefore:

$$65.60 + 10.25 = 75.85 \text{ pearlite.}$$

And

$$100 - 75.85 = 24.15 \text{ per cent.} = \text{excess ferrite.}$$

At a glance it may be seen that by increasing the combined car-

CHEMICAL COMPOSITION				SUBJECT: <u>GRAY CAST IRON</u>	
CARBON	TOTAL	2.61		NUMBER: <u>111</u>	MARK: _____
	COMBINED	0.74		FROM <u>FULTON FOUNDRY &</u>	
	GRAPHITE	2.87		<u>MACHINE CO</u> NEW YORK, <u>4-17-07</u>	
	FERRITE			<u>5.6 M. SIMPLEX 75 H.P. MO-</u>	
	PEARLITE			<u>TOR CYLINDER 6 1/2" BORE 6 3/4"</u>	
	CEMENTITE			<u>STROKE TIGHT AGAINST 500</u>	
Cr.		Ni.		<u>LBS. PER. SQ. INCH HYDRO-</u>	
V.		W.		<u>STATIC PRESSURE</u>	
Mn.	0.59	Si.	1.34	<u>COMBINED CARBON WITHIN</u>	
Al.		Cu.		<u>THE LIMIT.</u>	
S.	0.089	P.	0.62	<u>SULPHUR WITHIN THE LIMIT</u>	
Sn.		Zn.		<u>MANGANESE WITHIN THE LIMIT.</u>	
Pb.		Sb.		<u>PHOSPHOROUS ABOVE THE LIMIT.</u>	
As.				<u>SILICON ABOVE THE LIMIT.</u>	
PHYSICAL PROPERTIES					
T.S.		LBS. PER SQUARE INCH	9800		
E.L.					
EX.		PER CENT.			
CO.					
PROOF		DIAM. "			
		LENGTH "			
FRACTURE					
RATING		U.			
		H.			
TREATMENT					

CHEMICAL COMPOSITION	
CARBON	TOTAL 3.38
	COMBINED 0.58
	GRAPHITE 2.80
	FERRITE
	PEARLITE
	CEMENTITE
Cr.	Ni.
V.	W.
Mn. 0.44	Si. 1.78
Al.	Cu.
S. 0.165	P. ?
Sn.	Zn.
Pb.	Sb.
As.	
PHYSICAL PROPERTIES	
T.S.	LBS. PER SQUARE INCH
E.L.	
EX. CO.	PER CENT.
PROOF	DIAM. "
	LENGTH "
FRACTURE	
RATING	U.
	H.
TREATMENT	

SUBJECT: GRAY CAST IRON
 NUMBER: X MARK: _____
 FROM: MERCEDES CYLINDER
 NEW YORK 4-17-07

THE PHOSPHOROUS WAS NOT NOTED.

THE SULPHUR EXCEEDS THE LIMIT.

THE SILICON EXCEEDS THE LIMIT.

THE MANGANESE IS WITHIN THE LIMIT.

THE COMBINED CARBON IS WITHIN THE LIMIT.

The relation of combined carbon to graphitic carbon would seem to be of great importance, for with a low value of the total carbon, low carbon seems to afford a good strength but good castings are not assured. For cylinders, good castings must be of the first importance, and on this account adjusting the relation of graphite to combined carbon, with a view to depressing the total and the combined carbon, holds out no great promise.

This phase of the subject, then, is not one for more than mention, but the combined carbon can be as low as 0.0275 per cent. with the total carbon as low as 2.75 per cent. and still realize fully 25,000 pounds per square inch tensile strength, but the silicon would be very high in such products and the fluidity would be the only claim to be made in its favor.

If, then, the question is to be confined to the question of automobile cylinders, pistons, etc., it will be of no avail to discuss the uses and advantages of high silicon, low combined carbon mixtures, or in fact any of the many variations that could be brought about, provided assurance be given that no such variations would evolve better cylinder castings than those obtainable under the conditions fixing the limits of the components as herein before given with the understanding that within the given limits certain variations will obtain for diverse reasons, as:

- (a) differences in the "pig" iron.
- (b) differences in the "scrap" iron.
- (c) differences in the relation of the "pig" to the "scrap."
- (d) differences in the fuel.
- (e) differences in the slag forming part of the charge.
- (f) differences in the cupolas.
- (g) differences in the blowers.
- (h) different management.
- (i) different time of teeming.
- (j) position of the part of the charge used for cylinders, the first and last of the charge being the least desirable.

All these sources of variations are besides the question of gating, patterns, cores, sand, the "gaffer" and the rest.

If variations will be likely, the question of the effect of variations should amount to something more than to be disregarded. Briefly, the effects of the components besides carbon can be set down, viz.:

Phosphorus causes weakness to combat shock loads, and is manifested in the way of a decided "cold short" tendency that cannot be disregarded.

The ills of phosphorus are more apparent with high combined carbon than with low, so that decreasing phosphorus should be the rule with increasing combined carbon. In special automobile steel, for illustration, the phosphorus is fixed as a decreasing value with increasing carbon.

Phosphorus, fortunately, has a certain beneficial effect by way of producing good castings, and the aim should be to fix the phosphorus at a point giving the advantages of its presence, yet withal so low as not to render the casting "cold short." In the finished product this value is fixed as 0.50 per cent., which in itself limits the phosphorus content in the pig as that amount leaving not more than 0.50 per cent. in the casting. Phosphorus seems to afford, not so much fluidity, but the property of remaining fluid. To what extent phosphorus affords this property is not so well defined, since silicon seems to argue fluidity itself, and on this account silicon is likely to abound in castings in excess of that amount considered desirable from the purely strength point of view. Phosphorus has the property of reducing shrinkage and this in itself is a desirable property, since intricate castings, in the event of excess shrinkage, would alter their section, in compressing cores, or leave dangerous internal stresses.

Phosphorus in iron abounds, as a rule, in excess of the requirement, and the real problem is to limit phosphorus rather than to make any effort to render it high enough to afford the due measure of the good that it holds in its qualities.

In cylinders or other castings of an uneven thickness of walls or with large bosses or other protuberances, the phenomenon of unequal cooling must of course be taken into account, and two evils are likely to obtain as a result. * * * *

bon to 0.75 per cent., the excess ferrite fell off 24.15 per cent., whereas with the 0.45 per cent. carbon the excess ferrite was 0.50 per cent.

If excess ferrite is increased by decreasing the combined carbon, it might be argued that the fixed carbon content might be reduced to a low point, far lower in fact than the stated desired limit of 0.75 per cent. Unfortunately for any such theory, two things are against it.

(a) Combined carbon adds strength in some proportion to the amount present.

(b) Graphite enmeshed reduces strength in some proportion to the amount present.

Were no graphite present, the combined carbon would add about 800 pounds per square inch for each 0.01 per cent. of the same present and the then steel would be far stronger than cast iron with the same value of the combined carbon, and the relations of strength in the two products would approximate the following:

TENSILE STRENGTH IN POUNDS PER SQUARE INCH.

50 carbon steel.....	105,000
50 combined carbon cast iron.....	25,000

True, the tensility of the respective products might vary over broad ranges for various specimens and reasons, but the relation holds, nevertheless, for both products can be varied equally in per cent.

Cast iron holding about 0.10 combined carbon would have a tensile strength of not far from 15,000 pounds per square inch, if the total carbon be the same as in the case of the 0.50 per cent. combined carbon above cited. In this an illustration of the ills of excess graphite is quite apparent since a loss of 2-5 of the tensile strength is a good approximation.

Any attempt, then, to solely attribute good qualities and softness to excess graphite must be regarded as on slim grounds, nor would low combined carbon be a desirable condition. What seems to be best is that quality of combined carbon that holds excess ferrite about equal to pearlite, and if this contention can be substantiated, carbon (combined) should not exceed 0.50 per cent.

COMPLICATIONS OF LIMITED FUEL RACES

RUNNING an automobile race on a limited supply of gasoline at first sight appears to be an affair of angelic simplicity. The same amount of fuel is poured into each tank and that is the end of the matter. In practice, however, the simple method is not simple at all, but one far more complicated and difficult of application than the old regulations under which each car, after being brushed down and having its tanks emptied, had to be put on the scales, have all its parts verified, sent to race, and put through the same close inspection when its day's work was done. The Automobile Club of France made the experiment in this year's Grand Prix and will continue it in the Press Cup race, but has already decided that, notwithstanding good technical results, the trouble is too great for every-day usage.

Gasoline, like other bodies, is variable according to the temperature, and, after deciding that fifty gallons shall be allowed for the race, the question of density comes up for settlement, as well as the problem of how to supply every machine with fuel of the same value. For it is evident that if one car were filled with gasoline at 10 degrees it would be in a better position than one having been given the same number of gallons at 24 degrees. By

dilation the gasoline would have increased in volume for a difference of temperature of fourteen degrees to the extent of more than five pints.

In order that every competitor should receive the same treatment, a very special type of tank had to be constructed for measuring the gasoline allowance to the Grand Prix racers. The work was entrusted by the racing board and technical committee of the A. C. F. to the Alpha Company, the

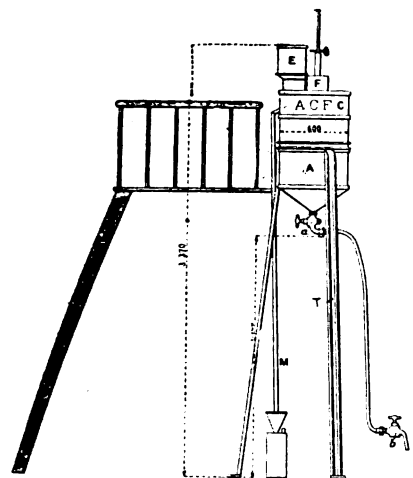


FIG. 1.—Elevation of fuel-measuring apparatus.

French firm of searchlight and automobile lamp manufacturers.

The accompanying illustrations, which are reproduced from *Omnia*, show the nature of the measuring apparatus, five of which were used on the Dieppe circuit, three being for the Grand Prix machines and two for Sporting Commission cup racers. A metal gasoline tank (A) is mounted on stout trestles (T) and has an outlet at its base through the tap *a*, to which is connected a flexible tube with the cock *b* at its extremity. On the upper part of the apparatus is fixed a collar (C), on which rest a funnel (E) and a cylindrical volume regulator, which for the convenience of description might be called a compensator. The lower part of the funnel E had an outlet shaped to fit the mouth of the tank, and has a volume calculated to receive ten liters at a time, gasoline in France being uniformly handled in stores and garages in sealed cans of this capacity.

The compensator F, 7.2 inches in diameter and 12.2 inches in height, was constructed in such a manner that a variation of volume of the 231 liters of gasoline in the tank, due to either increase or diminution of temperature by one degree, correspond to a correction in height of ten millimeters. This correction had been calculated on the apparent co-efficient of dilation of gasoline contained in a galvanized iron tank.

To give each car its 231 liters (about fifty gallons) of gasoline to which it was entitled for the race, the following process was

gone through: Cocks *a* and *b* being closed, the temperature of the gasoline ready to be poured into the 231 liter tank was obtained by means of a special apparatus, which will be described later, and the compensator F raised or lowered in the mouth of the reservoir A in such a way that the figure corresponding to the

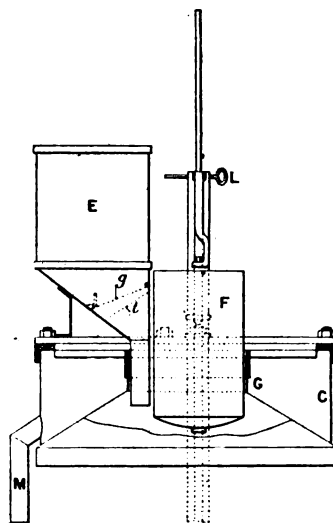


FIG. 2.—Funnel and volume regulator.

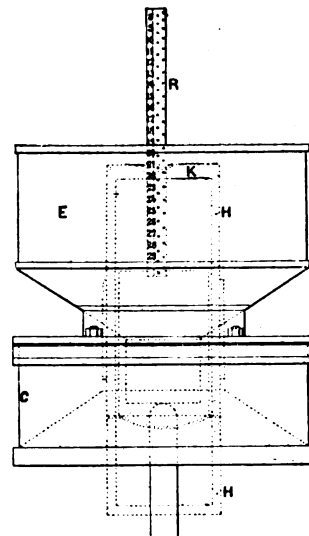


FIG. 3.—Compensating scale.

temperature could be read by the scale R attached to the compensator and the cross-member K, placed on the guide from H, as seen in Fig. 3. A key (L) then held the compensator in position, this operation increasing or diminishing the volume of the tank, according to whether the temperature of the gasoline was higher or lower than 15 degrees.

When the gasoline began to appear in the mouth of the funnel the temperature was again taken, and, should there be any variation, the necessary correction of volume was made by means of the compensator. The thermometer was then withdrawn and the tank filled until the fuel was level with the top of the inlet G. An overflow leading to a tank on the ground allowed of the tank being filled very accurately. All that now remained to be done was for the two cocks to be opened and the gasoline allowed to flow into the tank of the car and the special reserve cans provided for each entrant. A complete emptying of the measuring tank was assured by its conical base. Provision was made for straining the gasoline by a fine gauze in the base of the funnel, with a metal grating above it to prevent deterioration.

For a long time the technical committee was unable to find an instrument which would give an accurate reading of the average temperature of the mass of liquid. The apparatus finally adopted was a mercury thermometer T (Fig. 4), with graduations marked on its stem, contained within a copper cylinder C, and passing through the cork plug B. Two other openings were made in the cork plug, one serving for the passage of a copper tube A eight millimeters in diameter, and descending almost to the base of the instrument, and the other an opening four millimeters in diameter for the passage of gasoline. The thermometer was maintained by a stay at F and the apparatus provided with a chain sufficiently long to allow it to be dropped to the bottom of the

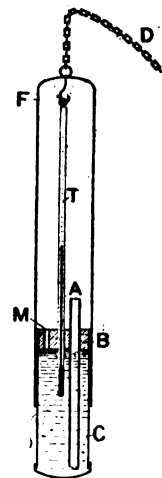


FIG. 4.—Thermometer.

tank. When the instrument was drawn out of the tank the gasoline which had passed in through the tube *A* ran out through the hole *M*, bathing the thermometer in its passage and recording the average temperature of the liquid without any evaporation whatever.

In addition to the measuring apparatus it was necessary to closely examine the interior of the gasoline tanks of the cars for hidden fuel. For this purpose a special electric lamp was devised and attached to the end of a flexible cane in such a way that it could be made to explore every corner of the tank. The eyes of the controllers not being as flexible as the canes, other rods were supplied with cotton pads at their extremity, which, being pushed around in every quarter of the tank, gave additional assurance that no gasoline remained within.

Everybody was satisfied at the manner in which the gasoline allowance was distributed, each detail being worked out so carefully that there was no possibility of cheating or unjust treatment. It is a delicate operation, however, and unless there is a perfect organization races run under this basis are likely to give rise to endless controversy. The French club was so unanimously of opinion that the method would give rise to difficulties that it was decided not to use it after this year.

CUSTOM REGULATIONS GOVERNING AUTOS.

WASHINGTON, D. C., July 30.—Collectors of Customs have been notified by Assistant Secretary of the Treasury Reynolds that new regulations governing automobiles taken abroad by tourists have been formulated. The new regulations provide that the owner of an automobile of foreign manufacture on which duties have been paid may, after its identification and the issue of a certificate by customs officers, on his application, take it abroad for touring purposes, with the right of free entry on its return with him, or within thirty days thereafter, provided that no repairs, improvements or additions were made to the automobile, except absolutely necessary repairs costing not more than 10 per cent. of the original appraised value.

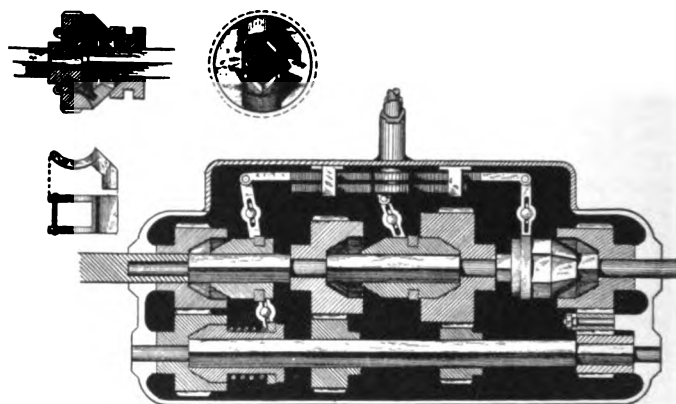
Accessories of foreign manufacture will be exempt from duty in connection with the automobile, provided that it shall be established that they were the ones taken abroad under the certificate. If the certificate covers a set of foreign tires, it will not be necessary to prove that the tires brought in on the wheels were those taken abroad.

Certificates will be issued, on request, for automobiles of American manufacture and their accessories, and such automobiles, whether or not under certificate, will be admitted on their return, free of duty, provided that they shall not have been advanced in value or improved in condition, and that all repairs thereto were absolutely necessary and did not cost more than 10 per cent. of the original price of the car. The further provision is made that it shall be shown that the accessories are those taken abroad under the certificate. Such repairs shall not be deemed an advance in value or improvement in condition within the meaning of Section 483 of the Tariff Act. Duty will be charged on any accessories of foreign manufacture which shall be substituted abroad. Foreign tires taken out on the wheels of automobiles may be brought back free of duty.

The regulations further prescribe that the owner must make oath and the Collector of Customs must be fully satisfied that they come within the regulations before any such automobiles and accessories shall be admitted free of duty. In case of the unavoidable absence of the owner when an automobile and accessories are entered either under a certificate, or without one, or entered as household effects, the duly authorized agent of the owner may give a bond in amount equal to double the estimated duties condition for the production to the Collector within sixty days from the date of entry of evidence to the satisfaction of the Collector, with the oath of the owner that they are entitled to free entry. This bond may be extended by the Collector for a total period not exceeding six months.

INDEPENDENT CLUTCH CHANGE-SPEED GEAR.

One of the most obvious methods of overcoming the very objectionable necessity of sliding gears into and out of mesh while revolving, which constitutes the chief drawback of the style of change-speed gear now in present use, is to design the mechanism so that the relative position of the pinions remains unchanged while they are brought into and put out of action by means of independent clutches. This expedient naturally suggests itself at once and it has been tried in numerous instances, but not with that measure of success that it would seem to hold at first sight. The accompanying illustration depicts a novel modification of the idea, employing conical clutches operated in a manner somewhat similar to that known as the selective type of gear-changing. It will be noticed that the high speed or direct drive is thrown in by means of a lever which is also connected to the clutch just below it on the countershaft at the left, so that throwing in the high speed disengages this clutch, leaving it, as well as all the remaining pinions, idle. As shown in the illustration, the gear is set to give the first or slow speed, the spring shown on the countershaft being employed to allow additional motion of the rack into reverse, as the latter is controlled by the same rack. The claims of the patentee, Frederick S. Leonard, Jewett City, Conn., permit of several detailed modifications, which may be embodied in the device should experience show them to be su-



SECTIONAL PLAN VIEW LEONARD CHANGE SPEED GEAR.

perior to those shown in the drawing. For instance, the hexagonal faces of the clutches shown might be replaced by conical, corrugated faces, thus doing away with all square corners, with their tendency to wear round and slip in time. Another type of individual clutch which may be substituted if thought fit is shown in section in the upper left hand corner. It is a simple and positive lock, the clamps for engaging the square sections of the shaft having extensions passing through the pinion on a curve, so that when released the helical springs force the clamps out and the curved groove lifts them clear of the shaft. When pressed into place by the sliding block on the shaft they instantly lock the pinions to the shaft and, being reinforced by the sides of the wheel, no serious strain is brought upon any particular part of the mechanism. The shaft can be made round and in one piece, while the short section of square shaft needed under the clamps can be slipped on and keyed to shaft proper. The sliding block is left free, so that only that particular part of the gear set that happens to be in service at the time is revolving, all other parts remaining idle.

One of the last things that the amateur driver learns to let alone is the carbureter. He seems to regard a bit of adjustment here and there, particularly where the gasoline flow is concerned, as a sort of panacea for all the ills of irregular running. In many cases the original trouble is wholly imaginary, but a little inadvised tinkering with the carbureter adjustments makes it real in a very short time, so that it pays to let the carbureter alone except when it is obviously at fault.

LETTERS INTERESTING AND INSTRUCTIVE

Various Types of Pumps Employed on Automobiles.

Editor THE AUTOMOBILE:

[839.]—Will you kindly let me know through Letters Interesting and Instructive, the following: How many kinds of rotary pumps are there in use beside the gear pump and the type used on the Pierce-Arrow that are employed as circulating or lubricating pumps and kindly describe the principles of each type briefly.

Also the following with reference to the fans ordinarily employed to assist in cooling the motor. How is the volume or amount of air put in circulation by such a fan calculated? That is, the fan formed by the spokes of the flywheel and forming a part of the latter, as well as the independent fan placed directly behind the radiator, when both the dimensions of the fan and its speed of rotation are known.

AUSTIN M. WOLFF.

Stamford, N. Y.

There are three types of rotary pumps in general use on the automobile, the gear-pump which you mention, the centrifugal pump and the rotary pump. The principle of the gear-pump is practically that of the piston or plunger pump in which an increase of volume, *i.e.*, the receding of the piston draws the liquid into the pump and the decrease of that volume by the return of the piston forces it out. In the gear pump the volume is increased and decreased alternately as the pinions revolve. As its name indicates, the centrifugal pump depends for its action on centrifugal force; in the gear pump the liquid enters at one side and leaves directly opposite, while in the centrifugal pump it enters at the center, the pump housing being circular. The water strikes the center of the moving member of the pump, which revolves at high speed and is thrown to the circumference by centrifugal force, the outlet being placed at the top of the casing. The rotary pump works on the principle of the simple waterwheel; its spindle carries a number of vanes, the water entering at one point on the circumference of the housing and leaving at another diametrically opposite, the former usually being at the bottom so that this pump is practically an undershot water wheel except that being driven by power and confined in a casing it carries the water round with it and out at the top, instead of being impelled by it. The centrifugal pump is the type most generally used on automobiles with the gear type next in favor, the rotary not being often found on present-day cars.

The method of calculating the volume of air delivered by a fan will be found in Kent or other engineers' pocketbooks under this heading, but the data is too voluminous for reproduction here. While there are doubtless exceptions, we are under the impression that the average fan used on the automobile is largely a matter of guesswork and that neither science nor overmuch calculation enters into its makeup. The same applies to the flywheel fans you mention, though we understand that this is a matter that is now coming in for considerably more attention at the hands of the designer than it has hitherto been customary to devote to it. A fan was a fan and that was all that was necessary owing to the relatively minor rôle it was called upon to play in the power plant.

Inquiries About the Holley High-tension Magneto.

Editor THE AUTOMOBILE:

[840.]—Some weeks ago I read an account of the Holley system of ignition in "The Automobile," in which it is stated that an electric condenser is employed in connection with a magneto. Can you give me the maker's address, as well as the number and date of his patents covering this system?

ARTHUR GRAHAM.

New York City.

You will find the announcement of the manufacturers of the Holly magnetos in our advertising columns and we would refer you to them direct for the information you desire. If you do not wish to correspond with them on the subject, the data you inquire about is a matter of public record and can be found by looking back through the *Patent Gazette*, which is kept on file at public libraries such as The Astor.

In Settlement of Two Disputed Questions.

Editor THE AUTOMOBILE:

[841.]—Perhaps you will be good enough to settle an argument I have had with my chauffeur. We have had some trouble with a slipping cone, leather-faced to metal clutch. The first leather not holding, I sent for another, and on taking the first one out I found that the leather was lifeless, having been burnt up with the great heat caused by the friction.

When putting the new one in my chauffeur stated it would have to be soaked in castor oil, but I told him that we would have the same trouble again, as castor oil was a good lubricant. He assured me though that "the leather must be well soaked," otherwise it would be very "ferce," so I let him go ahead and he soaked it thoroughly and thickly with the castor oil. The first few minutes we were out we found it slipped a little, but with the increasing heat of the engine (just as I expected) the oil exuded, and in a little while it could not move the car on the level, as the engines raced and the clutch would not hold.

My chauffeur then said that the clutch was too small, but I assured him that any clutch would be too small if he put enough of oil and grease between the leather and the steel, and that the action of oil on the leather was exactly the same in every way as reducing the size of the clutch. In other words, the effect on the transmission and the engine was precisely similar, because a small clutch not oiled would slip, and a large one with oil would also, and that the same effect was produced by a weak or a strong spring at the back of the clutch, *i. e.*, that a weak spring at the back of the clutch was precisely equivalent in every way to a small clutch or a large one well oiled. Will you kindly decide if I am right in this.

Another point about which I have had some argument is the effect of a magneto. In a case where a magneto is set to spark before the piston arrives at the dead center and thereby the explosion immediately after it passes it, the engine going at, say, 1,000 revolutions per minute, would not the explosion come when the piston is on the dead center if the engine was running very slowly?

My argument is that there is an instant of time between the spark and the explosion, and in that time the piston travels a more or less distance, according to the speed at which it is going.

My chauffeur holds that as the spark is set by the position of the piston, then the explosion must always take place with the piston in the same position, whatever the speed, and, therefore, if it does not explode on the dead center when the engine is running at 1,000 revolutions per minute, it could not take place there when the engine is going at 100 revolutions. Which is right?

Thanking you in anticipation for your kind reply.

Toronto, Can.

AMATEUR MECHANIC.

Regarding the first matter in dispute, while castor oil is a good lubricant, it also has the peculiar property of causing a leather surface to adhere to metal and on this account is largely used, or was in former years to apply to slipping belts in factories in order to make them cling to the cast-iron pulleys on the shafting. In fact, it is a belt-dressing of many years' standing and has long been used to keep the leather from drying out and becoming hard. There is little doubt that a leather clutch facing which was given a preliminary soaking in castor oil would not only act better but would be apt to prove more durable in the long run. It is only natural that a large part of the oil should be forced out in operation but sufficient would remain to keep the leather in a more pliable condition than if it were used dry. It would seem as if the trouble lay in a weak spring rather than in the facing of the clutch. On the other hand, you are quite correct in holding that the clutch, *i. e.*, the male member of it, is not too small, as if this were the case it would have been a source of trouble from the outset. Such a clutch would be apt to slip under any circumstances, but putting castor oil on a clutch of the proper dimensions should not cause it to slip once the excess oil has been squeezed out of the leather. The "increasing heat of the engine" to which you refer is not a factor in such cases ordinarily, as the clutch is situated sufficiently distant from the engine not to be appreciably affected by its heat. The heat which did the damage was that of the friction generated between the slipping leather face and the flywheel recess of the clutch, a state of affairs which, under the

circumstances, points to the presence of a spring that is not sufficiently strong to seat the clutch properly so that it will slip and cause trouble whether oiled or not.

A magneto is usually set to run synchronously with the engine to which it is attached and in timing it with the latter allowance is made for this difference in the time of the occurrence of the spark at the magneto and that of the explosion, which, though appreciable, would be a difficult matter to measure and constitutes but a small fraction of a second. However, as the piston of a motor turning over 1,000 r. p. m. can travel quite an appreciable distance in the same period of time, the necessity for the allowance will be appreciated. The position you take is quite correct, though you are probably not aware of the basis for it. This is to be found in the fact that the magneto is said to "build up" as its speed increases. Technically speaking, both its current output and its potential rise proportionately with an increase in speed, and particularly the latter. In other words, it acts much more quickly at a high speed than when turning over slowly, as is true of all current-generating machinery. This being the case, if the magneto were timed to fire the charge at a position corresponding exactly to the upper dead center of the piston when the motor was only turning over at 100 r. p. m., the charge would be fired considerably in advance of this point when the motor was running at 1,000 r. p. m., and this is exactly what is desired, as the piston naturally travels a much greater distance in a given space of time when running at high speed than it does at a low speed. The occurrence of the same interval at the higher speed as takes place at the lower rate, would naturally cause the piston to run away from the spark, so to speak, which would have to be counteracted by setting the spark advance lever further forward.

A Loose Piston Pin Caused This Hammering.

Editor THE AUTOMOBILE:

[842.]—Some time ago I wrote a letter (822) to "The Automobile" asking you for information which might lead to the discovery of a hammering noise in my engine that was troubling me. I gave as full an explanation as possible, but doubtless it was not entirely clear or you would have been able to locate the trouble. However, I had found my trouble before your reply was published and had reached me, so thought it might be of interest to you and to any who might be troubled that way to know where the trouble was and how we located it.

After examining the engine as closely as possible, we found which cylinder was the center of the trouble, then removed it so as to be able to get at the connection of the piston in an easy manner. We found upon further investigation that the piston pin was loose, giving enough lost motion to cause considerable of a pound and also a great loss of power. We took up the lost motion by removing the pin and pounding the same very hard on one end, the other end placed on a solid vise. This treatment enlarged the pin sufficiently, so that there was no more lost motion. From that time the engine has run fine and has the original amount of power.

I would like to make another inquiry and hope you can give me some assistance through your Letters Interesting and Instructive. I will try and give a good description of the trouble. I have a Model C Ford 10-horsepower engine, double cylinder. The engine has been in use for three seasons. The engine is doing as good work as I could expect, but the valves seem to make an unusual and unnecessary amount of noise. Is there any way whereby this could be improved on or stopped?

Tracy, Minn.

C. B. PARTRIDGE.

While our diagnosis of some of the problems submitted us for solution frequently goes wide of hitting the mark, this would hardly seem to be true in your case, as if you will refer to our answer to your former letter you will find that the opening sentence of this stated as explicitly as we could make it do so, that, in our opinion, the trouble was caused by looseness at either end of the connecting rod where it joins the crank pin or the piston pin. Your description was perfectly clear and, as subsequent events prove, we did locate the trouble, mentioning, moreover, that your statement of the case was an "almost certain indication" of the cause you discovered to be at the root of the trouble. We are glad to hear that you were able to find it and apply the remedy before our reply reached you, and the manner in which you made

it good may prove of interest to others, although the method employed was decidedly crude and rather to be avoided than patterned after in similar cases. If after upsetting the pin in the manner you describe it had been turned down true to its bearing again, no fault could be found with the repair, but the use of a brass bushing would have made a better job where lathe work was not convenient.

Regarding your second inquiry, probably the only way to bring about an appreciable reduction in the amount of noise caused by the valves of your engine would be to replace them with new ones, as the trouble is doubtless due to the fact that the valves have been worn considerably by grinding in and the tappet ends have also worn, the first permitting the valve to drop much further before reaching its seat and the latter bringing the tappet and push rods together with more noise owing to the increased distance between them.

Spur and Bevel Gear Differentials Compared.

Editor THE AUTOMOBILE:

[843.]—Will you kindly explain in the columns of your valuable journal the advantages and disadvantages of the spur gear and the bevel gear type of differentials? I have noticed that some machines which otherwise are constructed greatly the same differ in the type of differential, and each dealer claims that his is the only type of good construction. One dealer told me that many manufacturers who had tried the spur gear had gone back to the bevel gear. Why the spur gear is not an improvement over the other in not having the tendency to push the case apart is beyond me, so I have referred the question to your higher court.
Minneapolis, Minn.

RAYMOND O. WEISS.

The bevel type of differential is very generally used nowadays except on small, light cars, and there are several reasons for preferring it. Chief among these is the fact that some relative movement of the driving axle of a shaft-driven car is bound to take place; that is, under the stress of passing over rough roads the two halves of a live rear axle are compelled to assume slightly different planes instead of remaining in the same plane as when standing. Considered as one piece, the axle may be said to bend at the center. Bearing in mind the nature of a spur-gear differential, it will be apparent that under such circumstances the small pinions lying parallel with and meshing with the large pinions on the ends of the axle as well as with each other, will tend to bind. If there be sufficient relative movement of this kind between the two parts of the axle this binding will naturally become a serious factor until it reaches a point where the teeth strip.

This brings us to another advantage of the bevel type—the latter will not only automatically compensate for any amount of this so-called bending short of actual destruction, as it rolls round a point, but it is also proof to a much greater extent against stripping of the teeth as the design of the latter permits of their being made with a larger cross section. The bevel differential is much more silent when new and it maintains this advantage throughout its useful life as wear may be compensated for by adjustment, bringing the bevels and the members with which they mesh into closer contact to the extent to which they have worn. The dealer who told you that makers who had tried the spur type had later abandoned it in favor of the bevel was quite correct. Regarding the tendency of bevel gearing to push the engaging members apart, in this instance, the sides of the housing, this is readily overcome by the use of suitable thrust bearings, usually of the annular ball type and very little difficulty is experienced on that account. Thus the bevel differential has the advantages of greater efficiency, greater freedom from accident and silence in its favor, while it may also be made more compact.

Who Is the World's Greatest Racing Driver?

Editor THE AUTOMOBILE:

[844.]—Not long ago a friend and myself had an argument as to who was the world's greatest and most skillful automobile driver. My friend claims that Duray, the driver of the De Dietrich, is the most skillful in the handling of a racing car. Now I claim that Oldfield, though not a road driver, showed more skill in his races

on the local tracks than Duray or any of the other foreign drivers in the Vanderbilt Cup races. I base my argument on the fact that I watched the foreign drivers closely as they swung round the "hairpin" turn in the last cup race for the express purpose of comparing their driving with that of Oldfield, and my conclusion was that Oldfield was the most skillful. I would like your opinion on the matter. A reply through Letters Interesting and Instructive will be appreciated.

A. W. LARKINS.

New York City.

Like similar questions concerning the most popular or the most beautiful actress, this is entirely a matter of personal opinion. The work of many of the foreign racing drivers shows masterly control of the car at high speeds and in bad places such as are not encountered in track racing, but opinions both as to the relative merits of different road racing drivers and their skill as compared with some whose sphere is confined to the oval, are so numerous and so conflicting that it would be a waste of time to attempt to reconcile them. We cannot lay claim to being an authority on the subject, nor can we refer you to any higher tribunal.

SOME INFORMATION FOR NUMBERS 797 AND 772.

Editor THE AUTOMOBILE:

[845.]—I note your reply to letter No. 797, C. C. Cross, in the issue of June 27, and it is possible that the matter might be stated in another way which may help him to understand the matter. Simply bear in mind that the term "point" means one one-hundredth part of one per cent., or one ten-thousandth part of the total mass. In the case which he cites this would be spoken of as 45-point carbon, it would mean that the carbon content was forty-five one hundredths of one per cent., or not quite one-half of one per cent. The sulphur is one and seven-tenths points, or seventeen thousandths of one per cent. The nickel is one hundred and seventeen points. As points indicate hundredths, it is readily seen that when coupled with the term points we read the first two figures to the right of the decimal point, as whole numbers indicating the points, and when there is a third figure, as is the usual case when sulphur, phosphorus, manganese, silicon and other elements are spoken of, it means tenths of a point. In all good metallurgical test work all elements are figured to tenths of a point, and it should be done in every case requiring accuracy.

In the matter of physical properties, Ex-4" means the extension in the length of 4", in this instance it is eight and one-quarter per cent.; in other words, it means that a space which was 4" long stretched out to 4.33" at time of rupture. As to the second abbreviation I see where he took it from and consequently he is not at fault, but what is intended, and the proper term to us is reduction of area, it refers to the cross-section of the test piece and has nothing to do with the length. As an example we will assume that the test piece was a round bar $\frac{3}{4}$ ", or .750", in diameter. The area would then be .441787", we then pulled it to rupture and found the diameter at the break to be .713%, this would be an area of .399273", the reduction of area would be .042514", or nine and one-half per cent. It might not be amiss to say that the first abbreviation should be elongation instead of extension.

This matter of a 4" test piece brings up another phase of this question which is of interest, and it is hard to understand why some persons in the automobile industry are so ready to ignore the facts which the experience of years has taught. We test metals to secure facts, and it has been found that short pieces are misleading, the 8" test piece has become a standard. We must not lose sight of the fact that when a test piece is pulled it never pulls evenly, its main elongation and reduction takes place in a space of about two inches in the center of the specimen; this being the fact, it is readily seen that a 4" test piece gives us a wrong percentage of elongation.

In your issue of June 6, letter 772, the keyseat for a Woodruff is cut longitudinally, the same as for any other key. The "Rites" governor represents the best practice in modern high-speed steam engine work. The Corliss gear is not adapted to high-speed work, and the study of engineers to produce a gear which could be run at high speeds resulted first in the centrifugal governor, where weights in the flywheel are connected with the eccentric in such a manner as will change both its location and throw, and consequently the length of time that steam is admitted to the cylinder. The next step in this line was the "Ball" governor; he placed the belt wheel on the shaft so that it was free to revolve a certain amount, the spring of the centrifugal governor was attached to this wheel in such a manner as to pull it against a stop and in a direction contrary to the pull of the belt; under normal conditions the centrifugal governor controlled the speed of the engine, a heavy load resulted in a harder pull on the main belt, it rotated against the spring, increased its tension and consequently opened the valves. When this engine was first placed on the market it

created quite a sensation, as its makers advertised that they were ready to install an engine which should run at constant speed regardless of load, or run faster when under a load than when running light; this was in direct opposition to all facts known in practice at that time, the loose wheel was an objection, but it is quite presumable that this was what started the train of thought that resulted in the "Rites" governor.

The "Rites" governor combines the effects of centrifugal force and also inertia; under a given load and normal conditions it controls the valve action the same as a centrifugal governor; when any sudden load, or reduction of load, comes on the engine, the inertia effect comes into play. I have never known of its being applied to gas engines aside from Thompson & Sons, Beloit, Wis., and I know nothing regarding the results they have secured, but they claim to regulate within two per cent.; they build quite large engines.

EDWARD F. EDGECOMBE.

Cuyahoga Falls, O.

TO THE POINT ABOUT ALUMINUM CASTINGS.

Editor THE AUTOMOBILE:

[846.]—In "The Automobile" of July 18 there is an article on this subject by E. Blough that is the type of article that makes serious engineers so very, very tired. What real information is contained in it? His "say so" that his company can or has made castings having the characteristics given in the article does not amount to a "hill of beans" so far as real definite information is concerned. Why not give the composition, foundry practice and actual test records of specimens?

First we have a well-known engineer giving 9,000 pounds per square inch as the safe tensile strength to figure on. Then a prominent foundryman writes an article and says, in effect: "You're away off, old chap, we can give you castings with three times the strength of your rotten old test pieces and a real, live elastic limit; you surely got a 'bad one.'" Then, again, I know that this year another prominent foundry gave a well-known automobile manufacturer a fine lot of "punk" gear boxes, all of which have been renewed at the W. K. A. M.'s expense. In view of the above, "where are we at" on aluminum castings. Personally, I am sidestepping the question by using bronze, and incidentally keeping out of the bunco game.

There seem to be only two ways of getting good aluminum castings with certainty; either have your own foundry, or keep a bribe-proof, high-priced metallurgist as inspector at the foundry to watch every melting and pouring.

Mr. Blough's article is of the kind that says "now, I know, and you do as I say," but we have been "done" so often and so regularly on aluminum castings that articles like this only serve to create additional distrust and force us to an increased use of bronze.

E. T. BIRDSALL.

Rochester, N. Y.

SHORT-CIRCUIT TRACED TO THE COIL BOX.

Editor THE AUTOMOBILE:

[847.]—I have just had an experience that may interest your readers. I was driving my four-cylinder car in a rain storm and after driving about five miles two cylinders misfired, and a hasty examination showed all vibrators working, clean spark plugs, commutator in good order and carbureter in the same condition. I was pretty confident that the trouble was merely of a minor nature—some of those little things that defy discovery at the time and which are all the more exasperating on that account—but one is not overmuch tempted to "fight it out on this line" on a black, rainy night when more or less in the dark in every way and even that most ignominious ending to a run, a tow, is a welcome relief.

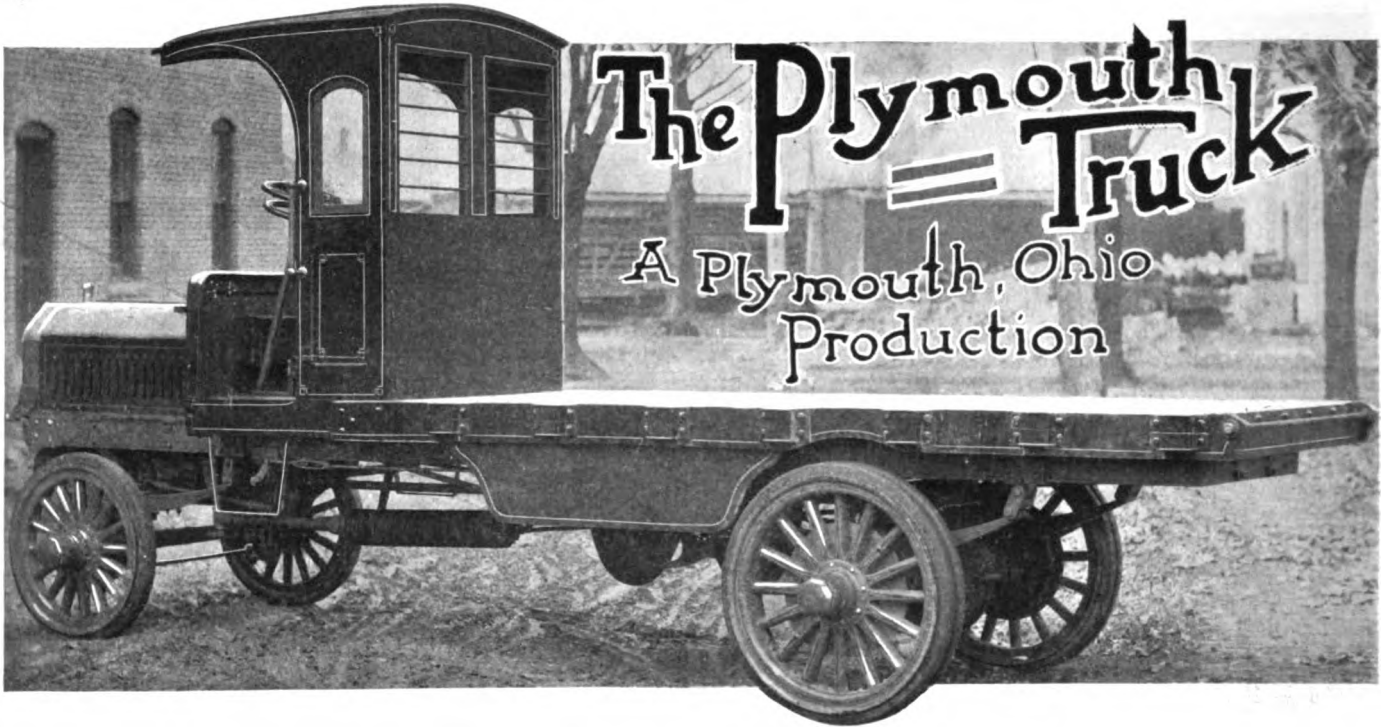
After running a few miles on two cylinders the engine died entirely, and with all vibrators still working, disconnecting the terminals from the plugs and holding them near the plug ends, or close to the cylinder heads would not show anything but a suggestion of a spark, though at times I would receive a shock when handling the secondary wires close to the top of cylinders. At this time, it being in the night and raining, I naturally thought of broken wires or broken down insulation, as others have said was the fault when I have told them of the symptoms, and I sent for help and was taken in tow and brought home.

This morning I went over the wiring and found that two cylinders were in order, but noted that the plugs of the two cylinders that were not firing, when laid on top of the cylinders, each gave a faint spark simultaneously, which was an indication of a short circuit between them, and took one of the units out of the coil and found it wet at the bottom. This proved that the rain had penetrated the coil box in some way, causing the two coils to short-circuit by reason of the water forming a contact between them.

Such a condition is so unusual and baffling that I thought it would be worth while to mention it, and it may save someone else from being towed in if they remember reading about it.

Lindsborg, Kan.

A. E. AGRELIUS.

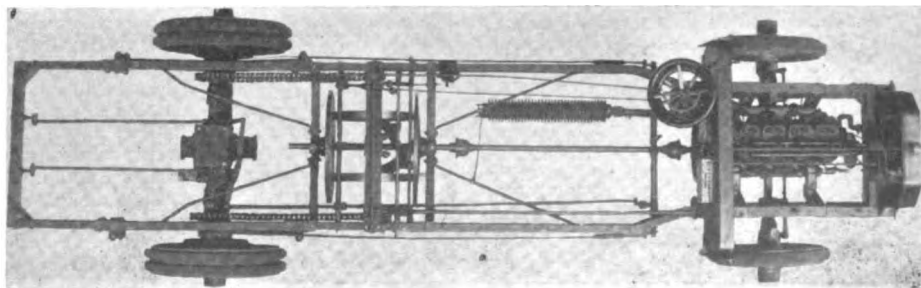


SOUTHERN Ohio is now the home of a line of commercial vehicles which in the course of the next season or two should prove eye-openers of no uncertain sort, provided their attainments measure up to the promise given by the first ones of their kind. They are built by the Commercial Motor Truck Company, Plymouth, O., and are known as the Plymouth cars. The power plant of the chassis at present being turned out consists of the well-known Rutenber four-cylinder motor with 5 by 5-inch cylinders. Ignition is of the high-tension type, employing a set of accumulators as the source of current, a Splitdorf multiple-unit coil and timer comprising the accessories, while the essential of lubrication is taken care of by a Hancock valveless automatic force-feed oiler, leads being taken to each of the cylinders independently as well as to the main bearings. In designing this power plant every effort has been directed toward making it the acme of simplicity in view of the service and lack of attention it would have to endure, as commercial trucks and sight-seeing cars more often than not fall into the hands of drivers who have but little appreciation of the needs of a piece of machinery such as an automobile motor. With this end in view every possible source of breakdown has been eliminated throughout, not alone the motor but likewise every other part of the car, so that a Plymouth truck may be placed in the hands of an inexperienced driver without fear of being stalled through petty defections, which, though never serious, nevertheless bring the car to a stop and cause a considerable loss of time as well as the services of a more expert attendant to go and supervise the repair. The liability of a truck to such failures also proves a potent attraction to the inexperienced hand to tinker, thus making the trouble far worse and frequently entailing other and more serious derangements than the initial cause of stoppage, which is often trivial.

The chief feature of the Plymouth cars lies in their transmission. This consists of two friction disks located just in front of the rear wheels and mounted on a shaft connected directly with the engine through the medium of two uni-

versal joints to compensate for any relative movement of the shaft and the body of the car. These disks are of cast iron, 25 inches in diameter and are faced with a $\frac{3}{8}$ -inch layer of aluminum alloy. Two friction-driven wheels are situated directly between the two disks just described, each being mounted on an independent shaft, and both being brought into contact with the friction wheels simultaneously. The rear disk is employed entirely for the forward speed and the other for the reverse. These friction wheels have their circumferences or contact surfaces equipped with a specially prepared tar filler, manufactured under great hydraulic pressure, and which when brought into contact with the aluminum alloy has an extremely high coefficient of friction, thus enabling the device to transmit a maximum amount of power without slipping with a minimum area of surface in contact, and likewise with a minimum of pressure between the contacting surfaces, thus rendering them far more durable than would otherwise be the case. The friction wheels are forced against the disks by means of a pedal.

Since these driven wheels are mounted on independent shaft and both are in contact with the same disk at the same time, they must necessarily revolve in opposite directions in order that the sprocket chains running from this divided shaft and which form the next link in the transmission of the power, will travel in the same direction. To accomplish this the sprocket on one side of the car, as shown in the full length chassis view, is driven by a spur gear operated from the divided shaft. It will further be seen that the power is transmitted from these sprockets to a corresponding pair somewhat larger in size, situated directly over the rear axle. These sprockets drive a countershaft at the center of which is an enclosed change-speed gear mechanism comprising sliding pinions and two large spur gears, the whole constituting a two-speed gear set giving a high and low speed. This manner of transmitting the power does away with the necessity of attaching any sprockets to the rear wheels, and the chains, moreover, are kept well up out of the mud and dirt, thus in-



CHASSIS OF THE PLYMOUTH TRUCKS AND SIGHT-SEEING CARS.

creasing the efficiency of the transmission in every-day service and making its proper maintenance an easier matter than under ordinary conditions.

Thus the Plymouth cars have two sources of high and low speed which may be used in conjunction with one another and which permit a great range of speed and power. Thus the speed of the two friction wheels depends upon their position on the face of the friction disk and they may be shifted at the will of the driver. Either speed can be used with either the high or low gear, the latter in connection with the high speed naturally being intended for heavy work and the high gear and high speed for light, fast work. The wheelbase of the vehicle, which may be fitted as an open stake truck, as shown at the head of the page, as 24-passenger sight-seeing vehicle or for any other similar commercial use, is 144 inches, tread 54 1-2 inches, the tire equipment being 32-inch single Firestone on the front and 36-inch twin Firestone solids on the rear. At present the company, which is well equipped to turn out these cars, is placing 20 to 40-passenger sight-seeing cars, 20 to 24-passenger 'buses, as well as flat and side-stake trucks, vans, and the like.

On a recent test of these sight-seeing vehicles the latter made a most successful run to Sandusky and return with a heavy load of passengers and under most adverse road conditions owing to rainy weather, some of the stretches being covered at a 20-mile-an-hour clip despite the bad going.

COMMERCIAL VEHICLE TRIALS IN ENGLAND.

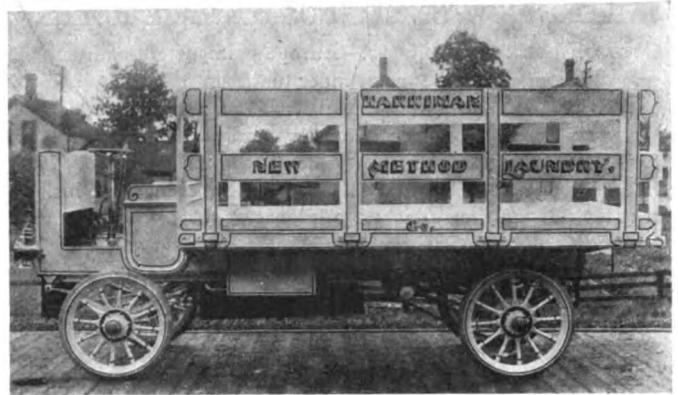
With the view to arousing public interest in and advertising commercial motors, the Royal Automobile Club, in connection, it is understood, with the Commercial Motor Users' Association, will hold, beginning September 9, trials of commercial vehicles, which will be in the form of a tour, reports United States Consul Albert Halstead, of Birmingham, Eng., regarding the British motor industry.

Manufacturers of the best lines of motor cars are reported to be exceptionally busy and to find their orders so numerous as to frequently necessitate delays in deliveries. Motor manufacturers are now confident that the sales this year will far exceed those of 1906, which were the greatest on record.

Concerning the standardization of parts used in the construction of motor cars, it is reported that the Institution of Automobile Engineers has appointed a committee, which is preparing to make a thorough inquiry into this question. It appears to be appreciated that for some time only those accessories and component parts used on engines of all types can be studied with a view to standardization, but it would seem as if nuts, bolts, bolt-heads and wrenches also deserve consideration. One difficulty in standardization is the fact that Continental motor makers use the metric system, while manufacturers in the United States and United Kingdom do not. It is understood, also, that a committee of the Society of Motor Manufacturers and Traders is making an investigation of the question of standardization. The fact that this subject is receiving attention is certainly important as a first step toward agreements that should be beneficial to the motor manufacturers of all countries.

EUROPEAN HOTELS AND MOTOR 'BUSES.

The motor post-service in South Tyrol, which worked last year so successfully, is being continued this year on a larger scale, says *The Commercial Motor*, of London. For instance, visitors get the benefit of a new line connecting up Neumarkt or Tramin with the popular health resort of Martino di Castrozza, and leading over the Rolle Pass, some 6,400 feet above sea-level. The route approximates to 44 miles, and passes through some delightful scenery. Ten-seat motor 'buses, in charge of men appointed by the military officials, who are greatly interested in the development, work the line.



A DOWN-EAST RAPID DELIVERER OF CLEAN SHIRTS.

NEW RAPID GASOLINE BUSINESS WAGONS.

One of the great advantages of the gasoline-driven commercial vehicle is the ease with which it lends itself to an endless variety of business uses. Whether it be transporting ponderous loads at a rate of speed not attainable by any other means, the haulage of medium heavy loads at a rapid rate or light delivery at a pace unknown to the business world before the advent of the gasoline car, the latter is equally valuable and not to be compared with any other current method of accomplishing the same ends. There is another side to the question also, as where the duty does not vary between any great extremes the same standard chassis is frequently applicable to both with equal advantage, merely a change of the body of the vehicle being necessary to adapt the car to the altered service.

This is aptly illustrated by the accompanying photographs, one of which represents a delivery wagon in the service of a New England laundry, while the other is employed daily by a Chicago creamery. Both are the product of the Rapid Motor Vehicle Company, of Pontiac, Mich., and both are mounted on the standard chassis built by this firm, the fitting of a body specially designed for the service in view of being the only difference between them, and it is evident that in both cases a roomy body, capable of carrying considerable load, is employed. The laundry wagon makes a daily round of thirty miles through the suburbs of Boston, while the milk wagon is employed in a similarly strenuous occupation in the confines of the Windy City, and, considering the miles of poor pavement in the latter, there is doubtless little to choose between the duty of each. The builders of the Rapid commercial vehicles construct cars for every form of commercial service, such as hospital ambulances, piano trucks, telephone service wagons, chemical fire engines and the like, illustrating the extremely wide range of uses to which they are adapted.



RAPID GASOLINE WAGON IN THE SERVICE OF A DAIRY.

EUROPE NOW UNANIMOUS ON RACE RULES.

OSTEND, BELGIUM, July 22.—Europe's important automobile races will next year be run under uniform rules adopted by the delegates of the international conference representing the automobile clubs of France, Germany, England, Italy, Austria, Holland, Belgium and Spain. The maximum bore for four-cylinder engines has been fixed at 155 millimeters (6.1 inches) and the minimum weight is 1,100 kilograms (2,425 pounds). In all other respects constructors are given entire liberty.

Four suggestions came before the conference: Limited cylinder area with minimum weight; limited bore with minimum weight; limited fuel consumption, and complete liberty in size and weight of engine and chassis. Germany spoke in favor of a maximum bore of 135 millimeters for four-cylinder engines, Italy asked that all regulations be abolished, makers being allowed to build what they considered the fastest machine unfettered by weight and cylinder limitations, while France asked for a maximum bore of 160 millimeters with weight limit fixed at 2,425 pounds. In abandoning the conditions governing the Grand Prix, the French delegates declared that they were thoroughly satisfied with the results obtained, but did not intend to repeat the experiment, owing to the difficulty of carrying out the rules. Under a limited fuel regulation there is always a possibility of fraud, of a good machine being eliminated by the breaking of a fuel pipe, and of the accidental breakage of the seals calling forth protests; in addition, the variations of weather make it difficult to fix upon a supply of fuel which will be universally acceptable. Their proposal for next year was 6.2 inches bore and 2,425 pounds maximum weight. After a short discussion a compromise was made between the French and German resolution, all the European clubs agreeing to run their races on the basis of 6.1 inches maximum bore and 2,425 pounds maximum car weight. Nothing was discussed regarding six and eight-cylinder engines, or those of the Gobron type.

As the result of this unanimity, automobile racing in Europe next year is likely to be much more successful than in the past two or three years. Builders will not be under the necessity of constructing several types of machines, one set now being available for the Grand Prix, the Ardennes, Targa Florio, Brescia circuit and whatever race Germany decides to organize. America was not represented at the conference, but if it is desired to obtain European entries for the 1908 Vanderbilt race the rules will have to be those of the Ostend conference, or be so framed as to admit machines built under these new conditions.

ESPLANADE FOR PARIS AUTOMOBILE SALON.

PARIS, July 23.—A further generous concession to the Automobile Club of France has been made by the city municipality in the granting of the Esplanade des Invalides for the industrial section annex of the Salon. Last year a portion of this magnificent open space was granted to the promoters of the Salon, practically free of cost, but with the reservation that the main entrance should be kept about three hundred yards from the riverside. For this year's decennial show an area of 36,000 square yards, which is about equal to the total floor area of the Grand Palais, has been granted, on which will be built a steel frame structure. The main entrance to the industrial section will be at the extremity of the Alexandre III bridge spanning the river Seine, and only distant from the Grand Palais 160 yards. It is intended to make the external decorative effect more brilliant than ever by the erection of a monumental entrance to the annex and to connect the two buildings by a luminous triumphal arch.

Further developing his retrospective exhibition as a part of the next Paris Salon, General Manager Gustave Rives announces that there will be an exhibition of documents and objects connected with the work of some of the pioneer automobilists, among others of Daimler, Levassor, Serpollet, Forest, Lenoir, and Chasseloup-Laubat. Requests for exhibition space in the show close on August 15, the Salon opening on November 12 and closing its doors on December 1.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
 Oct. 31-Nov. 7....—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
 Nov. 30-Dec. 7....—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
 Dec. 28-Jan. 4....—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.
 April 6-11.....—Buffalo, Convention Hall, Motor Boat and Sportsman's Show. D. H. Lewis, manager.

Races, Hill-Climbs, Etc.

- Aug. 3.....—New York City, Fort George Hill Climb.
 Aug. 9.....—Algonquin, Ill., Hill Climb, Chicago Motor Club and Chicago Automobile Trade Association.
 Aug. 5-10.....—Atlantic City, N. J., Automobile Carnival, Atlantic City Automobile Club.
 Aug. 9-10.....—New York City, Brighton Beach Track, 24-hour Automobile Race, United States Motor Racing Association.
 Aug. 17.....—Newark, N. J., Olympic Park, Carnival of the New Jersey Automobile and Motor Club.
 Sept. 2.....—Chicago, Harlem Track, Race Meet under the auspices of the Chicago Automobile Club.
 Sept. 2.....—Bridgeport, Conn., Labor Day Hill Climb, Sport Hill, Bridgeport Automobile Club.
 Sept. 5.....—Chicago, Cedar Lake Economy Run, Chicago Motor Club and Chicago Automobile Trade Ass'n.
 Sept. 7.....—Hartford, Conn., Hill Climb, under the auspices of the Automobile Club of Hartford.
 Sept. 14.....—Hartford, Conn., Charter Oak Park, Gymkhana Games, Automobile club of Hartford.
 Sept. 14.....—Albany, N. Y., 95-Mile Road Race, under the auspices of the Albany Automobile Club.
 Oct. 21.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

Motor Boat Races.

- Aug. 13-15.....—Chippewa Bay, St. Lawrence River, Gold Challenge Cup Race, American Power Boat Ass'n.
 Aug. 22.....—New York to Jamestown (Va.), Annual Cruise, American Power Boat Association.
 Sept. 2-6.....—Jamestown (Va.) Exposition Motor Boat Races.

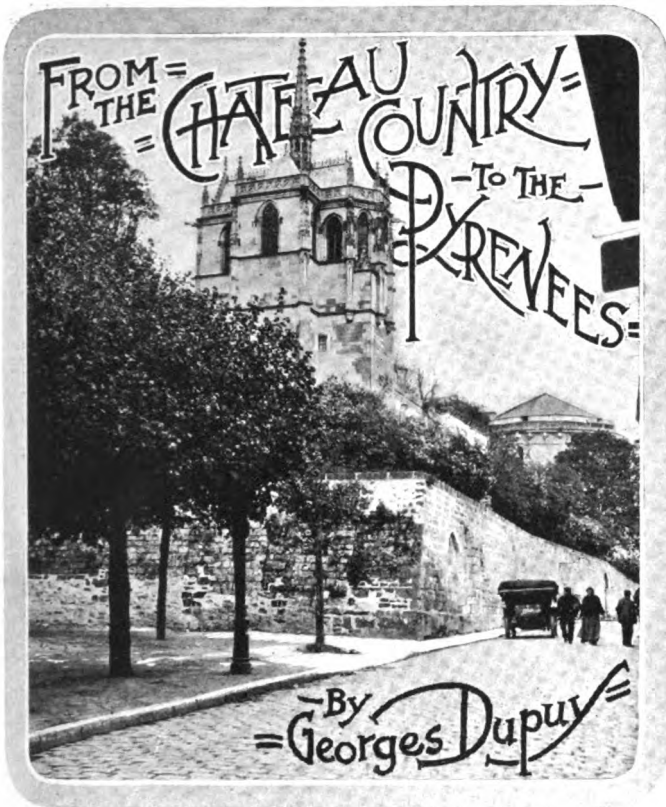
FOREIGN.

Shows.

- Sept. 28-Oct. 7...—Denmark, Copenhagen International Automobile Show.
 Nov. 11-23.....—London, Olympia Motor Show.
 Grand Palais, Esplanade des Invalides, Automobile Club of France. Applications for space close August 15.
 Nov. 12-Dec. 1...—Paris, Exposition Decennale de l'Automobile.

Races, Hill-Climbs, Etc.

- July 31-Aug. 8...—Belgium Regularity Contest for Touring Cars, A. C. of Belgium.
 Aug. 1-7.....—Criterium of France, 1,750 Miles Touring Competition and 250-mile Race for the Press Cup, A. C. of France.
 Aug. 3.....—Isle of Wight, British International Cup, Motor Boat Race.
 Aug. 23.....—Belgium, Ostend Motor Boat Meeting.
 Aug. 11-29.....—France, Coupe de Auvergne.
 Sept. 1-2.....—Italy, Brescia Circuit, Florio Cup, A. C. of Italy.
 Sept. 15.....—Austria, Semmering Hill Climb, Austrian Automobile Club.
 Sept. 15.....—France, Chateau-Thierry Hill Climb.
 Oct. 1-15.....—Paris, Electric Vehicle Competition, Automobile Club of France.
 Oct. 20.....—France, Gaillon Hill Climb.
 Nov. 1-15.....—France, Voiturette Contest near Paris.
 May 16, 1908....—Sicily, Targa Florio, Automobile Club of Italy.
 July 14, 1908....—Paris to London, Aerial Race.



AMBOISE, AN ARCHITECTURAL JEWEL OF FAIR TOURAINE.

SUNDAY, May the Seventh.—The vibration of four long, slow, musing strokes spread themselves over Amboise, still asleep in the imprecise white of dawn. Right at the foot of the *donjon* that shelters the old bell stands our blue Stearns, rested, watered, lubricated, hardly smoking, and roaring discreetly in the great silence. Clarence, my mechanic, his head under the bonnet, listens attentively to the rhythm of the pistons.

The motor of an automobile—and particularly that of a Yankee-made automobile—is (as a good many autoists of nowadays know, I presume) an enamored faun, who vowed to sing an eternal, monotonous banjo tune on one note, “raw-raw-raw-raw,” for the only love of eight slender, coquettish little valves dancing a perpetual and synchronous little jig, “tekatekatekatak.” But what is the good of trying to explain those abstract things to Clarence? That fellow positively believes in nothing. On such a mysterious revelation I am sure he would spit his “Virginia leaf” on the running board and reply in a sort of a disgusted way, “Watchertawkin’ about?”

* * *

In the wind, one hand on the wheel, Clarence buttons his covercoat up to the collar, for the air is really cold. Light gray vapors softly ascend from the brown fields and the green prairies. The road is wide, smooth, even, and we hear the fine gravel of the macadam creak under the tires. Over yonder, at the extreme limit of the horizon, a symphony of glorious reds announce the accession of the sun. We maintain a regular gait of thirty-five miles. I wish we could dine at Bordeaux by seven to-night and reach Mont-de-Marsan with the head lights.

* * *

7:30 A.M., Chatellerault.—We just had breakfast here. Old farmers, scared dogs and a few astonished cows, in the little villages of Montbazou, Sorigny, Sainte Maure, La Celle St. Avant, Port de Pile, have seen “Miss Stearns No. 270” pass in a flash, followed by a cloud of dust, buzzing and impeccable, with

An impressionistic sketch from advance pages of M. Dupuy’s book, “A 6,000 Mile Trip Around Europe in an American Made Car.”

her two enormous glassed eyes, and driven by a nonchalant little fellow smoking a briar pipe. They have seen Miss “No. 270” climb the hill and disappear in the perspective. Then the farmers have sighed and crossed the road, the dogs have barked, the cows have resumed their ruminating. I am writing these hasty notes while Clarence, swearing like a trooper (when in English, they don’t mind so much in France), searches the whole car for a handful of waste. I know there is none, as I used the last last night to wipe the mud off my shoes.

* * *

9:00 A.M.—Here is Poitiers. I can see the top of its four pointy steeples emerging from behind the long hill. We climb smoothly and keeping the same gait, with a little touch of the accelerator, and on high speed, of course.

“Saw that?” cries Clarence, placing his hand in front of his mouth to let me hear behind.

I turn quick to see the road. In the whirlwind of dust a good dozen white feathers are dancing a vague two-step.

The pavement in Poitiers must be three centuries old. The Louis XI. Cathedral is a piece of embroidery in itself. Here is the Place d’Armes and the statue of “Le Roi Soleil.” “Now, what does that gendarme want?—What?—Clarence, please stop awhile.—What?—Our bridge ticket?—No, we did not take any ticket before crossing the bridge.—Why don’t you put a sign there, or something, to let automobilists know they have to stop?—How much is it?—Three sous?—Here you are.—Don’t mention it.”

* * *

We are again on the wide, smooth road, bordered with high and pensive poplars, agitated by the morning breeze. Far away, on the gray ribbon, at the end of the perspective, a solitary little black point has just appeared. It is a man, a man with a pack on his back. It is a “chemineau,” I can see it the way he walks on the grassy side of the road. The “chemineau” is a typical wanderer, an honest tramp of France, who perpetually migrates from one town to another in order to improve his talents. The “chemineau” is usually a carpenter, a blacksmith, or a roof-maker. He is also a dreamer, loving the deserted road, the kilometer stones and the warm sun. “Clarence, old man, let’s stop to pick up this fellow; he looks tired.” (Clarence always growls on such occasions, but what’s the use of paying any attention to his feelings?)

Hello! Mon vieux, où allez vous?” (where are you going?)

“To Bordeaux, my brave friend, by way of Angoulême and Libourne, about 220 kilometers; yes, my brave friend. Sun is hot, my brave friend, but I hope I’ll be there by Wednesday at noontime.”

He is a short old fellow, tanned and gray, and what he wears on his feet are anything but shoes. But that is very kind of him, just the same, to call me “his brave friend.”

“Get in quick! We will put you at Bordeaux to-night. Well, hurry up!”

“Do you really mean——?”

The poor man is crazy with surprise and joy. All trembling, he puts his load on the floor of the large tonneau and while the car, having resumed its gait, devours the road again, I help him to insert his arms into the sleeves of a long raincoat, which wraps him entirely. Then he sits on the soft cushions and smiles in the wind.

“Are you comfortable?”

“This is heaven, my brave friend; this is heaven.”

“Very well then.”

* * *

The wide valley of the Charente river is even more charming than the paintings of Varennes. On the limitless green carpet live little hamlets, little streams, little hills, little cattle, and a narrow-gauged railroad invaded by all kinds of herbs and wild flowers runs alongside the highway.

"Yes, my brave friend, this is the happiest day of my life." (KONG-KONG-KONG, plays Clarence on the horn.) "Yes, indeed, and let me introduce myself. My name is Lagrave, Charles Lagrave, born at Pau in 1865, wood-sawer by trade, but since I had (KONG-KONG-KONG) an accident at my left leg (the chemineaus all have something at their legs, that is the reason why they perpetually tramp all over the country), a bad accident, my brave friend, getting down a staircase, I sprained my ankle, and (KONG-KONG-KONG) I am sometimes obliged to——"

"Get out of there, you crazy old witch!" That is Clarence singing this time. The old woman wakes up, utters an awful cry, and the donkey, in a sort of a funny little cake-walk, goes right to the ditch. That doesn't make any difference. The old woman, you have understood, was sound asleep in her cart in the very middle of the way.

* *

12:45, Ruffec.—That lunch was excellent. Charles Lagrave, my brave friend, always wrapped in the raincoat (because his clothes are so ragged) has enjoyed it too. But despite all his exquisite French politeness I do not think he will ever make friends with Clarence. Clarence looks at him as he would at a nigger. But what do we care, Charles and I?

* *

2:00 P.M.—Fifty-eight miles, with a good dozen long, steep hills, in one hour and thirty-five minutes. That is not bad. Charles is still smoking the cigar I offered him at Ruffec and he smokes some of his own moustache also. That man certainly does look funny with a pair of goggles and a skating cap!

* *

3:45 P.M.—Like happy nations, we have no history. Miss Stearns No. 270, roaring imperceptibly, swallows every hill, Clarence says nothing, Charles sleeps, I write these lines with a good-willing pencil, and the trees, the telegraph poles, the villages, the railroad crossings, the little cantonnier huts on each side of the road fly back in the wind.

* *

5:00 P.M.—Here is Libourne. We stop at the entrance of the town to "oil up." While Clarence opens his drop-oiler I get off to pump a soft tire at the rear. An old gentleman approaches, looks at the dusty machine, looks at the dirty workers at both

ends of it, and finally addresses Charles, who is gravely studying the map in his corner. The old gentleman must be the Notary Public or perhaps the School Master. He has the accent of Gascony.

"Bonjour, monsieur! That is a very powerful automobile, is it not?"

"Yes," says Charles.

"How many 'chevaux' (horse or horsepower), if you please?"

"Oh," replies Charles, anxious to put an end to the conversation, "don't you worry about the chevaux; we've got enough; yes, my brave friend, we've got enough, I tell you that!"

* *

8:20 P.M.—We have left Bordeaux more than an hour ago. We must not be far from Castel-Jaloux. I don't think it would be reasonable to try to make Mont-de-Marsan to-night. Three hundred and seven miles have been covered to-day up to this minute, as I can see by the speedometer.

We are in the great forest of the Landes, where Victor Hugo says he met the Devil and his companions. The sweet, fragrant odor of the pines surrounds us. The sun has sunk behind the mournful trees.

My brave friend Charles we left in Bordeaux at the corner of the Rue Ste. Catherine. Poor Charles!

Now the soft night comes down. A plucky little hare crosses the road once in awhile, and over there, at five hundred yards, shines the ancient lamp post of the Hotel de la Boule d'Argent, first house in Castel-Jaloux, on the right, when you come from Bordeaux.

"Good evening, Madame."

"Good evening, Messieurs."

"We are very, very hungry."

OLYMPIC GAMES TO INCLUDE MOTOR EVENTS.

LONDON, July 22.—Automobile events in connection with the international Olympic games to be held in London next year will consist of three races on the Brooklands track at Weybridge, the course at the Stadium not being suited for motor racing. The events will be a flying kilometer for racing machines; a 9-mile race for touring cars of not more than 30 horsepower and carrying 280 pounds weight in addition to the driver and mechanic; a 14-mile race for racing machines not exceeding 2,600 pounds in weight, including driver and mechanic. These events, as well as a motor boat race on Southampton water, will be held in July.



ACROSS THE LEVEL STRETCHES OF THE LANDES, WE REVELED IN FRANCE'S MAGNIFICENT HIGHWAYS.



STATE HIGHWAY AT SPENCER, MASS., PAVED WITH HASSAM CONCRETE.

THAT DUSTLESS ROAD IN OLD BAY STATE.

WORCESTER, MASS., July 29.—One section of the main through route for automobiles between New York and Boston, over which motor travel is now rushing, gives up no dust for the wayfarer, no matter what the condition of the rest of the highways, even in Massachusetts, the home of the State highway. This is in the town of Spencer, just west of the center of the town, and reached by the east-bound autoist after passing East Brookfield, thirty-six miles east of Springfield. It was built under orders issued by the Massachusetts State Highway Commissioners in 1906.

The paving is known as the Hassam paving, for the inventor of this method of laying concrete paving is Walter E. Hassam, former street commissioner of Worcester and now general manager of the Hassam Paving Company. He has laid many thousand yards of paving in the past year all over the country. One of the showpoints for his paving is at Phoebus, Va., where the Jamestown Exposition visitors can see it. Another section is being laid at Niagara Falls, N. Y., and he will have it in Boston, New York and many other large cities before the season is over.

The surface is smooth, but there is sufficient grittiness to the top of the highway to prevent slipping or skidding, and one of the fastest miles on the New York-Boston run is invariably done on this section of State highway at Spencer.

In the illustration Vice-president Daniel F. Gay of the Worcester Automobile Club is shown traveling at a rate of forty miles an hour on a very dusty day—at least it was dusty on other places found that afternoon.

The concrete roadway stood the weather of last winter in good shape and looks to be good for a long time without perceptible wear.

This section of highway was looked over carefully, together with another section of the same highway built by the Hassam Company at Williamstown, Mass., by A. R. Pardington when he was looking up data for the Long Island parkway.

MAKING A DUSTLESS STREET.

BOSTON, July 29.—Commonwealth avenue in Boston is one of the splendid boulevards of the famous Back Bay district, a broad, handsome street, parked through the center and

lined with fine residences, forming the main pleasure thoroughfare out of the city to Brookline and the Newtons. For many years it has been a favorite thoroughfare for automobiles.

As it was intended only for light vehicle traffic, and not for business uses, the avenue was macadamized and the result since the advent of the automobile has been a vexatious road problem, which led many of the residents to think that asphalt or wood pavement could not be avoided. The Metropolitan Park Commission and the city of Newton, however, have solved the problem satisfactorily without going to much expense, and the Back Bay residents will still have their quiet, easy riding, macadam pavement without the constant rebuilding and the dust.

The road was first carefully swept, to remove surplus dirt and loose particles, and the tarvia was then applied hot through a hose and rubbed into the road with street-sweepers' brooms. After it had permeated the road and cooled for a period of about five hours, a light coat of screenings was spread and a steam

roller completed the treatment, leaving a smooth, compact surface.

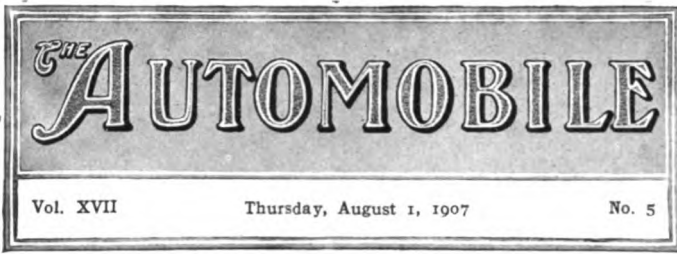
One of the peculiar features of macadam treated this way has been noticeable after a few months, namely, that up to a certain point a tarviated road improves, instead of deteriorating, with use. Uneven spots wear smooth instead of tearing loose or raveling, and high spots in the road wear down to their proper level.

Following the melting of the snow after its first winter, the tarviated part of Commonwealth avenue (opposite the Hotel Vendome) was found to be the only section in Boston which did not need to be resurfaced, while in Newton the road in front of the Brae Burn Club was as smooth as a billiard table. The adjacent roads will require a large expenditure to put them in good condition for the season.

The process is a development of French road practice. In France for a number of years certain grades of tar have been very generally used for highway improvement, and the French road engineers, who are undoubtedly the best in the world, have developed the method of application and have even invented elaborate machinery for applying their tar treatment. In this country about a million yards of roadways have been treated with this material for the prevention of dust with great success.



SPREADING TARVIA ON COMMONWEALTH AVENUE, BOSTON.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
L. R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$7.00
Other Countries in Postal Union (including Canada) - - - - - One Year, 3.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hiffe & Sons, Limited, 20, Tudor Street, London, E. C.
FRANCE:—Boyaue & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second class matter.
The Automobile is a consolidation of The Automobile (monthly) and the
Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October,
1903, and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905, - - - - -	730,000
" " in 1906, - - - - -	791,000
" " This Issue - - - - -	16,500
" " Since January 1, - - - - -	504,650

Some Mechanical Lessons from the A. A. A. Tour. Doubtless the fact that by far the most common form of mechanical trouble encountered by the competitors in the recent A. A. A. tour for the Glidden and Hower trophies had to do with the axles and suspension of the cars, will be seized upon for criticism and the American car put down as weak in these very important respects. Had the route of the tour been over the park-like roads of France or England, or even over such going as was selected for the recent A. C. A. sealed bonnet contest, for instance, there would be considerable foundation of truth in the charge, but no one who participated in the 1,600-mile struggle, whether technically trained or otherwise, could justly accuse such cars as went down before the onslaught as being weak in this, or, in fact, in other respects. True, not a few of them came through wholly unscathed. The more credit to them. It only goes to show that while American cars as a whole are remarkably trustworthy and enduring there are still some that are better than others, and doubtless there always will be.

There might be some justice in the charge also had the failures of the parts in question been wholly due to the wear and tear occasioned by legitimate touring service. To put it mildly, there was compressed into the fortnight of the tour the ample equivalent of more than a season of the hardest kind of touring, for no private owner would voluntarily subject his machine to such gruelling as the drivers in the tour found themselves compelled to in order to attempt to fulfill its arduous conditions. And to make the charge totally baseless there is the fact that almost

without exception these failures were the result of accidents pure and simple. There is little to be wondered at in the breaking of springs or axles when a car is hurtled into a ditch at high speed—rather the marvel is that those which met this fate, and they were not a few, did not suffer more grievous damage. Without doubt the most striking mechanical lesson of the tour brought out is the wonderfully high factor of engine reliability displayed by such a number of cars under the worst possible conditions. The percentage of trouble traceable solely to the motor or its accessories was practically a negligible quantity. There is still room for improvement in the automobile, whether American or otherwise, but the lesson of the tour is not half so much that a better car is needed as that better roads are a crying necessity.



What is to Be Looked for in the 1908 American Car. Experience in the past few years has demonstrated that the American automobile industry, as a whole, has entered upon a distinctive period in its career so far as the present and future character of its product is concerned. Up to 1904, or probably as late as 1905, it was customary to regard the coming of each year as an opportunity to give full sway to the designer's theorizing by bringing forth something that should be as different as possible from the model that had preceded it. The result naturally was that cars of the same make but of different years' models bore no resemblance to one another, either in outside appearance or constructional features. The work of the year was literally "dumped overboard" and a fresh start made at the last moment—the new model frequently not being out of the shop in time to reach the annual show at its opening.

There are doubtless those who think that similar conditions still prevail to a greater or less extent in the industry to-day, but nothing could be further from the reality. It may be a disputed point whether 1904 or 1905 really saw the passing of this pernicious state of unsettledness, but that it did finally pass for good about that time there can be no possible question. All of which means there will be no new cars for 1908, in the sense in which the word was construed up to the years in question. There will be new models galore—each maker will have one or several—but they will one and all embody what experience has taught their makers is sound from an engineering point of view, together with what detailed refinement that same experience has shown can be added to make the car a closer approach to that goal of perfection in simplicity and reliability for which all are striving.



Good Results Certain from Uniform Race Rules. When the delegates of all the national automobile clubs of Europe united at Ostend and unanimously decided upon a mechanical formula to govern future speed tests, they laid the way for an important development of the industry. Despite the hoarse ravings of a certain section of the public and a very small number of those within the fold against the continuance of racing, European constructors are convinced that speed, and speed alone, can improve the breed of automobiles. By speed is of course meant the holding of serious tests, with every possible guarantee for participants and public, and not the wild scamperings of irresponsible individuals after self-controlled records. Under the new conditions fixing cylinder bore at 6.1 inches and weight limit at 2,425 pounds, constructors need build only one set of racing machines with which they may figure in at least half a dozen international events. Compared with this year's system, calling for at least three different types of cars, the economy from a manufacturing point of view is enormous.

An interesting question raised by the new racing rules is will next year's machines, with their bore reduced one inch, be able to maintain this year's record? Constructors themselves are divided; but it is safe to predict that the diminution, if any, will not be in proportion to the reduction of cylinder area, and that the whole range of automobiles will profit by the year's experiments.

NO VANDERBILT CUP RACE TO BE HELD THIS YEAR

THERE will be no Vanderbilt Cup race this year. This decision and the reasons for it are announced in the following notice, issued on Saturday last from the A. A. A. headquarters, 437 Fifth avenue, New York City:

There will be no contest for the William K. Vanderbilt Jr. Cup during the year 1907, at least, in the United States. This announcement, reluctantly made by the Commission, follows an attempt to promote the race covering several months. The unfavorable attitude of the Governor of the State of New York with regard to the proposed use of the militia to guard the course; the failure of the New Jersey State Senate to convene in special session owing to deadlock; the great distance which the foreigners would be obliged to travel in the event of accepting the very cordial invitation of the Governor of California, and the lack of assurance from Missouri, due to the absence of Governor Folk from the State, that the guard of the State could be used, makes necessary the announcement.

The donor of the cup, William K. Vanderbilt, Jr., and the Chairman of the Commission, Jefferson DeMont Thompson, have been in correspondence with the acting chairman by cable, and it has been deemed wise, in view of the delays and the foregoing conditions, to defer the holding of the race in this country this year.

(Signed)

A. R. PARDINGTON, Acting Chairman,
F. H. ELLIOTT, Secretary,
William K. Vanderbilt, Jr., Cup Commission.

New York, July 27, 1907.

While the giving up of the race for this year is a great disappointment to the manufacturers of high speed cars, the members of the Vanderbilt Cup Commission, including the donor of the cup, did not care to go ahead with a race which would have to be run under the perilous conditions which reached a culminating point in the running of the 1906 event on Long Island. Unable to secure militia to guard the course, none of the active members of the commission cared to undergo again the strain to which they have been subjected for the past three years. The policing of the 1904 course was less difficult because of the comparatively small attendance, though Chairman Pardington and Cup Donor Vanderbilt experienced great relief when the day

ended without any accident. At the conclusion of the 1905 race, Chairman Morrell expressed the opinion that there would never be another cup race on Long Island. The 1906 A. A. A. Racing Board voted to hold another event, but when it concluded with one fatality and another serious accident, a quick decision was reached that unless the 1907 race could be held on the Long Island Motor Parkway, or with militia to guard the road, if the parkway were not completed in time, its running would have to be given up. Chairman Thompson, Acting Chairman Pardington, President Hotchkiss, and other A. A. A. officials have used their utmost endeavors to secure a militia guarded course, but their efforts have been futile, and those inclined at all to be fair-minded recognize the conscientious efforts which have been made to comply with the desires of the manufacturers.

Though it has been suggested by two automobile editors of New York dailies that the A. C. A. should now hold an open road race of an international character, it is a certainty that nothing of the kind will be attempted, the club's officers still having in mind the unfortunate Staten Island experience of several years ago.

Despite statements printed to the contrary, the American makers have not gone to any great expense in preparation for a cup race. One firm has reconstructed its 1906 cup cars and now will utilize them in other ways. Another firm intended to use its 1906 car almost as it stands; a third company had in mind the using of its stock chassis with racing body; and others had made but slight progress in the construction of speed cars.

It is among the probabilities that there may be held in Florida next winter a long-distance event for racing cars and also a somewhat similar race of a stock car chassis character. Since the announcement that the Vanderbilt Cup race would not be held, there has been a consequent revival in talk of Florida and its winter program. It is known that the Florida East Coast Automobile Association has asked the A. A. A. Racing Board to take charge of the meet.

HOW ONE NEW JERSEY AUTOIST REGARDS ROAD RACING

Editor THE AUTOMOBILE:

In your issue of July 25 appears an editorial entitled "New Jersey Repudiates the Vanderbilt Race." In holding us up to ridicule because we do not see fit to allow the race I feel that you do us an injustice, and the tone of the article, in which you call us "foreigners," and accuse us of mediæval ideas, is undignified and petulant.

As a matter both of public policy and of the true interests of the automobile it is unwise for any State to grant the use of its roads for a race. Its greatest harm is the fostering of a mania for speed which is the cause of most of the prejudice against us and of most of the restrictive laws from which we suffer.

In the community in which I live we have over a dozen automobilists. All of us use the roads with care and with due consideration for the rights of others, and by so doing have almost entirely overcome the prejudice here against the automobile. Every once in a while, however, some reckless driver of a high-powered machine rushes through our midst, tearing up our good roads and scatters them in the form of dust over our farms and lawns, driving horses into the ditches, and frightening women and children; and im-

mediately we hear the cry that we should be placed under more severe restrictions.

The consequences of this reckless craze for speed are sometimes frightful. Witness the accident recently down near Barnegat, in which a car running at racing speed crashed into a family touring party, killing one and dangerously injuring several others. An occurrence of this sort is a brutal outrage which words are not strong enough to condemn. It is a direct consequence of the racing spirit, and its perpetrators should be punished by imprisonment for manslaughter.

Every one who feels enthusiastic over the present development of the automobile, and who looks forward to its future usefulness to all classes of society for business and for healthful recreation, should do all in his power to discourage racing, and I believe the policy of your otherwise excellent paper in favoring it is suicidal.

In refusing to permit the Vanderbilt Cup race to be held here our State is upholding the right of all users of the roads, in furthering the true interests of the automobile, and is giving a splendid example of our far-famed "Jersey justice."

Moorestown, N. J.

JOSEPH STOKES.

PANHARD BOAT WINS PARIS-TO-SEA RACE.

TROUVILLE, FRANCE, July 25.—The *Panhard Tellier*, victorious all along the line at Monaco, has proved herself the victor in the Paris-to-the-Sea race, just concluded here. Her time is two minutes faster than the previous record. *La Rapière II*, also with Panhard engines, came second, followed by the *Mercedes*. In the cruiser class *La Lorraine* was first, with *New Treffe* (Brasier engine) second, and *Nautilus Mutel* (Mutel motor) third. The race, which was a seven-day event, united twenty-five competitors, twenty of which were present at the finish.

CAN THE GRAND PRIX RECORD BE BROKEN?

PARIS, July 23.—A bet of more than local interest has been made between Louis Renault and Rene de Knyff, director of the Panhard firm, on the possible speed of next year's racers. With cylinder bore reduced to 155 millimeters one party maintains that speed will be reduced, the other claims that the Dieppe record will be maintained. This year, Fiat, Darracq and Dietrich had 180 mm. bore, Renault and Brasier, 165. To maintain the Grand Prix record will therefore require a considerable increase of efficiency in the engine and transmission.

AUTOMOBILE RACING IN THE NORTHWEST.

WINNIPEG, MAN., July 26.—With the exception of what might have proved a bad accident to Bruno Seibel, better known as the "Flying Dutchman," in the handicap race, the meet held under the auspices of the Winnipeg Automobile Club on Saturday last was a great success. Fully 7,000 people turned out to see the races, and the whole affair was run off without a hitch, due to the excellent management of the promoters. The program of eight events was well varied, and provided constant interest for the spectators. It led off with a two-mile event for Ford runabouts, which was won by F. Lion, driving for J. Maw & Company, in 3:56. This was followed by an event at the same distance for fully equipped touring cars, in which a Stevens-Duryea 20, a six-cylinder Ford and two Oldsmobiles, one of them a roadster, lined up for the start. W. Fisher, driving the roadster, came in first in 3:52, with L. Grussey, in the Stevens-Duryea, tagging on to his rear wheel, a close second.

The track is a half-mile oval with a cinder surface, and this seemed to worry Seibel, who was down for a two-mile exhibition in the Peerless *Red Devil*, so that the best he could do was 2:56. The next number on the program was a purely amateur event, dubbed a novelty race at three miles, making the first lap empty, then pick up three passengers, discharging them again at the end of the second lap, re-embarking them at the third and again losing them at the fourth, making the last two laps empty. The passengers were the most enthusiastic competitors of the lot, and in their haste to get off and not delay the car in which they were riding they usually started long before it came to a stop, with the result that the track was covered with involuntary acrobats for some time. D. E. Gourlay in a four-cylinder Oldsmobile was an easy winner, followed by Dan Woods in a second car of the same make. Time 6:18 1-2. Then Oldfield did a two-mile exhibition stunt in 2:38, which was 10 3-5 seconds better than existing Canadian track records. This was followed by a three-mile handicap event, on the fourth lap of which Seibel went through the fence on one of the turns, Fisher in the Olds roadster only saving himself from a collision by some quick and cool work with the wheel, which also saved him the race, the six-cylinder Ford, driven by McGregor, taking second. Time 5:28 1-2.

A 25-mile match race for \$100 a side between a Ford and a Maxwell runabout closed the program, and proved one of the most exciting events of the day, as the issue was in doubt right to the last. F. Lion, driving the Ford, finally won by almost a lap in 48:12 4-5, his competitor being L. Grussey, who drove for the Dominion Automobile Company.

ATLANTIC CITY'S AUTOMOBILE CARNIVAL.

ATLANTIC CITY, N. J., July 30.—This up-to-date city by the sea will be turned over to the automobilists next week, and if preparations count for anything there will be a busy innings for all kinds of autoists. The speed contingent will open the carnival with two days of racing on Ventnor Beach, and the entry list will contain such good ones as Thomas, Darracq, Locomobile, De Dietrich, and Matheson, Vanderbilt Cup racers, Christie and his "Blue Streak," and several other of the fast brigade. The racing part of the carnival is in charge of the Atlantic City Automobile Club, with Harry Cook, chairman of its racing committee, the man at the helm, which means that there will be nothing lacking in the way of arrangements. The motorcyclists will have races for their kind.

The floral parade will take place Wednesday and cups innumerable are offered for the best decorated cars. Pacific avenue, seven miles long, will be the route of the parade, with the reviewing stand at City Park, between the Marlborough-Blenheim and Brighton hotels.

Concluding the week will be the three-day exhibit of cars on Young's "million dollar pier," which will supply an ideal location for this feature of the carnival. C. Wood Tatham is the president of the well-planned auto week.

HARRISBURG COMPETITORS TAKE HONORS.

READING, PA., July 29.—It was Harrisburg day Friday on the Fair Ground track at the meet held under the auspices of the Reading Automobile Racing Association, as entrants from the latter city walked off with practically all the prizes. The meet opened with a big parade and carnival in the morning and despite threatening weather and a light sprinkle that looked as if it might turn into a downpour, between two and three thousand people filled the grandstand and overflowed into the bleachers.

The first event on the program was an obstacle race of the now familiar type, in which John E. Sellers, driving a Maxwell, took the prize in 45 seconds by a masterly exhibition of driving, not another one of the competitors succeeding in getting by all the dummies without knocking them over. This was followed by a motorcycle race in two heats, both of which, as well as the final, went to local riders. There was not much excitement provided until the fourth event, which was a two-mile dash for stock gasoline touring cars, the first heat of which was won by a Jackson driven by Chester B. Smith. The final was between the latter and a Ford, Smith bringing the Jackson in first by a liberal margin in 3:11½, the next to the fastest time of the day.

In event No. 5, a stripped Pullman with Robert Martin at the wheel, was victorious over an Acme handled by Edward Lengel. In the second heat the Pullman was steered by J. A. Kline, while his competitor was J. Seager in a Wayne. The race proved close and exciting until the Wayne had motor trouble and had to quit, so that there was no final, to make up for which Kline drove an exhibition mile in 1:33½. These races were followed by what some wag in the crowd dubbed "gin rickey" stunts (gymkhana), much to the amusement of the spectators, and they were in turn followed by the other speed numbers on the program, event No. 7 for gasoline runabouts being captured by Pullmans in both heats. The meet closed with the contest for the Reading *Eagle* silver cup, which was taken by an Acme, but because of a protest no winner was announced. Challenge races will be held August 10, the outcome of several challenges made at the meet.

HILL-CLIMB UNDER NOVEL CONDITIONS.

Not the least interesting feature connected with the annual hill-climb to be held by the Chicago Motor Club, at Algonquin, Ill., on August 9, is the method of classifying the competing cars according to their piston area, as adopted by the English club recently. The event is, moreover, in the nature of a twin trial, as the morning session will be devoted to tests made from a standing start, while in the afternoon all attempts at records will be from a flying start. Six classes are provided for; one a free-for-all in the full sense of that term, the others being divided as follows: Class 1, cars with a piston area under 35 square inches; class 2, 35 to 50 square inches; class 3, 50 to 65; class 4, 65 to 90; class 5, over 90 square inches.

The formula upon which the rating is based consists of squaring the bore of one of the cylinders and multiplying by the number of the latter. The adoption of this classification brings about some odd groupings in the cars to line up for the various trials, and it is thought that when the definite results are made known it will be found that this is a thorough test of their ability in hill-climbing. The handicapping system is the same as that used last year, the cylinder dimensions being multiplied by the combined times up the two hills and divided by the weight of the car with driver. The standing-start trial is to be up a quarter-mile incline, said to be the highest hill in the State, while the flying-start trials will be on a half-mile grade situated on the other side of the town of Algonquin. Last year's record holder is a Pierce-Arrow, which made the distance in :34 flat from a standing start, while in the flying start trials the Pierce and the Stevens-Duryea Six were tried at :46 2-5. The Autocar, Jackson, Queen and Pierce were the class winners. Entries for the event close with Charles P. Root, 1200 Michigan avenue, Chicago, on August 5. The fee is \$30, half of which is refunded at start.

GENERAL CLUB NEWS FROM FAR AND NEAR

Enforcement of the Pennsylvania Automobile Law.

PHILADELPHIA, July 29.—S. Boyer Davis, of counsel to the Automobile Club of Philadelphia, and who is also the secretary of the club, has sent out a general letter to the members of that organization regarding the recent epidemic of trapping that has sprung up near the Quaker City and in eastern Pennsylvania generally. His opinion of the spirit in which the law is enforced will doubtless come as a surprise to many. "In the course of my duties I have met many of the local officers and have had opportunity to observe their work and methods of enforcing the automobile law. The majority I have found to be fair and liberal, and in most cases the officers reporting violations were paid by the day and do not benefit by making such reports." While rank injustices are frequently perpetrated in making arrests, there is little doubt that thoughtless, if not deliberate, violation of the law is more or less common, and this Mr. Davis says he has found to be the case, cautioning the members of the club to pay particular attention to compliance with the legal requirements, as otherwise the danger of stringent and restrictive legislation is imminent.

Outing of the New Jersey Automobile and Motor Club.

NEWARK, N. J., July 29.—The next outing of the New Jersey Automobile and Motor Club may be to Olympic Park, August 17, if arrangements can be made in time. Chairman Joseph H. Wood, of the house committee, and Secretary Horace A. Bonnell recently visited Olympic Park to see what the outlook was for holding an event at that place. Some sort of a carnival, slow race on the high gear and other novelty events, a dinner at the Park restaurant, and the opera in the evening may be included in the program. A club run to some coast resort with an old-fashioned shore dinner is a possibility of the near future.

Lancasterians Will Inspect the County Turnpikes.

LANCASTER, PA., July 29.—At a meeting of the board of directors of the Lancaster Automobile Club last Friday evening a letter was read from ex-Attorney-General W. U. Hensel, the club's legal adviser, in reference to the appointment of committees and the work that the club can do. As a result, a committee of inspection will go over all the turnpikes in the county to learn whether the companies are living up to their charter. One man will have a turnpike to inspect and he will go over it and note any breakers or other defects in the pike. The club will then take action against them.

Buffalo Club to Assist Old Home Week Auto Event.

BUFFALO, N. Y., July 29.—Buffalo is to have an Old Home Week in September. One of the features of the week will be a magnificent automobile pageant at night. Every automobilist of the city has been asked to cooperate in making this parade a spectacle long to be remembered by the people. Each car will be expected to be lavishly decorated. Prizes are to be offered. Seymour P. White, president of the Automobile Club, is chairman of the committee that is to arrange the details of the parade. H. A. Meldrum, a director of the club, is assisting him.

Philadelphia Now Has a Ford Motor Club.

PHILADELPHIA, July 29.—Regular organization of the Ford Motor Club of this city has been perfected with the election of Dr. I. E. Bennett as vice-president and R. F. Kohler as secretary and treasurer. The next regular run is scheduled for August 4 to Three Tuns. It is expected thirty cars, ten of which will be driven by ladies, will participate.

Hartford Autoists Arrange Hill Climb and Gymkhana.

HARTFORD, CONN., July 29.—A hill climb on Albany and Prospect avenues on September 7, and a program of gymkhana sports at Charter Oak Park, September 14, will keep interest at a fever heat in the Connecticut Valley during the next six weeks. At a special meeting the Automobile Club of Hartford decided to arrange these events, and for the gymkhana sports has arranged a program of rare attractiveness, teeming with novel features, which will include a parasol race, lamp race, button race, hat race, Teddy Bear race, turning race, and best appearance contest, all to be open to both lady and gentleman drivers. In addition to the above the following track races will be held on the Charter Oak course: Five miles, for cars costing less than \$1,500, amateurs to drive (manufacturers and agents barred); five miles, for cars costing \$1,500 and less than \$3,000, for amateurs, owners to drive; five miles, for cars costing \$3,000 or over, for amateurs, owners to drive.

Ohio Valley Auto Club Hands Out Prizes.

WHEELING, W. VA., July 29.—At a meeting held here last week the Ohio Valley Automobile Club awarded a number of trophies to those of its members who have signally distinguished themselves during the past year. The prizes consisted of five handsome loving cups in silver, suitably engraved, which were handed to A. W. Paull, Earl M. Giesy, Charles F. Paxton and two others which will be awarded later, as the members were not present owing to the inclement weather. The club will soon hold a dinner at Colerain, O.

Automobile Club Organized at Winona, Minn.

WINONA, MINN., July 27.—Automobile owners of this city have organized the Automobile Club of Winona, and will have headquarters at the rooms of the Arlington Club for the present. Officers elected for the first year are as follows: President, E. W. Williams; vice-president, H. S. Youmans; secretary and treasurer, Theodore Wold; board of directors, the above-named officers and S. H. Somsen and J. W. S. Gallagher.

CLUB DOINGS IN GENERAL.

MASON CITY, IA.—The first run of the Mason City Automobile Club was held July 22, the trip being to Nora Springs. The club is a new organization and promises to make itself a power in this section of the State.

SAN FRANCISCO.—Fifty women participated in the recent run of the California Women's Automobile Club of this city, to Del Monte early this month. It was the longest and most successful tour ever held by the organization.

WILKES-BARRE, PA.—Direct purchase has been made by the Wilkes-Barre Automobile Club of the mountain boulevard from Albert Lewis, the man who built and owned it. This private road was the easiest route from the valley and has hitherto been closed to autoists, who have been unable to secure permission to use it. The club did the next best thing under the circumstances—purchased it outright.

ROCHESTER, N. Y.—The work of posting the roads in and about Rochester with signboards is well under way, under the direction of the Rochester Automobile Club. Secretary Bert Van Tuyle is making daily trips over the territory, has completed the Scottsville road to Batavia, and has started work on the Churchville road. When this is completed the Geneva and Ridge road will receive his attention.

CONCERNING GEORGIA'S NEW LAW.

ATLANTA, GA., July 29.—Georgia Senators have just applied the brakes to automobiles in passing a bill by Senator Felder, of Macon. The bill fixes the speed limit at fifteen miles an hour and throws other restrictions around the operation of machines. Here are the provisions of the bill briefly stated:

Forbids driving autos in built-up portions of incorporated towns, where houses average less than 150 feet apart, at greater speed than one mile in six minutes.

Forbids greater speed on country highways than one mile in four minutes.

Provides that automobiles cannot be run on any street or highway at greater speed than proper for preservation and safety of public. Act does not in any way affect right of person to sue and recover damages from auto owner.

Lays stringent regulations on auto drivers in regard to persons riding or driving domestic animals.

At a signal from a person riding or driving restive domestic animals, autoists must come to a full stop and remain so until danger is over.

All automobiles must have adequate brakes, good horn or bell, and carry, from one hour after sunset to one hour before sunrise, a white light in front of the car and red light in the rear. The headlight must project light 500 feet ahead of the car.

Act includes automobiles, locomobiles, and all other vehicles propelled otherwise than by muscular power, save electric and steam cars. Violations of act render offenders amenable to section 1039, criminal code.

Act does not affect or abridge right of municipalities to regulate auto driving within limits as they may see proper.

Automobilists are not displaying unusual interest in the bill. They understand that the bill contains a provision that it shall not conflict with the speed laws of any incorporated city or town, and, therefore, will not alter the status as regards speed in Atlanta and other large cities, where most of the automobiles are to be found. They seem to feel that the speed of fifteen miles in the country, provided for in the bill, is all right.

They do have a complaint that the bill is unfair in that it puts the burden on the automobilist to show that he was right in the case of an accident. They say this presupposes that the automobilist is guilty, and he is required to prove his innocence whenever any trouble occurs. Automobile legislation, however, which is new in Georgia, they think will gradually work itself right as the people at large become better acquainted with the subject.

INDIANA HAS GOOD ROADS FEVER.

INDIANAPOLIS, IND., July 30—The crusade for good roads in Indiana, backed not only by automobile men, but by farmers, has reached such large proportions that a number of counties find themselves on the verge of bankruptcy due to extensive road improvements.

At the last session of the Legislature a law was passed making it mandatory for County Commissioners to grant a road of less than three miles in length, connected at each end with an improved free gravel or macadamized road, and providing it is traveled by a rural mail route, upon the petition of fifty persons.

In Randolph County roads that will cost upward of \$465,000 have been granted and are under course of construction. There are fifty-four petitions in Putnam County, calling for as many roads. Two of them have been built and paid for. Stone is easily obtained in the county, and fifty are to be built of stone and four of gravel.

There have been forty-five petitions granted in Howard County, and fifteen more are pending. Several others will be petitioned for later. Hamilton County will spend at least \$500,000 for roads within the next year, as thirty-six petitions have been granted within three weeks. Adams Township alone is asking for roads that will cost \$40,000.

Financial insolvency is threatening Clinton County because of the new law, and it has been discovered that residents of various townships are signing each other's petitions for roads. There will be sixty-three new roads built this year, according to petitions on file, although the number may yet reach 100. The average cost of building the roads is \$2,300 a mile. This is a very low figure

that is only made possible by the fact that there is an abundance of suitable material right at hand and as yet no difficulty has been experienced in obtaining a sufficient amount of labor at prevailing prices to carry the work of road improvement through—conditions that are not to be found in many other States where stone and gravel are scarce and have to be transported from a distance at a cost which more than doubles the expense of road building.

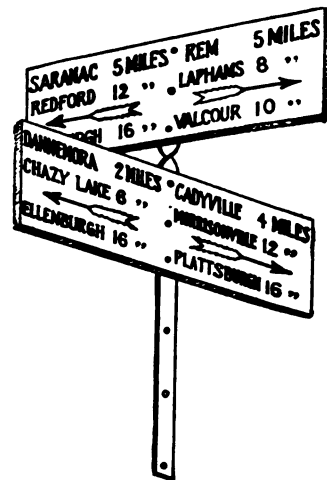
There are now 148 miles of improved roads in Morgan County, and about sixteen petitions are on file. In Shelby County a road was petitioned for, but the Commissioners were surprised a few days later to receive a remonstrance signed by the same persons presenting the petition.

About fifteen petitions are on file in Madison County. Monroe County will build six new roads, while Wells County Commissioners have sixty-three petitions before them.

The new law provides for a bond issue of 4 per cent. All the land-owners of a county are taxed alike for the improvements.

ROAD SIGNS FROM THE N. Y. STATE PRISON.

As a part of its industrial activity, the Prison Department of the State of New York has taken up the making of road signs, the work being carried on at Dannemora, N. Y., where the Clinton prison is located. The aim has been to produce a sign-board that would be proof against the weather at all seasons of the year, and to this end the boards themselves are made of seasoned one-inch white pine, well protected with paint, the letters being painted on in black on a white background and are legible at a distance of 40 to 50 feet, depending on the size of the sign. The painting is thoroughly weatherproof and the signs will last indefinitely. The boards are mounted on wrought-iron standards, heavily coated with white lead as a rust preventative, and to which they are attached by bolts and nuts. They are made in a variety of styles and sizes, such as those



A SAMPLE ROAD SIGN.

shown by the accompanying illustration, depending on the nature of their location, and are sold at nominal prices. The sign shown by the cut is the largest size made and provides 12 different distances, the two parts being at right angles to another, this being variable according to the angle of the crossroads.

TEXANS IN A QUANDARY OVER REGISTRATION.

FORT WORTH, TEX., July 27.—When the new Texas law went into effect on the 12th inst., half of the autoists in this city appeared at the Courthouse prepared to pay their 50 cents for registration, but here, as at other places, the county clerks have not yet received copies of the law. Consequently automobilists in this State are all violating the law, because they are unable to comply with it.

E. E. Fosdick, a prominent autoist of this city, has petitioned the commissioners to place a tax of \$1 a year on all automobiles and 50 cents a year on all rubber-tired vehicles for the purpose of raising a fund to improve the streets. According to his estimates, the owners of such vehicles expend \$50,000 annually for repairs and replacements due to the bad condition of the streets, tires in several instances having been completely cut in two by bottles, while injuries of an almost equally serious nature have become so very common that the expense of tire maintenance—already very high—has become more burdensome than usual.

INTERPRETING CONNECTICUT'S NO SPEED LIMIT LAW

HARTFORD, CONN., July 29.—Instead of being downcast by the taking effect of the new automobile legislation removing the arbitrary speed limit, the rampant advocates of repression are hailing it as a greater opportunity for making large hauls than ever existed under the old law. It seems to be the impression now that they can take up any and every one they see by simply preferring a charge of reckless driving against them. According to Walter S. Schutz, attorney for the Automobile Club of Hartford, the only real change in the speed provision from that in the former law is the insertion of the word "recklessly," and a rate of speed in excess of 25 miles an hour is made *prima facie* evidence that the person operating the vehicle is doing so at a rate of speed greater than is reasonable and proper, and in violation of the provisions of the law.

Section 10 of the old law was to the effect that "no person shall operate a vehicle at a rate of speed greater than is reasonable and proper, having regard to the width, traffic and use of the highway, or so as to endanger property, or the life or limb of any person," and then followed the arbitrary provision that in no event shall the speed exceed 12 miles an hour within city

or borough limits or 20 miles an hour without such limits.

If a person is caught driving a car at a rate exceeding 25 miles an hour, the burden is upon him of showing that he was not operating recklessly, or without regard to the width, traffic and use of the highway.

"Of course, it is possible that traps will be maintained under the new law," says Mr. Schutz, "and that people will be convicted on the arbitrary statement of witnesses that they were operating 'recklessly,' but appeals to the Superior Court in a few such cases will put an effective *quietus* upon such proceedings. Furthermore, as all fines must be remitted by the local justices to the State for highway purposes, I am confident that much of the local enthusiasm for traps will be dispelled. Both the Massachusetts and Vermont laws make driving at 20 and 25 miles an hour, respectively, *prima facie* evidence of improper driving. The new law in Vermont is working exceedingly well. I have just returned from a three days' trip in that State and hear nothing but praise for it. I am confident that the Connecticut law is likewise a tremendous advance over the old forms of automobile legislation, which provided an arbitrary speed limit."

MASSACHUSETTS AUTOISTS AGAINST RE-REGISTRATION

WORCESTER, MASS., July 29.—The Worcester Automobile Club took the initiative among the clubs of the Massachusetts State Automobile Association in protesting against the new re-registration law of Massachusetts at a special meeting of the active members of the club Thursday night. After listening to talks by members and by Attorney Francis Hurtubis, Jr., counsel for the State Association, these resolutions were passed:

That the club members be advised in paying re-registration fee of \$5 to do so under protest, and that the club attorney furnish a form of protest to the assistant secretary, to be transmitted by him to the members.

That it is the sense of Worcester Automobile Club that the Massachusetts State Automobile Association should test and bear the expense of testing the constitutionality of Chapter 580, of the legislative acts of 1907.

In consequence of the first vote, Vice-President Daniel F. Gay, counsel for the club, furnished Assistant Secretary R. M. Pratt with a form reading: "This payment is made under protest and by paying it I waive no rights," and this has been used by many of the members when applying for re-registration of

their cars. Because of the second vote, the State Association and the legislative committee thereof have been notified of the club action by President John P. Coghlin, and all of the clubs in the State have been likewise informed by the assistant secretary.

The action of the club is being endorsed by many non-members of the club, who have written it testifying to their endorsement and expressing their satisfaction that the club is taking the matter up. The Brockton, Mass., club will have a meeting to take action on similar lines.

At the meeting Thursday night it was stated by members who had consulted counsel on the matter that they are satisfied the annual fee of \$5 for registration of cars is clearly unconstitutional, and there will be a test case taken to the United States Supreme Court if the wishes of several of the leading members of the club are carried out. Most of the members of the club are applying for their re-registration and are paying their \$5 fee, which is due August 1, under protest, with hopes that the law will be declared unconstitutional and the fees returned.

BUFFALO'S AUTO TAX DECLARED UNCONSTITUTIONAL

BUFFALO, N. Y., July 29.—Members of the Automobile Club of Buffalo are in a pleasant frame of mind over the decision of Judge Hodson of the Municipal Court, who, on last Saturday afternoon, declared the local ordinance requiring automobilists to pay an annual tax of \$5 was unconstitutional. The ruling was given in the test suit brought by the city of Buffalo against Dai H. Lewis, secretary of the club. At the behest of Secretary Lewis the club members declined to pay their tax some time ago and the city took steps to enforce its ordinance by virtue of a court ruling. It has lost.

Judge Hodson, in his opinion, says: "The charter amendment, in providing for the imposition of a tax and penalty upon an owner of an automobile 'for the privilege of operating, driving or propelling the same along or upon the streets of Buffalo, and authorizing the Common Council to prohibit the use of such

streets and public places of the city by such owner who refuses to pay such tax and penalty,' so plainly contravenes the provisions of the general motor vehicle law that it does not admit of serious discussion. Nor does it matter that the Common Council, in framing the ordinance, has gone to the extent of preventing the automobile from using the streets, as authorized by the law; the ordinance is passed pursuant to that law, which law is inconsistent with and contrary to the provision of the general law, and is therefore repealed by Section 7 of such general law; and the law authorizing the ordinances being repealed, clearly the ordinance itself becomes null and void."

While the decision is regarded as a big victory by local automobilists, the proposition of the Board of Assessors to make autos personal property assessments is causing much serious thought on the part of autoists in this city.



THOUGH apparently of standard design throughout so far as external appearance goes, the new Griswold runabout depicted here, and which is the work of J. P. Lavigne, well known to the automobile trade through the force-feed oiler that bears his name, stands revealed as something very much out of the ordinary, once its bonnet is lifted. A review of its specifications—5 by 5 inch, 16-horsepower, two-cylinder opposed motor, friction transmission, shaft drive, and similar details—gives no inkling whatever of the unusual arrangement in which these various essentials are grouped.

The motor is of the standard four-cycle, two-cylinder opposed type, barring minor changes necessitated by the position in which it is placed, which is longitudinally under the hood, with the flywheel underneath and the crankshaft vertical. Beneath the flywheel is placed a friction wheel, making contact with it. This friction wheel is arranged to slide longitudinally on a level horizontal shaft and is splined on it so as to turn with it. An extension of this horizontal shaft to the bevel gearing on the rear axle comprises the drive, one universal joint being interposed. Another unusual feature that is bound to attract the observer's attention at first sight is the starting device. The upper end of the crankshaft terminates in a bevel pinion meshing with another of about half the size on a horizontal shaft that extends rearward through the dash of the car, its end being fitted for the reception of a starting crank of the ordinary type, so that the car may be got under way from the seat, even though it be necessary to crank it. As it does not interfere with anything, this horizontal shaft may be allowed to turn without inconvenience, but provision is made for taking the small bevel out of mesh by means of a hand nut.

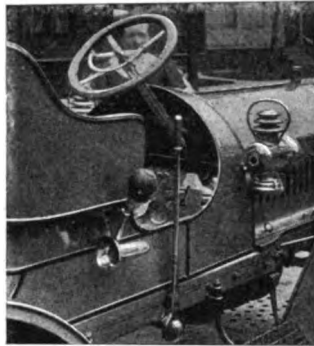
The position of the engine has been taken advantage of to install a unique and extremely simple system of lubrication. The crankshaft is partly hollow down as far as the center of the lower bearing. At the middle of each crank and pin bearing is a radial hole, one lead of a three-feed Lavigne oiler connecting with the hole in the upper bearing of the crankshaft, passing down through the hollow shaft by gravity and out on the crankpins and lower bearing, the surplus collecting in a circular groove at the bottom of the case, from which it is again

brought into action by a small scoop attached to the lower web of the crank. The other two feeds from the oiler are taken to the tops of the cylinders at a point registering with a groove on the pistons when the latter are on the upper dead center, an oil ring being placed at the outer end to aid in spreading the oil. As a further means of lubrication, particularly in case one of the bearings should run hot, a compression grease cup is attached to the upper end of the crankshaft. As at present arranged, the oiler is placed quite high and driven by a belt, but it is the intention to lower it and use a gear drive. A Briscoe cellular radiator

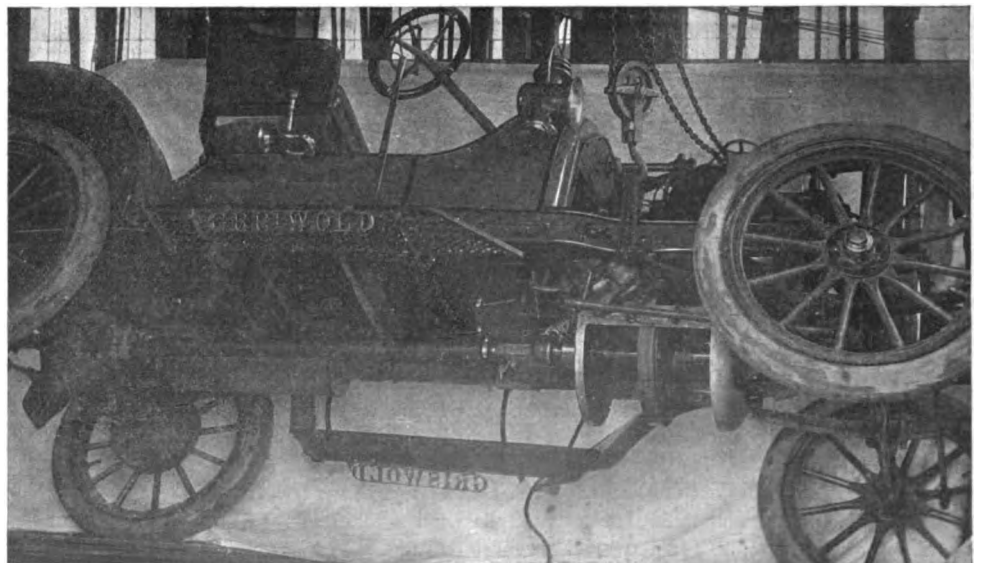
completes the cooling system of the car, which operates on the thermo-syphon principle, while a Heinze coil and Quad timer, and a battery of dry cells constitute the ignition system.

It may appear at first sight as if the new Griswold car were the first born of some amateur entrant into the field with a cherished theory to realize, but as a matter of fact Mr. Lavigne is really one of the pioneers of the industry. As far back as 1899 he built a car driven by a three-cylinder, vertical, two-cycle engine located under the body and driving through spur gears to the rear axle. The engine had a 4½-inch bore and stroke and in 1902 it was built into a larger car than had marked the first attempt. In this instance an individual clutch system was employed to give the speed changes and the drive was by means of spiral gearing. The wheelbase was 110 inches and the body a side-entrance tonneau, while the engine was placed in front and the drive was by means of a horizontal shaft, so that the car combined all the features of present-day construction. In 1904 Mr. Lavigne designed

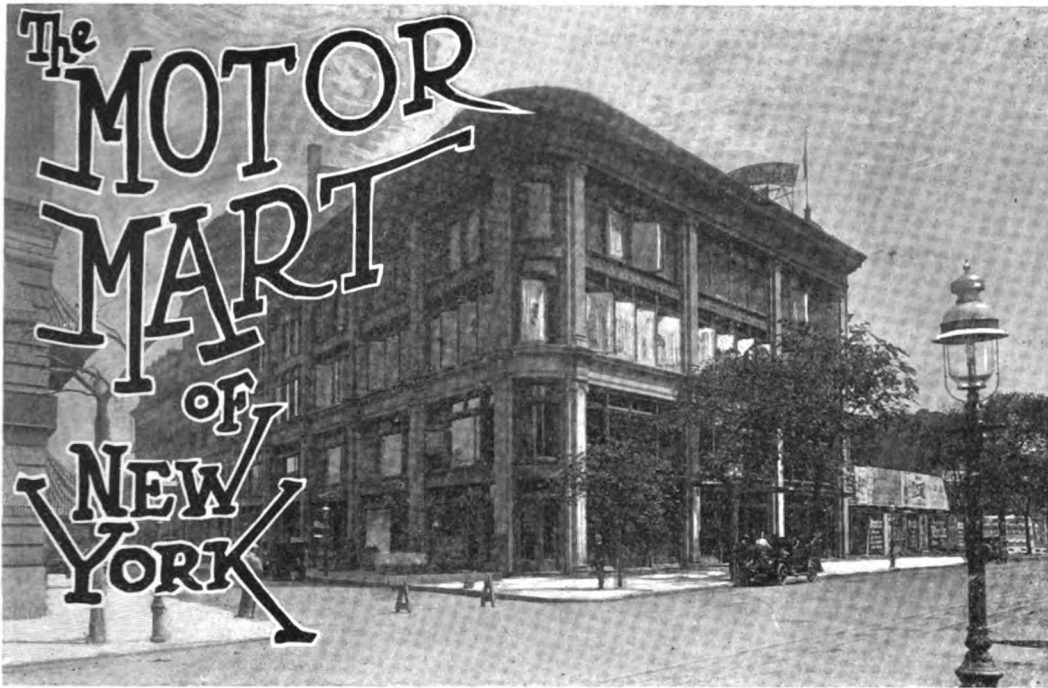
another smaller car, known as La Petite, of which a small number were built. The plans of the company include the building of a 10-horsepower runabout with a 90-inch wheelbase, a 15-horsepower touring car with a 100-inch wheelbase, and a 20-horsepower touring car with a 110-inch wheelbase. The builders are the Griswold Motor Car Company, Detroit, Mich., recently organized with a capital of \$200,000, and with headquarters at 521 Lincoln avenue.



OPERATING LEVERS AND DASH.



UNDER VIEW OF THE GRISWOLD CHASSIS SHOWING FRICTION TRANSMISSION.



WITHIN the past few years the development of New York's automobile row has been little short of stupendous. Some of the more prominent American manufacturers have invested amounts of capital in providing quarters for their branch houses and have erected buildings of a nature that leaves little doubt as to their faith in the permanency of New York City as a selling center for the automobile. But while such houses have been erecting the palatial buildings—for they are nothing less—that dot upper Broadway at intervals of a block or two for a matter of two or three miles, a similar amount of attention has not been paid to the needs of the smaller manufacturer.

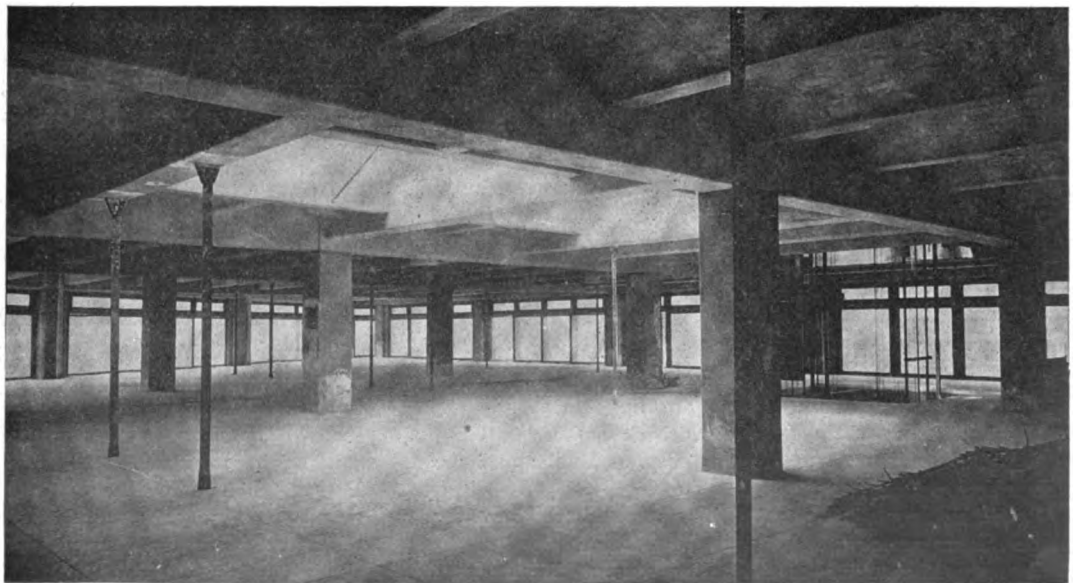
Recognizing this, a corporation known as the Motor Mart of New York has been organized by A. T. Otto and F. E. Malone to develop the possibilities of the building located at the corner of Sixty-second street and Broadway and which has been christened the Motor Mart. This structure was originally erected more than a year ago, especially with a view to housing automobile garages, but its builders evidently had little definite conception of the requirements of this business. It is of steel and concrete construction throughout and modern in every respect, but aside from being fireproof it was hardly any better adapted to the purposes of a garage before its present holder took possession than are many buildings which were never designed for the purpose. It had 30-foot ceilings but was totally minus either elevator or heating service. This the new company has remedied by building in two additional floors as well as installing large electric freight and passenger elevators and a steam heating plant, in addition to which other facilities will be provided. The building measures 116 feet on Broadway and runs 173 feet east on Sixty-second street. At present it provides 14,000 square feet of surface per floor, but, with the addition of a 25-foot L extension facing on Sixty-first street.

difficult for the small out-of-town manufacturer who is not otherwise represented in the metropolis to obtain adequate space and facilities in New York's automobile row, and due both to its favorable location and the excellent facilities it affords for the purpose, there seems to be little doubt that the idea will appeal favorably to a sufficient number of small manufacturers to make the holding of a permanent exhibition of the kind a feature of the New York trade.

That the selling end of the New York industry, which found itself indifferently situated with regard to quarters when the new Motor Mart was thrown open, has not been slow to recognize the advantages of location and up-to-date housing afforded by the latter, is shown by its present roll of tenants, although the work of remodeling the building is not yet quite complete. For instance, at its southerly end, the Diamond Rubber Company has established its New York branch house in a manner equaled by few similar establishments in the world. The original 30-foot ceiling of the building was left undisturbed with the exception of the rear end of this imposing office, which has been bridged by a special balcony. The fittings are in keeping with its size and prominence. Other tenants on the Broadway side of the

it will have 17,000 square feet on each floor, of which there are four and two light basements.

Its most distinctive feature when running in full blast will be a permanent exhibition of automobiles, accessories and the like, to which the entire fourth floor is to be devoted. With a view to making the building as light as possible, a very large proportion of the walls is composed of glass, as may be judged from the photograph of the interior showing the fourth floor. The space afforded by the latter is to be divided into 50 combined offices and salesrooms, which are to comprise the units of the permanent exhibition referred to. Under prevailing conditions it is now very



ONE FLOOR OF THE MOTOR MART DESIGNED FOR A PERMANENT CAR EXHIBIT.

ground floor are the Mitchell Motor Car Company, of New York, handling the Mitchell gasoline pleasure and commercial vehicles, while on the Sixty-second street corner the General Vehicle Company, of Long Island City, shows some of its large line of electrics. Back of the latter, on Sixty-second street, is the branch house of the Oscar Lear Automobile Company, builders of the Frayer-Miller cars, while just behind them is the Motor Sales Company, which concern represents the interests of the Detroit builders of the De Luxe car. The New Amsterdam Oil & Grease Company and the Ennis Ruef Tire Company complete the list at present on the ground floor, though the Colt runabout is a prospective addition, while the Imported Car Repair Company is located in the basement, though it is the intention of the corporation to lease part of the latter together with the upper floors to those firms requiring combined office and garage facilities.

On the second floor, along the Broadway side, Percy Owen has already installed the Bianchi cars in an elaborate setting, another well-known firm which has taken up its headquarters here being the Winchester Speedometer Company. Other firms on this floor are the Tiger Tire Company, the A. Franck Company, the W. L. Fry Company, J. T. Finn & Co., and the Auto Specialty Company, while the shock absorber contingent is to be represented by the Kilgore Shock Absorber Company. On the same floor the Automobile Trade Association and the Automobile Press Association both have their headquarters.

At the present writing both the third and fourth floors are still undergoing the finishing touches of the reconstruction process in order to fit them for the purpose in view, as is also the case with some of the other details of the building, but with the latter housing its full complement on three floors and with the Motor Mart exposition a permanent feature of the fourth, it will represent a center of automobile activity of which there are few equals in the country.

JUST AS IT CAME FROM PELLETIER'S PEN.

Furnished by the Press Bureau of the Ford Motor Co., Detroit, Mich.

It wouldn't have happened if his name had been an unusual one; but his name is Smith, and he lives in a small town in Vermont.

He owns a Ford runabout that he purchased from Charley Fay, manager of the Ford Boston branch. The car had been running fine for several months, and Smith had written several times to say how delighted he was. But one day there came a change in the form of a letter that detailed all the ills a motor car is heir to, and winding up with a request for immediate information as to what to do to make the motor perform as of yore. Fay diagnosed the case as well as he could, and sent him a bunch of "absent treatment" by return mail. But it was of no use. A telegram stated all the expedients suggested had been tried, but the motor would not "mote." Fay wired for more symptoms. In reply he received information that the engine, after much cranking, would start, run for a few seconds, smoke, spit and emit a terrible stench. "Seems as if it is running hot," ended the telegram. Fay suggested examining the pump, commutator, carburetor, coil and everything else he could think of, and concluded by advising to "Put plenty of oil in the engine base." Smith replied, "Nothing doing." Then Fay got him on the telephone.

"What kind of cylinder oil are you using?"

"Same as you sent me last week," replied Smith hotly.

"That's good cylinder oil," said Fay; "but I cannot understand the engine heating. Put in some more oil."

"Got the case half full now," yelled back Smith.

"Well, put in some more," replied Fay, as he slammed the receiver back on the hook.

In half an hour a telegram told Fay he could send an expert to make the car run or take back his old machine.

It was in the middle of the selling season. Runabouts were going at the rate of ten a day, and every competent man was re-

quired to tune up the new ones. But there was no way out of it—a man must be sent.

"Half a day to go, half an hour to make the engine run, and another half day to return," growled Fay. "Wish that fellow could think of one symptom he didn't tell me, so I could tell him what ails his car."

Man was absent three days. When he returned he met the infuriated manager, who asked: "What on earth kept you so long; what have you been doing?"

"Took his engine all apart, cleaned it, and put it back in."

"Why—what was wrong with it?"

"This," said the man, setting a can of light brown liquid before his chief.

"That looks like good cylinder oil," said Fay.

"Looks like it—yes—that's the trouble. It's maple syrup!"

Strange as it may seem, there are two Smiths in this Vermont town. A friend had shipped a can of maple syrup to one, on the same day and by the same express company that was carrying the can of cylinder oil from Fay to the Ford owner. Cans got mixed en route. When the expert took the motor apart he found the cylinder full of maple sugar, the bearings full of syrup, and the muffler choked with the half-burnt wax.

Fay is now wondering how the other Smith relished the cylinder oil on his pancakes.

TWENTIETH CENTURY HUNTING IN TEXAS.

DALLAS, TEX., July 27.—Probably for the first time in its history has the automobile been utilized in the rôle of the hunter's steed. As an aid to hunting, it has become almost common, but its rôle has been confined to that of a method of transportation and nothing more, though its ability to cover long distances has made it particularly valuable for this purpose. In the instance under review it actually played the part of hunter. A party left Tahoka, Tex., in two touring cars one day last week and proceeded about twenty miles east of that place on the J. B. Slaughter range. Three antelope were jumped on the open plain and both cars were immediately started in chase. The antelope has always been considered the swiftest runner that walked on four legs, and any attempt to chase it previously would have been worse than useless. Even with the superior speeding powers of the automobile, seven miles were covered before the fleet animals were overtaken and one of the party, skilled in the use of the lasso, easily roped a big buck from the front seat of the car, which was subsequently released. This is doubtless the first case on record of an antelope having been run down, and it goes without saying that the seven-mile chase provided sport of a rarely exciting nature. The party was composed of Judge F. M. Bartley, W. S. Swan, Dr. S. H. Wyndom and T. Simmons, of Tahoka; H. Ford, of Austin, and O. B. Helley, of Garza county, Tex.

There is a movement afoot to provide the public commissioners of Dallas with an automobile for their use in traveling round the town, many of the business men of the city being enthusiastic about the project, even to the extent of planning to circulate a monster petition in its favor. But Mayor Hoy and Commissioner Doran have thrown cold water upon it as a luxury to be foregone until the time when the automobile can be operated more economically than at present.

PIERCE MAKES BIG FACTORY ENLARGEMENT.

BUFFALO, N. Y., July 29.—Additions are to be made to the factory facilities of the George N. Pierce Company by the erection of a third story to the body-building department, giving an increased floor area of 45,000 square feet. The contract for the work has been awarded to the Trussed Concrete Steel Company of Detroit. In building their new plant, which has a floor area of over 325,000 square feet, and was completed less than a year ago, the Pierce Company secured a fifteen-acre tract advantageously situated on the old Pan-American Exposition grounds, with the New York Central belt line close at hand to facilitate shipping.

A FORD CHAPTER OF SELDEN ACTION. AUTO ENGINEERS MEET AT BUFFALO.

As the testimony in the so-called Selden litigation—the action of the Electric Vehicle Company *vs.* the Ford Motor Company, over the Selden patent—now totals more than 6,000 long type-written pages, it is hardly to be expected that anyone other than those directly interested would be apt to remember any details of it. But Dugald Clerk, who was brought over from England by the complainants as an expert witness, on the stand admitted that the Lenoir patent undoubtedly antedated that of Selden by many years, but was positive that such an engine could not be built light enough to allow of its application to a road vehicle. Henry Ford seized the opportunity thus presented and built a 7 by 7 Lenoir engine, on which the patent dates back to the early sixties and equipped it with a Festugier carbureter that was especially designed to be used in connection with the Lenoir engine and was patented in 1865. The whole was mounted on a regular 1903, single-cylinder Ford chassis, and neither in its action nor its appearance, with the exception of the huge barrel-like brass carbureter fastened to one side of the body, and which measured 8 by 24 inches, could the car be distinguished from the standard product of that day.

It was put through its paces on Monday afternoon last in the vicinity of the Broadway store of the Ford Company for the benefit of a number of the witnesses on both sides and a gathering of scribes, who took turns in testing its ability. It was run backward and forward at a good pace, started easily by cranking from the seat, and was even started on the spark, showing that it was thoroughly broke and could perform all the regulation stunts that any well-bred automobile could be expected to do. Its ability to run throttled down would easily gain it a record, as it would run so slowly with the throttle closed that a stop seemed imminent between explosions, despite which it could be speeded up and the car made to travel at a rate that would easily break more than one speed law.

This and a great deal more were matters of common observation by those present, and they were duly enlarged upon by the press agent. Those who viewed the test included Prof. R. C. Carpenter, of Cornell; Charles E. Duryea, consulting engineer of the A. M. C. M. A.; John P. Murray, attorney for the Panhard interests; Hugo Gibson, one of the expert witnesses brought over by the complainants at the same time as Dugald Clerk; Judge R. A. Parker, the Ford attorney; Jesse Smith, a Ford expert; Alfred Reeves, general manager of the A. M. C. M. A.; R. S. Crawford, of the Crawford Motor Car Company; Gaston Plain-tiff, manager of the New York branch of the Ford Company; Paul Lacroix, of the Renault Company, and R. M. Barwise.

During the morning of the same day a demonstration was given of the old Selden motor, which, however, was not public and was only attended by the lawyers and witnesses on both sides. It was not said to have been an unqualified success, but the publicity department of the Licensed Association did not wish to make any statement regarding it on the ground that it in no way concerned the litigation in question.

GEORGE DAY REJOINS LICENSED ASSOCIATION.

Due to the recent resignation of M. J. Budlong as president of the Electric Vehicle Company, Hartford, Conn., a somewhat unexpected result has followed in the election of George H. Day to fill the vacancy thus created in the Executive Committee of the Licensed Association of Automobile Manufacturers. It will be recalled that Mr. Day for some time held the presidency of the Electric Vehicle Company, and only recently resigned the general managership of the Licensed Association, so that it would be difficult to find any one more thoroughly conversant with the affairs of both organizations. On this account, the Electric Vehicle Company requested that Mr. Day be elected to fill the vacancy created by Mr. Budlong's resignation, which was done at the meeting on Tuesday. He will not resume his connection with the company in any official capacity on that account.

The midsummer meeting of the Society of Automobile Engineers, held in Buffalo on Monday and Tuesday last, was combined with that of the Mechanical Branch of the Association of Licensed Automobile Manufacturers.

Sessions were held on Monday at the rooms of the Automobile Club of Buffalo, papers being read on steels and their properties in the morning, which were followed by an extended discussion of the magneto during the afternoon and evening. This included the reading of a paper by E. T. Birdsall, chairman of the committee on magnetos of the Society of Automobile Engineers. The paper was profusely illustrated by lantern slides. Otto Heins, representing Robert Bosch, advocated a closer relationship between the automobile manufacturers and the magneto makers.

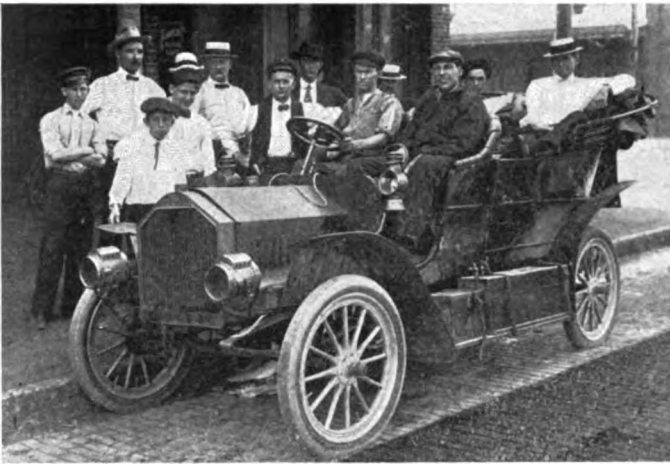
The remainder of the meeting was devoted to an inspection of the plants of the E. R. Thomas Motor Company and the George N. Pierce Company, which are said to be the largest and most completely equipped of their kind in the world. After going through the Pierce plant, the engineers were taken over into Canada for a ride in a number of Pierce and Thomas cars, crossing the river and returning via Lewiston and Niagara Falls to Buffalo.

The following members of the Mechanical Branch were present: H. E. Coffin and F. P. Nehrbas, E. R. Thomas Company; A. L. Riker and E. F. Russell, Locomobile Company; Charles B. King, Northern Motor Car Company; D. Ferguson and Duncan H. Pierce, George N. Pierce Company; Charles R. Greuter, Matheson Motor Car Company; E. T. Birdsall, Selden Motor Vehicle Company; C. E. Calkins, Studebaker Automobile Company; J. G. Perrin, M. Z. Viau and M. S. Young, Lozier Motor Company; G. A. Dunham and R. M. Jackson, Olds Motor Works; Lindley D. Hubbel and Frank W. Cooke, Pope Manufacturing Company; Henri G. Chatain, Waltham Manufacturing Company; H. P. Maxim, Electric Vehicle Company; John Wilkinson, H. H. Franklin Manufacturing Company; J. A. Baumgardner and John G. Utz, Autocar Company; J. S. Worthington, Haynes Automobile Company; Frank Johnson and E. E. Sweet, Cadillac Motor Car Company, and Walter L. Marr, Buick Motor Company.

GARFORD COMPANY ENTERS LIST OF MAKERS.

Behind the simple announcement that the Garford Company has decided to enter the automobile market proper with a car to be known as the Garford, rated at 40 horsepower, and which will be on view in October next, lies one of the most radical changes in the New York trade that has occurred along the "row" in many months. William B. Hurlbut and C. R. Teaboldt, respectively manager and assistant manager of the Packard Motor Car Company's branch in this city for the past three years, have severed their connection with the latter firm to organize the Garford Motor Car Company of New York, of which Mr. Hurlbut is president and general manager and Mr. Teaboldt secretary and treasurer. The new company is capitalized at \$300,000.

The importance of the entrance of the Garford Company into the automobile field will be realized when it is stated that a very large percentage of all the automobile parts of several kinds that are manufactured in this country have their origin at this concern's factories in Cleveland and Elyria, O. It was among the very first to take up the making of automobile parts on a large scale, and has done a tremendous business, so that the extent of its facilities for turning out work of this kind places it in an excellent position to build complete cars. Messrs. Hurlbut and Teaboldt recently made a test trip in one of the first Garford cars and were so pleased with it that they decided upon the action already mentioned, severing their connection with the Packard interests last Saturday. It is expected that the new car will be on the market in numbers by October 1, and that a detailed review of their specifications will be found to reveal a number of constructional innovations, though the car as a whole is patterned strictly along recognized lines of standard practise.



AN INDIANA CAR THAT MADE A LONG SOUTHERN TRIP.

The Model car above illustrated recently completed a trip from the company's factory at Peru, Ind., to Tampa, Florida, over the mountain roads of Kentucky and Tennessee, said to be the worst in the country. Mr. Hixon, the Tampa agent, made the trip to demonstrate the fact that a two-cylinder car could do it.

ELECTRIC 'BUSES PLEASE QUAKERS.

PHILADELPHIA, July 29.—After a fortnight's operation, the initial line of automobile omnibuses established by the Auto Transit Company, of this city, has been pronounced by the Quaker City public as an unqualified success. Harassed for many months from every side by grafting politicians in city councils, who seemed unwilling to grant a long-suffering public the boon of a much-needed addition to its transportation facilities, the Auto Transit people persistently stuck to their guns, and finally won out when, early in the present month, Mayor Reyburn signed the ordinance which gave them a legal right to operate their vehicles on the Broad and Diamond streets route between the Bellevue-Stratford and the Diamond street entrance to Fairmount Park.

Although but twelve of the twenty-five vehicles which will constitute the rolling stock of this initial route are in operation, owing to the incomplete state of the company's charging plant and garage at Thirty-third and Dauphin streets, the full complement of 'buses will be put on the line by next Monday, by which time the additional motormen and conductors who are now being drilled will be ready to take hold. With its present equipment the company is starting one of its 'buses from each of the termini every seven minutes. By August 15, says General Manager J. M. Hill, the line will be run on a three-minute headway, and if necessary the 'buses will, by October 1, be running under a one-minute headway during the morning and evening rush hours. When the present line is firmly established, the Auto Transit people will

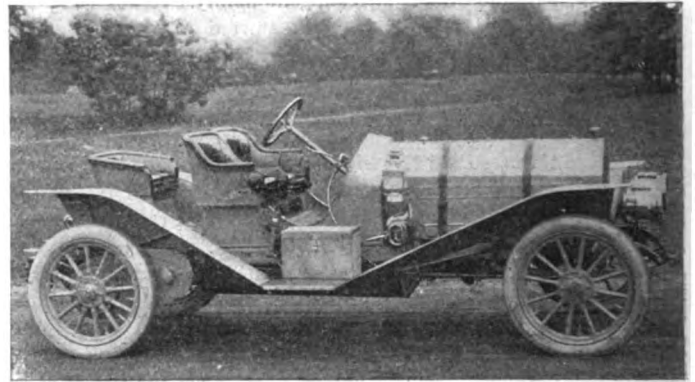
turn their attention to the southern line, in all probability running south on Broad street to League Island and return, with possible feeders on an east and west street with free transfers.

The five-cent fare with no one allowed to stand—a policy which the Auto Transit Company announces it will adhere to—is meeting with the approbation of the local public, and the 'buses are running full in both directions at all hours of the day.

The Commercial Truck Company of America, which built the vehicles for the Auto Transit Company, is working night and day on the second installment of 25 'buses, which will be slightly larger and capable of carrying 40 passengers each as against the seating capacity of 36 of the vehicles now running. The 'buses are all built under the Imperial four-motor four-wheel-drive patents, each motor being 2 1-2 horsepower.

GREAT CHADWICK SIX TOURABOUT FOR 1908.

At first glance it would scarcely be realized that the power plant of the natty car shown by the accompanying photograph was fitted with a six-cylinder engine, so well proportioned are its lines throughout. It is the runabout counterpart of the Great Chadwick Six, recently described in detail in these columns, and has been christened a tourabout, owing to the unequalled facilities it offers for this service. Special attention has been paid to



HOW THE GREAT CHADWICK SIX TOURABOUT SHOWS UP.

making it as attractive and compact a car as possible, and wherever alterations from the touring car were necessary to attain this end they have been made, so that it is not merely a runabout body on the same chassis, but a special design which really speaks for itself in this respect. The makers are devoting considerable attention to this model and quite a number are being produced for the coming season.

TRADE DOINGS IN QUAKERVILLE.

PHILADELPHIA, July 29.—The local automobile trade was recruited last week by the advent of W. L. Edison, son of the inventor, who will represent the 40-45 Colt Rapid Fire car locally. He is associated with H. M. Fernald of this city, and will temporarily carry on business at the Bellevue-Stratford garage. Later the new concern expects to establish quarters on "Gasoline Row."

George Barbier, the well-known actor, but recently connected with the local Rambler branch house, has decided to return to his Thespian first love, and, in company with Eddie Middleton, will form a stock company for a season at the Forepaugh Theater.

Gilbert S. Smith, head of the Hamilton Auto Company, local Stoddard-Dayton agents, and who has attained fame by entering his cars in every competitive event he could conveniently reach—and winning out—has found it necessary to considerably enlarge the company's present quarters at 206 North Broad street. He ascribes the Stoddard's rapid jump in popularity to the wide publicity given the car's triumphs in the local and trade press throughout the entire country.



ONE OF THE NEW MOTOR 'BUSES THAT PHILADELPHIA USES.

RULES FOR BRIGHTON BEACH 24-HOUR RACE.

For the August 8-9 twenty-four-hour contest, to be held at Brighton Beach, N. Y., under the auspices of the Long Island Automobile Club, A. R. Pardington, acting chairman of the A. A. A. Racing Board, has issued special rules for this form of racing. Two kinds of twenty-four-hour races are provided for. Class A is an endurance race limited to one car and only two drivers, while Class B is a relay event in which two cars of the same kind may be used with not more than three drivers to pilot them. Regulation stock cars, described in manufacturers' catalogues, are the only vehicles permissible in these long events. Extensive preparations are being made for the Brighton Beach event.

MAXWELL OFF FOR CHICAGO, BONNET NAILED.

It was a more than ordinary sealed bonnet test that the little 16-20-horsepower Maxwell undertook when, after traveling about 1,500 miles, it joined in the Glidden tour and came eastward to New York. Still with its bonnet nailed down, it has started westward again and expects to reach Chicago without any tinkering with the seals. The start was made from 317 West Fifty-ninth street, New York, at 10 o'clock on Wednesday morning.



THE "16" REO AT THE SWISS VILLAGE, JAMESTOWN

To show that the strenuous two weeks of the A. A. A. Tour were far from being a measure of its capacity to get there and back, the 16-horsepower Reo was started on another journey to Jamestown immediately after the conclusion of the tour and without making any adjustments or repairs. The trip was made as non-stop dash and was finished in 24 hours without an incident.

FROM NEW YORK TO BUFFALO IN 21 HOURS.

BUFFALO, N. Y., July 29.—With the Packard "24" which he had driven in the 1906 and 1907 A. A. A. Tour, Gus. Buse, Jr., started from the Knickerbocker Hotel in New York on Thursday morning last, after the completion the day before of the big tour, and arrived in Buffalo in twenty-one hours. Roads between the two cities a great part of the way were dusty and in poor condition.

NEW FIRM TO BUILD AIR-COOLED CARS.

COLUMBUS, O., July 29.—Under the title of the Harmer Motor Car Company of Columbus, a company has been incorporated here with a capital stock of \$100,000 to build automobiles employing a new air-cooled motor, which is the invention of Frederick S. Harmer. The motor is cooled on the blower principle and 40-horsepower touring cars and runabouts, as well as a three-ton delivery truck, will be turned out on a large scale. One of the cars, which was built recently, has shown up very well under test and it is the intention of the company to build or lease a manufacturing plant and begin business in the near future. The incorporators are Frederick S. Harmer, P. Scott Stafford, E. H. Holterman, J. E. Ward and W. M. Parsons.



J. W. DAVID IN A MORA ON A STIFF GRADE

TESTING OUT MORA CARS IN THE HILLS.

Western New York offers an unusually favorable testing-out ground for cars, as is evidenced by the accompanying photograph, depicting John W. David driving a Mora car up what is claimed to be a 45 per cent. grade, on the high gear. Newark, N. Y., where the factory of the Mora Motor Car Company is located, is situated close to Rochester, of which it is practically a suburb, and it is surrounded by numerous hills and endless miles of rough roads, which appealed to the builders of the Mora very strongly as a testing ground, and really constituted an inducement toward locating the works there. J. W. David, the driver, is the son of William P. David, president of the Kelsey Motor Car Company, Philadelphia, who are agents for the Mora in that territory. Young David is the possessor of a number of trophies won on the Point Breeze track, and since going with the Mora people has developed into one of the company's best testers.

BRUSH TO MANAGE PACKARD N. Y. BRANCH.

W. A. Brush, formerly assistant to S. D. Waldon, general sales-manager of the Packard Motor Car Company, Detroit, Mich., has just succeeded W. H. Hurlbut, as manager of the company's New York branch, due to the latter's recent resignation to go with the Garford Company, as detailed elsewhere in this issue. Mr. Brush is one of the old-timers of the selling end of the automobile trade, and was formerly associated with W. A. Metzger in the sales department of the Cadillac Company in Detroit.



A FRANKLIN IN ONE OF ITS DUAL ROLES

Carl Hohoff, manager of the Alaska Fur Company, Grand Rapids, Mich., gets all there is to be had in the way of service out of his Franklin car, which he utilizes for business purposes in the delivery of furs and for pleasure by substituting a detachable tonneau in place of the delivery box shown in the photograph.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY.

Allen Pirie, of Carson, Pirie, Scott & Co., Chicago, has bought the famous Tincher 80-horsepower racer and it is now converted into a high-powered roadster for Mr. Pirie's use.

The Warner Gear Company, Muncie, Ind., is adding a two-story factory, 155 by 144 feet, immediately adjoining their present plant, and expect it to be in use within sixty days.

Cullman Wheel Company, 1027 Dunning street, Chicago, have added two stories to their main factory building and are equipping it with additional machinery to take care of their increased business.

Out of the 48 cars that finished the strenuous two weeks' run of the recent A. A. A. tour, 36 cars, or 75 per cent. of the entire number that completed the distance, were equipped with the Warner Auto-Meter, according to the makers of the latter.

The Pierce Engine Company, Racine, Wis., will have for 1908 a line of three cars: a 40-horsepower four-cylinder, \$3,000; a 30-horsepower four-cylinder, \$2,000, and a 24-horsepower, two-cylinder, \$1,350, details of which will be announced shortly.

Pancho Hernandez, a Puerto Rican who is the proud owner of a Winton Type X-I-V, has been showing the natives what it can do, and recently established a new record over the military road from Ponce to San Juan, covering the distance in four hours.

E. R. Thomas is again to head the E. R. Thomas Motor Company, of Buffalo, as president, having just been re-elected to that office at the annual meeting. The other officers for the ensuing year are: Edwin L. Thomas, vice-president; J. M. Edsall, treasurer, and Ellicott Evans, secretary.

The Raino Company, manufacturers of automobile waterproof clothing at 735 South Halsted street, Chicago, have just booked an order for 5,000 military capes to be supplied to the Cuban Rural Guard, the order being secured in the face of considerable competition, as bids were publicly advertised for on this equipment.

The Bellefield Motor Company, of Pittsburgh, has been incorporated with a capital of \$100,000, making it one of the largest concerns of its kind in the Steel City. The incorporators are: Charles M. Johnston, J. H. McClaren, John H. Langdon, Frank P. Blackmore and George D. Kelley. It is the intention of the company to operate in the East End.

Buffalo's aldermanic committee on fire protection having reported in favor of purchasing an automobile for the use of Fire Chief McConnell, bids were advertised for a high-powered car. The E. R. Thomas Motor Company offered a Thomas Flyer at \$4,000 and the George N. Pierce Company tendered a Pierce Great Arrow at \$3,000, their offer being accepted.

At least one of the towns along the Hudson has come to the conclusion that 10 miles an hour is too low a speed limit for automobiles and has decided that an increase of 50 per cent. would still be within reasonable bounds. This is Irvington-on-the-Hudson, the village authorities of which have recently decided to raise the permissible speed limit to 15 miles an hour.

In the recent A. A. A. tour figures compiled for the Diamond Tire Company showed that the 72 cars in the run used a total of

95 tires in addition to their original equipment. Of this number, 33 cars equipped with Diamond tires are said to have used but 14 tires all told in addition to those on the wheels at the beginning of the tour, and in no case, it is said, were Diamond tires responsible for a penalization.

As a result of the action of Director of Public Works Shepard in putting out of business a 'bus line that had no franchise and the fares of which were said to be extortionate, public sentiment is growing in favor of the city of Pittsburgh, undertaking the work of running an automobile 'bus line through Highland and Schenley Parks for the benefit of the thousands of people who visit them.

"It's surprising the good influence it has over employees for them to hear that their factory's product is making good," says Manager Schaaaf, of the Pope Motor Car Company. "I can feel the results from the excellent reports we are receiving about our cars, even among our humblest laborers. Every one of the 1,800 men is imbued with the spirit of the Pope-Toledo enthusiasts and is going round with a chip on his shoulder."

Probably the largest manufacturer of tufting machines for making cushions, backs and upholstered parts is now the Novelty Tufting Machine Company, of Chicago, which has its machines in such well-known automobile factories as Pierce, Peerless, Pope, White, Thomas, Woods, De Luxe, Dayton, Oldsmobile, Buick, Whiting, Cadillac, Northern, Dolson, Dorris, Jackson, Reo and St. Louis. In addition eleven firms trimming cars for the trade are users of Novelty machines.

Roomy quarters having been provided for the New York Trade Automobile Association in the new Motor Mart, Broadway and Sixty-second street, by F. E. Malone. Manager E. V. Stratton says it will be the purpose of the association to place a meeting room at the disposal of any automobile interests desiring these facilities. Desks, chairs, and other necessary equipment will all be provided and doubtless the offer will be appreciated by the automobile fraternity, as the need of such a meeting room in a convenient location has long been felt.

In the counties of northeastern Ohio and the level portions of Pennsylvania north of Pittsburgh a movement is on foot for the establishment of a rural automobile mail service. Fairly good roads and the absence of many steep hills makes an automobile by far the quickest method of transportation. Several of the larger distributing centers have already inaugurated the practice and a few machines have been bought. It is claimed that, in addition to the greater rapidity of the service, the first cost of the machines will be more than offset by the greatly reduced number of carriers needed.

Appearances are certainly against the low, rakish-looking car in the eyes of the law, and that drivers of such turnouts occasionally have to pay for the privilege of looking sporty was well illustrated by an incident which came under the observation of Colonel Pardee recently. "We were running along at about 15 miles an hour," says the Colonel, "when a young fellow passed us in one of those smart-looking racers. He was not going particularly fast, and we kept right behind him in a Max-

well runabout, when suddenly a 'cop' stepped out and held him up. We were running at exactly the same rate of speed and no attention was paid to us."

The Auto Top and Trimming Company is the name of a newly organized concern at Pontiac, Mich., the officers of which are: President, E. M. Murphy; vice-president, R. F. Monroe; treasurer, O. J. Beaudette; secretary, M. L. Pulcher; manager, Frank Jacques. A building adjoining the P. O. & N. R. R., formerly used by the Pontiac Buggy Company, has been secured and is now being put in shape for use. It is the intention of this company to furnish bodies trimmed complete, as well as doing trimming and painting auto tops. Other accessories along the carriage line of automobiles will be manufactured also.

As the outcome of the spirited campaign that the New York Automobile Trade Association, working in conjunction with the American Motor Car Manufacturers' Association, has been waging against the steamship companies which have not permitted gasoline trucks to enter on their piers, many of the latter have now been opened to the modern commercial vehicle, and some of the other companies have the matter under consideration. At present the following companies have acceded to the demands of the association: The Enterprise S. S. Company, Brunswick S. S. Company, Maine S. S. Company, New York & Porto Rico S. S. Company, United Fruit Company, and the Ward line.

No. 31 in the Glidden tour, the Walter car entered by E. S. Lea, went through the severe touring competition without any preliminary tuning up, being shipped direct from the factory to the starting point, its preliminary mileage was less than 30. During the run the car shot over a 20-foot embankment without sustaining any injury, the motor still being running when the machine came to a stop. Although two hours were lost in getting on to the road again, control was reached 45 minutes ahead of time. One of the reasons claimed by the makers for the car's wonderful resistance is the use of chrome nickel steel springs, which were so efficient that no shock absorbers were needed.

That the number 13 is not always an ill-omen was amply demonstrated by the Thomas press car in the recent A. A. A. tour that carried this much-maligned numeral and alleged bringer of misfortunes. Probably few cars had less trouble to account for in the whole trip than did the Thomas bearer of the "hoodoo," as three nail punctures were the sum total of its trials. In the meantime, it helped cars out of ditches, lent a helping hand in case of tire trouble, and on one occasion picked up two passengers that had been left at the roadside by another car and carried them 80 miles into Chicago, making a load of seven and baggage. In spite of it all, every day's run was finished on schedule time.

Times have changed somewhat when instead of Americans paying premiums for foreign cars, things are reversed and foreigners have to pay more for an American car than it can be bought for at home. This is the case with the Ford cars, of which numbers are now being sent abroad. In Great Britain the runabout lists at £165 (about \$800), while in Germany and Italy the demand is said to exceed the supply at \$840. In Paris the runabout is said to command

\$1,000, and the Ford Six, \$3,700, as compared with its price of \$2,800 here. The extent of the Ford export business may be gauged when it is stated that regular weekly shipments are constantly being made to England, Germany, France, Italy, Belgium, Austria and Sweden.

Just how much foundation there is for many of the alleged automobile "accidents" was well illustrated by one that took place in Buffalo recently. A girl on her way to work was knocked down by a bicycle as she was alighting from a street car, and was rendered unconscious by being thrown to the pavement. The response to the ambulance not being very prompt, the policeman hailed Charles Miller, one of the E. R. Thomas Company's testers, who was driving by, and the Thomas Flyer, with its oddly assorted trio, reached the General Hospital just as the ambulance was leaving. Within the next twenty minutes one of the daily papers had received telephone calls from no less than fourteen people telling how a girl had been injured by an automobile, the reports giving the car's speed as anywhere from 30 to 80 miles an hour, while the girl was thrown from 30 to 80 feet. Four people said that they had seen the accident, and one was quite certain the girl would not live the day out. Several people also called up the Thomas factory and read the telephone girl a lecture on the criminal carelessness of the automobile driver in general. In the meantime the girl was on her way home with nothing worse than a bad headache—caused by a bicycle.

RECENT TRADE CHANGES.

The De Luxe Motor Sales Company, of which S. B. McCoy is manager, has opened up at 1536 Michigan avenue, Chicago, and will sell De Luxe cars.

The McDuffee Automobile Company, Chicago, have given up the De Luxe and Kisselkar agencies and will hereafter confine their efforts to the sale of the Stoddard-Dayton cars.

The Brush McLaren Motor Company, 47 William street, Newark, N. J., have just been appointed general agents for the Brush runabout in the State of New Jersey. The company is managed by Thayer McLaren.

The Appeal Manufacturing & Jobbing Company, Los Angeles, Cal., who represent Morgan & Wright in Southern California, have removed from 940 South Main street to 631 South Los Angeles street. Morgan & Wright's Atlanta, Ga., branch has been

removed from 49 South Forsyth street to 92 North Prior street, the establishment at the new location being one of the finest rubber goods stores in the entire South.

PERSONAL TRADE MENTION.

A. E. Vinton, formerly Cleveland manager of the G & J Tire Company, is now connected with the sales department at the factory in Indianapolis.

R. B. Wrigley, formerly associated with the press of Minneapolis and St. Paul, has been appointed advertising manager of the Excelsior Supply Company, Chicago.

Charles B. Shanks, general sales manager of the Winton Motor Carriage Company, Cleveland, O., has his line out for salmon trout in Lady Evelyn Lake, northern Canada.

The Winton Motor Carriage Company is sending Clarence B. Lincoln from the home office to its Seattle, Wash., branch house, where he will act as assistant to Manager Miller.

L. M. Eagye, formerly manager of the Beaver Manufacturing Company, of Milwaukee, Wis., has been elected secretary and general manager of the Franco-American Auto & Supply Company, Chicago.

B. N. Crockett has joined the sales forces of the Northern agency in the Motor Mart, Boston. Mr. Crockett has had long experience as a salesman and has a large automobiling acquaintance throughout New England.

C. C. Fairman has resigned his position as assistant general manager of the York Motor Car Company, Inc., York, Pa., and while it is his intention to continue in the automobile trade, no announcement of his future plans are forthcoming at the moment.

Frank E. Sparks, formerly manager of the auto department of the Excelsior Supply Company, Chicago, has been appointed Chicago Manager for the National Sales Corporation and Weed Chain Tire Grip Company and has opened an office at 1436 Michigan avenue, Chicago.

F. W. Ansley, eastern traveling representative of the H. H. Franklin Manufacturing Company, Syracuse, N. Y., was married July 10 to Miss Mabel McKellar, of London, Ont. Mr. and Mrs. Ansley expect to make their home in one of the larger cities in Mr. Ansley's territory.

A. E. Morrison, who was injured in the automobile races at Lowell, Mass., on the Fourth of July, is still confined to the hos-

pital at that place, as his broken leg has not become sufficiently strong to enable him to be removed to his home in Boston. It is expected this will be done in a short time.

Major J. S. Keenan, who has been superintendent of the Massachusetts Automobile Club ever since the organization of the latter, has recently severed his connection with the club to assume a similar position with the new White garage on Newberry street, Boston, which it is expected will be ready by next September.

Owing to poor health, John Kane Mills, has retired from the presidency of the Dragon Automobile Company, Philadelphia, and has been succeeded by A. L. Kull, H. B. Rawle now being vice-president and manager. Nicholas Roosevelt has resigned as treasurer and T. F. Randolph has been succeeded as designer and superintendent of the works by Charles Kenen.

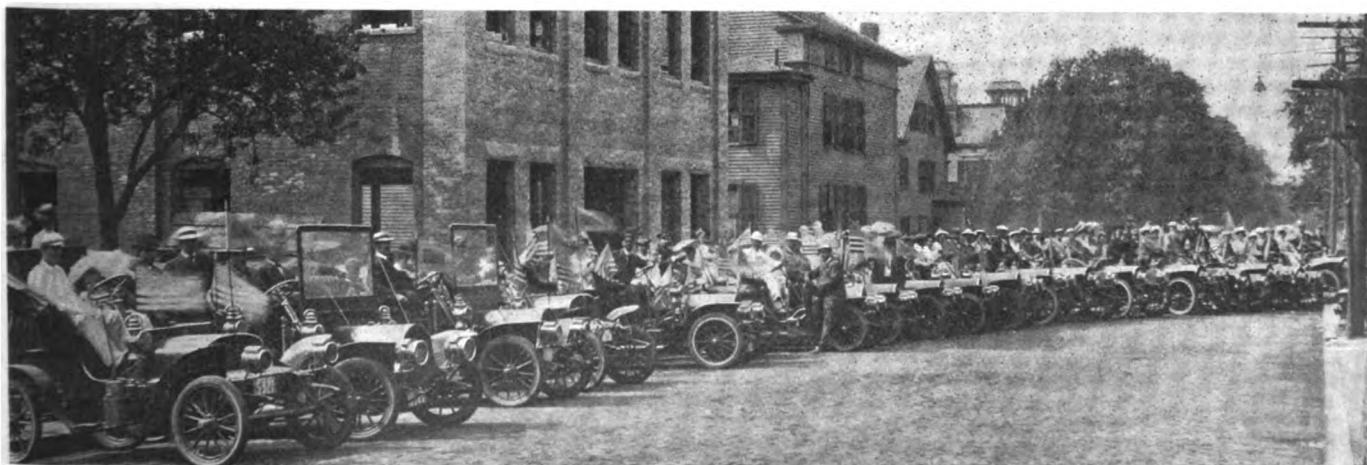
Frank B. Illsley, Chicago, who has been handling the Stevens-Duryea cars for several years past, has given up the agency and will retire from the retail business for the present, and possibly permanently, as he has some idea of going into manufacturing cars. Mr. Illsley will go to Europe in a few weeks and expects to spend about three months abroad investigating foreign methods of manufacturing. It is rumored in Chicago that the Stevens-Duryea people will open a Western branch in Chicago shortly with Louis Geyler as manager.

NEW TRADE PUBLICATIONS.

A preliminary catalogue from Charles Burgess, Jr., of Wenona, Ill., describes a new type of suspension spring, which, according to its inventor, will be placed on the market in a very short time.

The why and wherefore of the Prest-o-Lite tank is clearly put forth in a brochure from the Prest-o-Lite Company, Indianapolis, Ind., illustrated with numerous cuts showing the tanks in use for illuminating purposes on automobiles, boats, and in private residences. The use of the company's compressed air tanks for tire inflation is also explained.

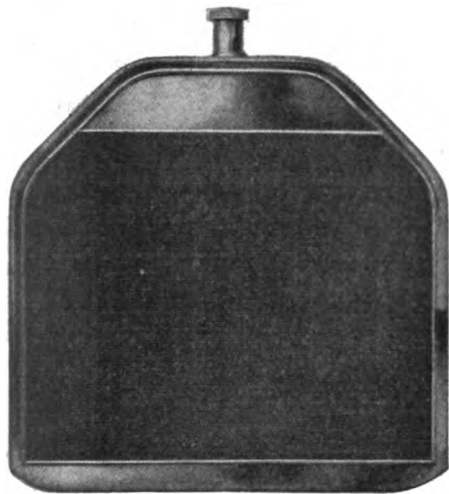
Information on the lubrication of an automobile is contained in an illustrated booklet published by the Vacuum Oil Company, of Rochester, N. Y., under the title "The Preservation of a Smooth Running Machine." The feature of the book is a series of views of scenes on the Vanderbilt and Grand Prix courses, reproduced from leading automobile journals. Two pages of tables giving winners of all Vanderbilt races and all straight-away records made at Ormond are included.



A GROUP OF FRANKLINS THAT PARTICIPATED IN THE RECENT FALL RIVER, MASS., AUTO PARADE.

INFORMATION FOR AUTO USERS.

McCord Coolers.—A system of water-cooling that is essentially different so far as the construction of the radiator itself is concerned, is to be found in the McCord cooler, manufactured by McCord & Co., Old Colony building, Chicago. It consists of vertical water tubes running between an upper and lower water tank and through continuous horizontal radiating plates. The principle is practically that of the fin-tube



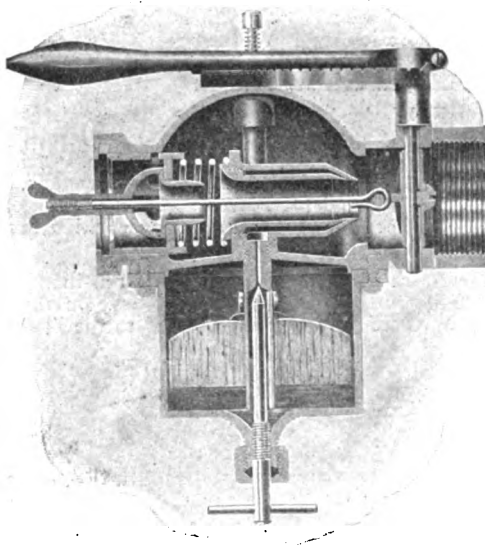
FRONT VIEW MCCORD COOLER.

cooler, with the advantage in this case that the fins of each tube are connected to and are continuous with those of the tubes next to it. This results in the entire surface of the metal being called upon to do an equal amount of the cooling irrespective of the amount of water flowing through the tubes, as anyone tube receiving more hot water than another radiates its excess heat to the fins of its adjoining tubes, and even though a tube became stopped up completely, the efficiency of the radiator as a whole would be but slightly impaired as its radiating surface would still be in use. The tubes and plates are sweated together, supporting one another in such a manner as to give the plate cooler a great advantage on the score of strength. This also permits the use of thinner metal, making the cooler as a whole far lighter than the ordinary form of construction. The tubes are 1-4 inch in diameter, and the plates are spaced eight to the inch, the standard plate being 23-4 inches wide, this being the depth of the cooler from front to back. There are five tubes in this distance and the radiating surface amounts to 48 square inches for every square inch of front area. The ornamental brass frames of the McCord coolers are independent and readily removable, thus greatly facilitating repairs without marring the appearance of the radiator as a whole.

Two New Sager Specialties.—In addition to the Sager Equalizing springs and antiskid chains that have been specialized by the J. H. Sager Company, Rochester, N. Y., for some time past, this firm will soon bring out two additional auto accessories of a special nature, the details of which are not forthcoming at the moment, but which are said to give great promise of success. The Sager Equalizing springs have been meeting with unusual favor during the past season, and some idea of the quality of the material of which they are made may be had from the fact that out of 8,000 sets of springs, but 20 showed flaws of

nature whatever. In fact, the makers are so confident of their product that they are giving an unusually liberal guarantee, *i. e.*, agreeing to replace any broken part within one year from date of sale. Nearly all the attachments for the springs are drop forgings, and in some special cases the brackets are hand forged. The Sager springs and their making are the outgrowth of 12 years' experience in bicycle saddle making, of which literally millions were turned out in that time.

The Old Nick Carbureter.—As the result of fifteen years' investigation and experience of the problem of carburation, the experience part representing nine years of actual use, the Pioneer Brass Works, 424 So. Pennsylvania avenue, Indianapolis, Ind., may well be said to be in a position to know considerable of the ins and outs of this most vexatious of all problems connected with the internal combustion motor. J. B. Knickerbocker is the inventor of the Old Nick carbureter and he has embodied in its latest and most recent form, which is illustrated herewith, many of the essential features which have seen service for nine years—something that can be said of very few similar devices connected with the automobiles that are on the market at the present day. The sectional view showing the internal arrangements of the carbureter shows its construction so plainly that a detailed description of it is scarcely necessary, the short paragraph to which the makers limit themselves in describing it probably being more than sufficient for all purposes. They say: "This carbureter will work in all positions except upside down, on all kinds of engines; it has a float valve that regulates, and auxiliary valves that auxilerates at the will of the operator, it has a

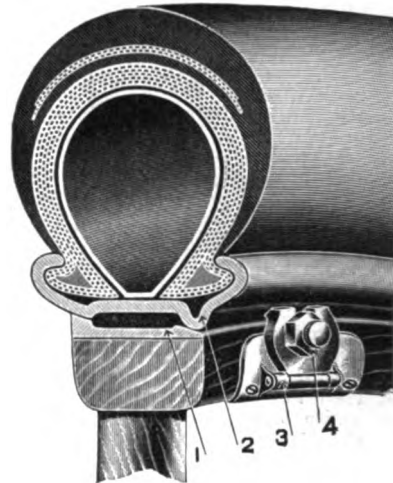


SECTIONAL VIEW "OLD NICK" CARBURETER.

circular spray nozzle that vaporizes. A double volume of air, one part coming through the center of the circle and the other over the outside meets at the point of the spray nozzle and there vaporizes, making a perfect dry gas." It will be noticed that the device is distinguished both by its extreme simplicity and compactness, the mixing chamber being made dome-shaped.

An Eliminator of Tire Annoyances.—After struggling with a punctured or blown-

out tire in heavy rain, under a hot sun or by the side of a mosquito swamp—why do tire troubles generally occur at such places?—the automobilist willingly admits that some more convenient method of changing tires than the old-fashioned one followed for years might be found. Numerous inventions having been tried, it is now pretty evident that the most satisfactory method is to carry an extra rim or two on which are mounted fully inflated tires, which will



CROSS SECTION CRESCENT RIM.

speedily replace the damaged one with the minimum expenditure of labor and the loss of only a few minutes' time. A rim of this type is produced by the Crescent Parts Company, of New York City, and handled by leading dealers under the title of the Crescent—formerly the same rim was known as the Harburg. All the essential qualifications of a dismountable rim, security and absence of binding after long use, are claimed for the Crescent, while the assertion that a tire can be changed in three minutes under this system is substantiated by all who have seen the operation.

Convertible Two and Four-Cycle Engine.—Points of superiority claimed for the convertible two or four-cycle gasoline motor as constructed by the North Chicago Machine Company are increased accessibility, flexibility and efficiency. The horsepower can be varied without change of motor speed. This is done by taking advantage of the fact that the chief thing necessary to make the present-day automobile motor convertible from one cycle to the other is a means of admitting and exhausting the charge. The change from the two to the four-cycle motor in this case is made through a double set of cams on the camshaft, all valves being mechanically operated. To the camshaft is connected two sets of gears, one being the two to one type commonly used on the four-cycle motor and the other a one to one gear to drive the camshaft the same number of revolutions as the crankshaft and operate the cams to open the valves in producing the two-cycle engine. In making the change from one type to the other the cam is shifted about one-half of an inch longitudinally, which disconnects the camshaft from the two to one gears and engages it with a set of one to one gears. Camshaft and crankshaft then revolve at the same speed and a new set of cams is engaged to operate the intake and exhaust valves. At the same time the spark timing is changed to conform with changed cycle of motor.

THE AUTOMOBILE



STEARNS SIX-CYLINDER FREE-FOR-ALL WINNER, DRIVEN BY FRANK LELAND, ARRIVING AT THE TOP OF FORT GEORGE HILL.

NEW YORK CITY can supply a good hill for an auto climb, and, furthermore, the authorities of the metropolis are progressive enough to grant permission for its use. This was made apparent on Saturday last when "The Metropolitan Automobile Association" held a very successful event.

It doesn't matter in the least who are the members of this association, nor that the climb was more or less an idea of the Greater New York representatives of the Stearns car; the event was exceptionally successful and interesting and a good metropolitan advertisement for automobiles.

Invariably the buyers of automobiles in New York City, who are aware of the existence of Fort George hill, ask for a demonstration which includes this difficult incline, its three-eighths of a mile being a tortuous 10 per cent. grade. In addition to testing the capacity of the cars, the hill is also one to try the skill of the drivers, for in its length it not only has two turns to the right, with two more to the left, but where the subway crosses it at Dyckman street on an elevated structure it is badly obstructed by the iron pillars. The start of the climb was placed at Dyckman street, and the cars were given some distance to get under way. While the drivers could take their choice of going either side of the first pillar, they had to leave the second one on the right at a point where the jutting structure of the elevated was not out of the subway far enough to allow much headroom and also where the distance between the pillar and sidewalk was hardly ten feet.

Twenty-seven cars participated in the climb and the fact that of this number five were foreign machines may be taken as an indication that importers are awakening to the value of local contests. The classification of the competing cars was on the basis used in England, and recently adopted here; that is, of rating the cars according to their piston area, a car's standing being calculated by taking the square of the bore and multiplying it by the number of cylinders, the

resulting product being taken as an arbitrary rating. For instance, the rating read: "Class A, 100 and under 125," meaning square inches of total piston area.

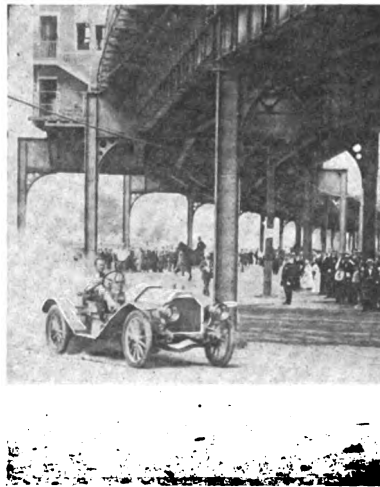
A 35-horsepower Simplex, driven by Watson and Al. Poole, Joe Tracy's Vanderbilt Cup race helper, figured unofficially in an accident, which, however, had no serious results, though the damage was aggravated by a careless bystander in throwing a lighted match into the escaping gasoline. It brought home a realization of the danger of the narrow passage under the structure and made the other drivers more careful.

The record-breaking climb of the day was made by Frank Leland and a six-cylinder Stearns and without the necessity of touching the gear lever. The same thing was true of most of the cars, nearly all being "flights on the high." On the whole, the meet showed conclusively that a hill-climb is a drawing card in the metropolitan district, as at the start and finish, and along the entire hill, crowds of auto enthusiasts were gathered. The competition was divided into four classes, Stearns cars taking the honors in two, a Stevens-Duryea in the third, and

a Pope-Hartford in the fourth. In view of the extremely bad spot through which the cars had to pass at speed and on a turn, the times made were remarkably good; doubtless they would have been improved a little had not the accident to Watson and the Simplex caused a change in the original plan of giving the cars a flying start. This was altered so as to send them away with merely a rolling start in order that the driver might have the car well in hand when passing between the pillars.

Owing to the defection of the electrical timing apparatus at the outset, the start had to be postponed two hours and did not get under way until 3 P.M., instead of at 1 o'clock. But then things went without a hitch and things were smoothly managed.

The meet was formally opened when the word was given by Starter Wagner to F. J. Leland, of Cleveland, in a 1908 model, six-



START OF THE STEARNS "SIX."



VIEW FROM TOP OF FORT GEORGE HILL IS FAR-REACHING AND IMPRESSIVE—SIMPLEX NEARING THE FINISH LINE.

cylinder Stearns roadster. He went over the line with but a short preliminary dash from a standstill, and his time of 0:28 1-5 fully met the expectations of those who had had an opportunity to size up the car. It was simply a question of follow the road, once the danger spot had been passed. The second best time of the day was made by C. Schilp, driving a four-cylinder Stearns, who did the distance in 0:32 2-5, and to prove that there had been no error in the timing of the record-breaker it was sent over the course again. Strange to relate, it did the distance in exactly the same time to a fraction. A. J. Picard, in another Stearns, took third honors in 0:35 2-5, the necessity of dropping into a lower gear at one of the turns where the grade is said to be 13 per cent. probably costing him second honors.

In Class C, J. P. Robinson's 35-horsepower Stevens-Duryea swept the field by a good margin, and its time of 0:36 1-5 was better by several seconds than some of the performers of double its power in the preceding class. This was also true of R. T. Peckham's 35-horsepower Pennsylvania, though it required 41 1-5 seconds.

The showing of Edwin Southworth's 30-horsepower Pope-Hartford in Class D was also considerably superior to the performances of several of the cars of double its power, as it reached the top in 0:39 3-5.

The closing event of the program was for the Wyckoff, Church & Partridge Cup, limited to Stearns owners. It was taken by W. A. Tilt in 44 4-5 seconds, with R. G. Morris second in 45 4-5.

The officials were: Referee, A. R. Pardington; timers, Charles J. Dieges, H. P. Burchell, and H. T. Clinton; starter, F. J. Wagner; clerk of the course, T. J. Moore; judge, Carlton R. Mabley. The summaries:

CLASS A—RATING: 125 SQUARE INCHES OR OVER (PISTON AREA).

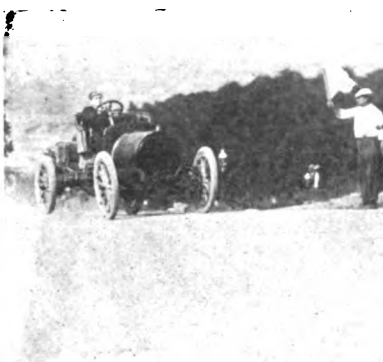
- 1. Stearns, 90-h.p.; Frank Leland.....28 1-5
- 2. De Dietrich, 60-h.p.; Wm. Manna.....40 1-5
- 3. Simplex, 50-h.p.; Al. Poole.....43 4-5
- 4. Bianchi, 70-h.p.; N. M. Powell.....44 4-5

CLASS B—RATING: 100 TO 125 SQ. IN.

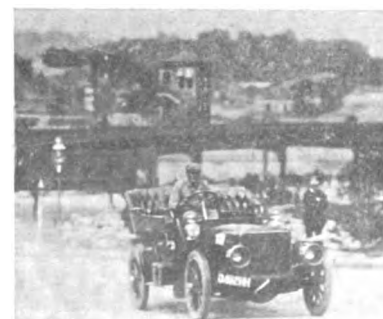
- 1. Stearns, 60-h.p.; C. P. E. Schlupp.....32 2-5
- 2. Stearns, 60-h.p.; A. J. Picard.....35 2-5
- 3. Stearns, 60-h.p.; W. I. Fickling.....38 1-5
- 4. Stearns, 60-h.p.; Arthur Warren.....39
- 5. Packard, 30-h.p.; W. T. Armstrong...41 3-5



THE POPE-HARTFORD WINNER.



PILAIN, A FOREIGN PARTICIPANT.



THE STEVENS-DURYEA WINNER.

- 6. Bianchi, 50-h.p.; Felix Prosser.....44 1-5
- 7. Crawford, 50-h.p.; R. S. Crawford...44 4-5
- 8. Stearns, 60-h.p.; W. A. Tilt.....45 1-5
- 9. Isotta-Fras. 35-h.p.; C. H. Hamilton 46 4-5
- 10. Matheson, 60-h.p.; C. Slinger, Jr....47 2-5
- 11. De Dietrich, 40-h.p.; Arthur Roskey. 49 4-5

CLASS C—RATING: 80 TO 100 SQ. IN.

- 1. Stevens-Dur., 35-h.p.; P. J. Robinson 36 1-5
- 2. Pennsylvania, 35-h.p.; R. F. Peckham.41 1-5
- 3. Bayard-Clem., 30-h.p.; H. A. Vantine.41 2-5
- 4. Franklin, 30-h.p.; J. H. Manning.....44 2-5
- 5. Pope-Toledo, 50-h.p.; Joe Judge.....45
- 6. Stod.-Dayton, 30-h.p.; Ray Howard...48
- 7. Pope-Toledo, 50-h.p.; Joe Judge.....49 1-5

CLASS D—RATING: 60 TO 80 SQ. IN.

- 1. Pope-Hartford, 30-h.p.; J. P. Grady...39 2-5
- 2. Corbin, 24-h.p.; Jack Dower.....46 3-5
- 3. Pope-Hartford, 24-h.p.; Phil Hines...48 4-5

SPECIAL FOR STEARNS CARS—WYCKOFF, CHURCH & PARTRIDGE TROPHY.

- 1. Stearns, 60-h.p.; W. A. Tilt.....44 4-5
- 2. Stearns, 60-h.p.; R. S. Morris.....45 4-5
- 3. Stearns, 60-h.p.; W. I. Fickling.....48 4-5

CLASS FOR ELECTRICS.

- 1. Babcock; H. E. Wagner.....1:53 4-5

MAINE ROADS NOT INJURED.

Judge James B. Dill, a prominent member of the A. C. A. and also of the A. A. A. Touring Board, at present enjoying his annual summer camp in Maine, writes that there is no truth in the prevalent reports that the recent cloudburst in Franklin and Somerset counties took away some bridges and interfered with the automobile route to Rangeley Lakes and from Portland, Me., to Quebec. The damage was entirely local, and the Blue Book routes are in better order than last year.

REMAINS AN AUTOLESS EDEN.

BAR HARBOR, ME., Aug. 5.—Pulled by a horse or pushed by its owner, no automobile may travel over the forbidden roads of Eden, according to a decision of Judge B. E. Clark. In entering the village a few days ago with his 40-horsepower automobile, Fordham C. Mahony, of New York City, caused his car to be towed by a horse over the first section and on the second forbidden stretch, which was down hill, shut off power and had the machine pushed. In the legal proceedings which followed, the automobilist was fined \$1 and costs, the court finding that the spirit of the law, directed against the passage of automobiles over certain restricted territory, had been violated.

WITH the arrival of 36 "pt-pt-pting" two-wheelers at Hills Grove track at Providence, R. I., on Wednesday of last week there came to an end the sixth national endurance contest held under the auspices of the Federation of American Motorcyclists, and, be it added, one of the most strenuous and consistent tests of the motorcycle and its rider that that progressive organization has ever fostered.

Of the sixty riders who sent their entrance fees to Chairman H. J.

Wehman, many were from distant parts of the Union: Texas, Wisconsin, and the Middle West providing entries, 13 States in all being represented. Of this number 55 faced the starter at 4:30 A. M., Tuesday morning, July 29, and were sent away from Eighty-eighth street and Broadway, New York, in squads of four at one-minute intervals. The competitors were divided into two classes—the first, Class A, for single-cylinder machines, and Class B, for multi-cylinder machines, and it is interesting to note that the winner of the Diamond Medal, Bert T. Barrows, of Springfield, Mass. (21-4-h.p. Indian) was in the ranks of the former aggregation.

The rules governing the contest were very similar to those that characterize automobile runs of the same nature, each competitor starting with 1,000 points initial credit, penalizations being one point for each minute late at controls and two points for each minute early, with an allowance of five minutes for variations in timing. To insure the absence of the long roll of tied scores that has served to rob similar events of interest in the past, Jacob's Ladder in the Berkshires was made the venue of a hill climb, failure to ascend without resorting to the pedals incurring a loss of 10 points, and a dismount 25 points, in Class A, and 25 and 50 points, respectively, in Class B. Moreover, immediately upon arriving at the track in Providence the competitors were given a pint of gasoline and their machines started on an economy run without any adjustments or repairs. This effectually served to make tied scores a practical impossibility.



CLOSING CHAPTER OF THE MEET AT HILLS GROVE TRACK.

The route was from New York to Poughkeepsie, Lakeville, Conn., Lenox, Lee, and Springfield, Mass., the last-named constituting the end of the day's run, a distance of 200.3 miles, the first day controls being at Poughkeepsie, Lenox, Lee, and Springfield. The second day's run was to Providence via Worcester, 105.1 miles, with a single intermediate control at the latter. One of the striking features of the contest was the performance of the German machines and

there is every probability that the American maker, who has thus far not even recognized the existence of a change-speed gear, will come to regard this piece of equipment much more favorably.

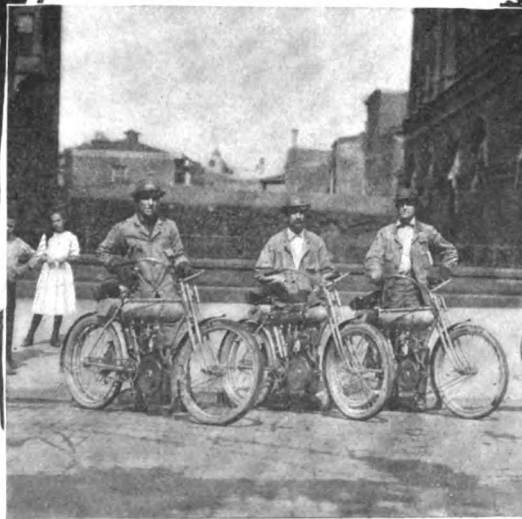
Trouble began right in sight of home, so to speak, and some of the competitors who had come farthest to participate in the event went the shortest distance. Deupree, a Tennessean, succeeded in covering only three miles, when, after much fussing, he discovered a dead battery that had been new but the day before. He retired, but rode to Providence as a tourist later. White, a Texan whose appearance belied his name, went only 15 miles, his trouble also being due to faulty ignition, but in his case a magneto was the moving cause and inability to diagnose its ailment put him out of the running. An odd accident retired McLaughlin when he was within a few miles of Poughkeepsie, the stand of his machine becoming mixed up with the rear wheel, wrecking the latter.

Though the first stretch was marked by some bad falls, particularly on a protruding piece of car track at Fishkill, it was not until Poughkeepsie had been left behind that the endurance part of the test became evident. There was a heavy fall of snow to mark the second stretch, so heavy that G. A. Snow, of Hartford, Conn., the particular brand of snow that fell, was laid up for two days with an injured back. The real work of the day was concentrated between the Lenox and Springfield controls. Far too much attention of the "nothing to watch but the road" variety was required to permit any appreciation of the picturesqueness

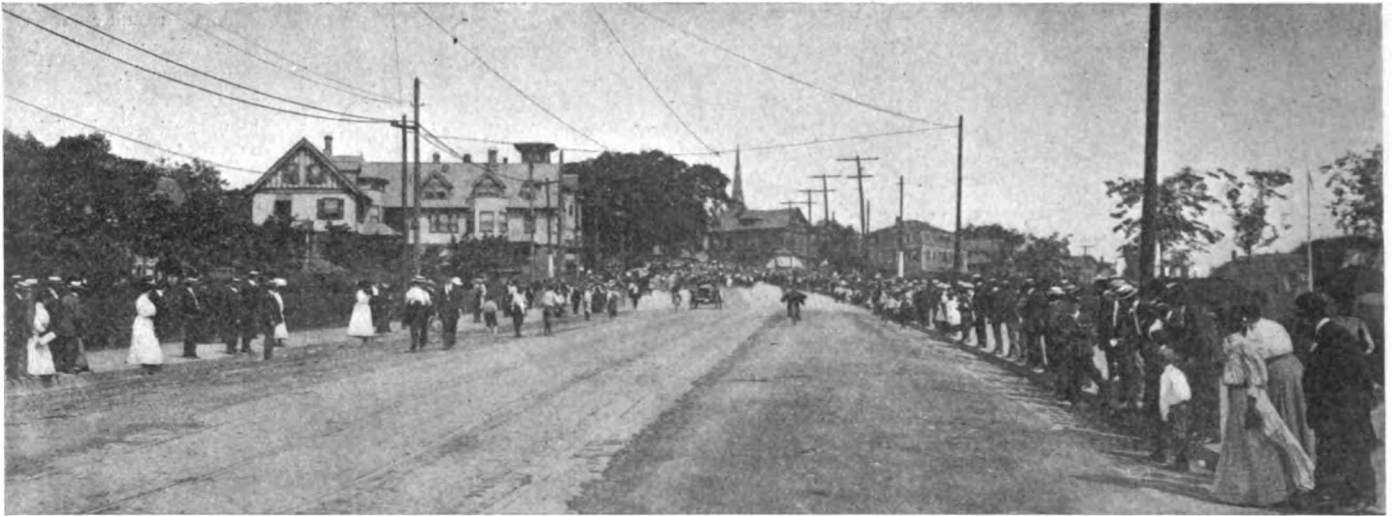


BARROWS, CHAMPION OF THE ENDURANCE RUN.

THE YALE-CALIFORNIA TRIO FROM TOLEDO, O.



SEIDELL, VICTOR OF THE COLONIAL HANDICAP.



STRAIGHTAWAY EVENT CONTESTED ON THE BLACKSTONE BOULEVARD, PROVIDENCE, ON THIRD DAY OF MEET.

of the scenery afforded by the Berkshires. Thornley, on a 2 1-4-h.p. Indian, had a bad fall which put him out with an injured leg, and W. H. Wray, 5-h.p. Simplex, was delayed by a broken cotter pin in the exhaust valve stem; W. F. Mann, 4 1-2-h.p. four-cylinder F. N., had to hunt an elusive spark, while Koch, a New Jersey Teuton, on a 3-h.p. Merkel, gravely reported: "I don't find my spark any place," with an appropriate accent. G. H. Ruck, also on an Indian, punctured his oil tank.

The site of the climb was about 300 yards long, with a grade varying from 15 to 18 per cent., and a transverse gully flanked by boulders proved a roof on which quite a few hopes were wrecked. Times were not taken, the only requirement being a successful climb. Barrows and Holden, both on 2 1/4-h.p. Indians, were the first up and they made the climb in beautiful style. Then Chapple gave a two-speed gear performance on his N. S. U.

Of the 55 starters, 43 reached Springfield that evening and 42 started the next day, but six of them with their 1,000 points still intact. This number was cut to three by the time Providence was reached, Baker and Holden, second and third, respectively, being eliminated in the economy test with losses of 1 and 6 points by Barrows, who covered 24 miles 3,490 feet on his 2 1-4-h.p. Indian. In Class B, Oscar Hedstrom ran 15 miles 925 feet on a 4-h.p. Indian, but he had lost so many points previously that Cook, on a 5-h.p. Curtiss, with a little less than 12 miles to his credit, was the winner with a loss of but two points. For his performance of 20 miles 1,425 feet in the economy test T. K. Hastings 2 1-4-h.p. Indian, won the private owner's medals and an honor medal for his record of 986 points in Class A. Mr. Hastings left for England last Saturday to compete in the six-day contest of the Auto-Cycle Club of Great Britain, which starts from London.

NATIONAL F. A. M. MEET AT PROVIDENCE.

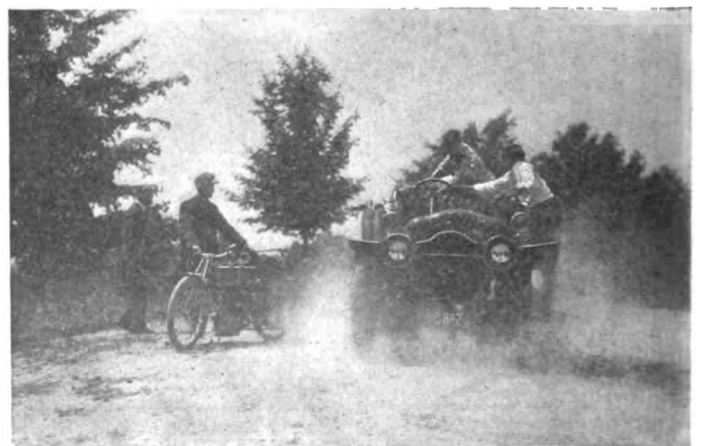
PROVIDENCE, Aug. 3.—The national meet of the Federation of American Motorcyclists opened Thursday with road races on the Blackstone boulevard. W. G. H. Wray's free-for-all straightaway mile in :44 3-5 on a 7-horsepower Simplex-Peugeot was considered the feature of the morning's work, and the twenty-mile Colonial handicap was won by J. S. Seidell, of Springfield, Mass., on a 3-horsepower Reading-Standard. In the afternoon at Hills Grove track the two-mile F. A. M. national championship was won by Walter Goerke, of Brooklyn, on a 4-horsepower Indian. In the two-mile open single-cylinder race, J. S. Pickering, of Providence, was fatally injured, his machine striking a soft spot at the three-quarters pole, skidding and throwing him headlong against the base of one of the posts.

In Friday's races Stanley T. Kellogg on a 4-horsepower Indian was the bright and particular star, winning both the mile and ten-mile F. A. M. national championships at Hills Grove and the hill climb on Francis street. Goerke, of Brooklyn, and Peter Cox, of New Haven, came together in the ten-mile handicap, owing to the dust, both being thrown and sustaining bad scalp wounds, but were otherwise uninjured. The run to Newport, scheduled for Saturday morning, was called off owing to the death of Pickering, who was injured in Thursday's races.

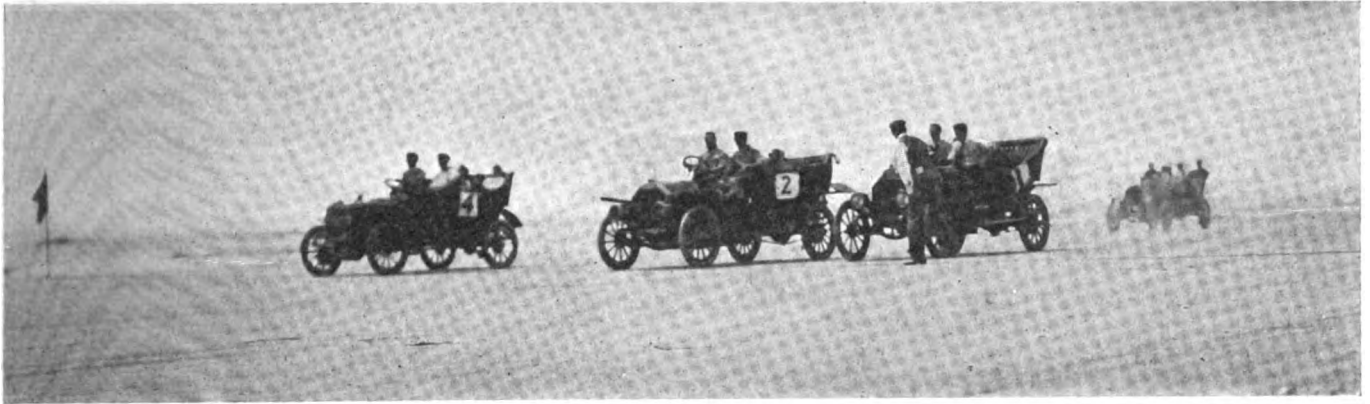
The annual meeting resulted in the following officers elected for the ensuing year: President, R. G. Betts, New York; vice-president, William Suddard, Providence, for Eastern District; E. Y. White, San Antonio, Tex., for Southern District; R. K. Holmes, Los Angeles, Cal., for Pacific Coast District; secretary, Henry J. Wehman, New York; treasurer, G. B. Gibson, Westboro, Mass.



CHECKING IN AT THE FIRST CONTROL, POUGHKEEPSIE.



G & J TIRE SUPPLY CAR THAT ACCOMPANIED THE RUN.



START OF THE \$3,000 TOURING CAR CLASS ON FIRST DAY, T. W. BERGER'S OLDSMOBILE FIGURING AS THE WINNER.

ATLANTIC CITY'S CARNIVAL GIVES GOOD RACING

ATLANTIC CITY, N. J., Aug. 5.—The annual race meet at this bustling seashore city, included this time as a part of a Summer automobile carnival, began this morning on the beach at Ventnor. The competitive part of the carnival is in the hands of the Atlantic City Automobile Club, with Harry Cook as the experienced chairman of the Racing Committee. Such old-timers as Reeves, Wagner, Burke, Dieges, Clinton, Partridge, Moore, Healy, and Smith are included in the official list. Harry S. Houpt is an interested observer of his Vanderbilt Cup race flyer; F. B. Stearns, the Cleveland manufacturer, is keenly involved in the performance of his fast stable; and Messrs. Lawrence and Moulton look after the B. L. M. racer as though it were a favorite child, which of course it is, since they are its builders. Walter C. Martin, the Rolls-Royce importer, is in evidence, as are many other prominent tradesmen.

Following the races of to-day, to-morrow, and Wednesday, will come a floral parade Wednesday afternoon. Thursday is the day set for the opening of the week's display of automobiles on the famous Young's pier. C. Wood Tatham is the president of the carnival committee, which unquestionably will cause the name of Atlantic City to be printed thousands of times as a result of the annual innings of the autos.

It is anticipated that, as is often the case where stock car events are contested, there will be a substantial number of protests for intentional and unintentional evasion of the exact letter of the rules.

RESULTS OF THE FIRST DAY'S RACING.

After the regular program had concluded this morning a special mile challenge event took place which proved to be the feature of the competition. Guy Vaughn, driving A. W. Church's

Stearns, defeated the B. L. M. Vanderbilt Cup car, piloted by Frank Lawrence; a Rolls-Royce, with L. R. Burne at the wheel, while Harry Levey's Mercedes brought up the rear in charge of John Barr. The mile was traveled in 0:57 3-5, and the winner had nearly a hundred yards the best of it at the finish. Mr. Levey was the challenger and responsible for the \$500 purse.

The event for gasoline runabouts, of all types, fully equipped, originally had thirteen entries, but after the referee had looked them over only five remained for the race. After F. W. Leland, an added entry, had won with a 30-horsepower Stearns, with A. W. Church and another Stearns second, and W. McIlvrid third with a Thomas, a protest was lodged against the two Stearns cars. Subsequently the referee ruled against the Stearns driven by Leland and dismissed the protest against the Stearns driven by Church. Leland's car was minus a muffler.

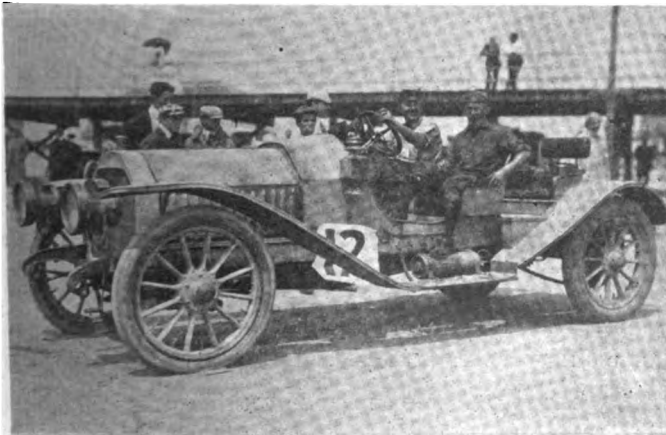
The third victory of the day for the Stearns came in the touring car class, \$5,000 or less, regularly equipped.

In the touring car championship, 60 horsepower or less, regularly equipped, and carrying five passengers, the field was reduced to two by the failure of entrants to comply with the conditions. F. H. Hancock's six-cylinder Duryea defeated a 50-horsepower Matheson.

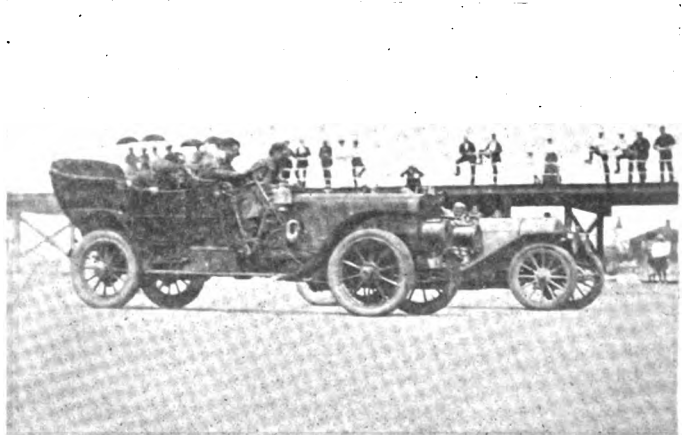
The other winners were an Oldsmobile, which captured two touring car classes, \$3,000 or less, first carrying five passengers and then repeating without passengers; a Maxwell, in the \$1,200 or less runabout division, and a Mercedes in the foreign car class. The summary follows:

TOURING CARS, GASOLINE, \$3,000 OR LESS, REGULARLY EQUIPPED (CARRYING FIVE PASSENGERS).

1. Oldsmobile, 35-h.p.; Phila. Motor Shop; driv., T. W. Berger. 1:15
2. Pope-Hartford, 35-h.p.; Miss Alice S. Lyon; driv., Hoffman
3. Stod.-Dayton, 30-h.p.; Hamilton Auto Co.; driv., Leinbach



CHURCH'S SIX-CYLINDER STEARNS, WINNER OF SPECIAL MATCH.



STEVENS-DURYEA "SIX" DEFEATING MATHESON "50" ON FIRST DAY



MESSEURS. LAWRENCE AND MOULTON OF THE B. L. M. CO.

RUNABOUTS, GASOLINE, \$1,200 OR LESS, REGULARLY EQUIPPED.

1. Maxwell, 14-h.p.; Maxwell-Briscoe Co.; driv., C. Fleming. 1:32 4-5
2. Buick, 22-h.p.; Edwin Wilkie; driver, Thomas Wilkie.....

TOURING CARS, CHAMPIONSHIP, 60-HORSEPOWER OR LESS, REGULARLY EQUIPPED (CARRYING FIVE PASSENGERS).

1. Stev.-Dur., 50-h.p.; Stevens-Duryea Co.; driv., Hancock. 1:06 3-5
2. Matheson, 50-h.p.; Matheson Company; driver, J. P. Gray.

RUNABOUTS, GASOLINE, ALL TYPES.

1. Stearns, 30-h.p.; A. W. Church; driver, F. W. Leland..... 0:52
2. Stearns, 30-h.p.; A. W. Church; driver, A. W. Church.....
3. Thomas, 60-h.p.; E. R. Thomas; driver, W. McIlvrid.....

TOURING CARS, GASOLINE, \$3,000 OR LESS, REGULARLY EQUIPPED.

1. Oldsmobile, 35-h.p.; Phila. Motor Shop; driv., T. W. Berger. 1:14
2. Stod.-Dayton, 30-h.p.; Hamilton Auto Co.; driv., Leinbach
3. Maxwell, 40-h.p.; Maxwell-Briscoe Co., driver, C. Fleming

FOREIGN CARS, 60-H.P. OR LESS, REGULARLY EQUIPPED.

1. Mercedes, 60-h.p.; Harry Levey; driver, John Barr..... 1:15 3-5
2. Rolls-Royce, 50-h.p.; W. C. Martin; driver, L. R. Burns....

TOURING CARS, \$5,000 OR LESS, REGULARLY EQUIPPED.

1. Stearns, 30-h.p.; A. W. Church; driver, Guy Vaughn..... 1:01 1-5
2. Stearns, 30-h.p.; A. W. Church; driver, A. W. Church.....
3. Stearns, 30-h.p.; Phila. Motor Shop; driver, C. W. Schlipf

SPECIAL MILE CHALLENGE RACE.

1. Stearns, 45-h.p.; A. W. Church; driver, Guy Vaughn..... 0:57 3-5
2. B. L. M., 30-h.p.; B.-L.-M. Co.; driver, F. Lawrence.....
3. Rolls-Royce, 50-h.p.; W. C. Martin; driver, L. R. Burns.....
4. Mercedes, 60-h.p.; Harry Levey; driver, John Barr.....

STEAM CARS, OPEN TO ALL.

1. Stanley, 25-h.p.; driver, D. W. Harper..... 0:53 2-5

HOUPPT'S VANDERBILT CUP CAR A WINNER.

ATLANTIC CITY, N. J., Aug. 6.—The feature event of the second day's racing was the free-for-all one-mile championship for



MAXWELL VERSUS BUICK, FIRST DAY, MAXWELL WINNING.

gasoline cars, which united one of last year's Thomas Vanderbilt racers, driven by Montague Roberts; the B. L. M. racer intended for the Vanderbilt, driven by Frank Lawrence; a six-cylinder Stearns, driven by Frank Leland; a 90-horsepower Matheson, handled by J. B. Ryall; Harry Levey's 30-horsepower Mercedes, in charge of John Barr, and a six-cylinder Stevens-Duryea, driven by P. J. Robertson.

In the first heat the Thomas won in :42 3-5, the Stearns being second in :43 1-5, and the B. L. M. third. The Stevens-Duryea beat the Matheson by more than 100 yards in the second heat; time, :50 1-5. A stirring race was witnessed for the final between the Thomas, Stearns, and Stevens-Duryea. Roberts, who got an easy lead, rushed his 120-horsepower Thomas over the finishing line in :40 2-5, the best time of the season and two seconds faster than his previous heat. The Stearns, which also improved on its previous run, was second in :41 4-5, with the Stevens-Duryea fifty yards behind.

An Oldsmobile, driven by T. W. Berger, won a keenly contested handicap for gasoline cars, uniting five starters. A 30-horsepower Stoddard-Dayton was a very close second; the others, a Jackson, Pope-Hartford, and Maxwell, being closely bunched. T. W. Berger also won the Lyons Cup for American touring cars of 30 horsepower or less, in 1:14 1-5, beating a Stoddard-Dayton.

The gentlemen's roadster handicap, uniting eleven starters, found a victor in a 40-horsepower Thomas, driven by W. McIlvrid, defeating a Stoddard-Dayton by about ten yards.

Guy Vaughan won the class handicap for cars with a record of 1:10 or better on a beach track in his 45-horsepower Stearns, defeating D. W. Harper's Stanley steamer by about twenty yards.

All the wires working the electrical timing apparatus having been cut by vandals during the night, some rush work had to be performed to put the apparatus in order again in time for the races. The lowering of Ventnor Beach records was rendered almost impossible by heavy rain, which fell to within a short time of the start of the day's events. This was a reason given for the inability of the Thomas "Cup" car to come closer to Walter Christie's course record of 34 seconds. The summary:

TOURING CARS, GASOLINE, \$1,500 OR LESS.

1. Jackson, 20-h.p.; Jackson Auto Co.; driver, W. J. Hayes. 1:26 3-5
2. Buick, 22-h.p.; Edward Wilkie; driver, Edward Wilkie....

PRICE HANDICAP, GASOLINE, REGULARLY EQUIPPED, CARRYING FIVE PASSENGERS; \$4,000; SCRATCH; HANDICAP OF ONE SECOND FOR EACH \$200 LESS IN PRICE.

1. Oldsmobile (scratch), 35-h.p.; driver, T. W. Berger..... 1:32
2. Stoddard-Dayton (1 sec.), 30-h.p.; driver, E. L. Leinbach..
3. Jackson (2 1-2 sec.), 24-h.p.; driver, C. Smith.....

FREE-FOR-ALL; CHAMPIONSHIP; GASOLINE; FLYING START. (Record Held by Walter Christie; 34 Seconds.)

- First Heat:
1. Thomas, 120-h.p.; H. S. Houpt; driver, M. Roberts..... 0:42 3-5
 2. Stearns, 45-h.p.; F. B. Stearns Co.; driver, F. W. Leland.. 0:43 1-5
- Second Heat:
1. Stev.-Dur., 50-h.p.; Stev.-Dur. Co.; driver, P. J. Robinson. 0:50 1-5
 2. Matheson, 90-h.p.; Matheson Co.; driver, J. B. Ryall.....
- Final Heat:
1. Thomas, 120-h.p.; H. S. Houpt; driver, Montague Roberts. 0:40 2-5
 2. Stearns, 45-h.p.; F. B. Stevens Co.; driver, F. W. Leland.. 0:41 4-5

JOHN H. LYON CUP, OPEN TO AMERICAN TOURING CARS OF 30-H.P. OR LESS, REGULARLY EQUIPPED; CARRYING FIVE PASSENGERS; OWNERS TO DRIVE.

1. Oldsmobile, 30-h.p.; T. W. Berger; driver, T. W. Berger... 1:14 1-5
2. Stod.-Dayton, 30-h.p.; P. F. Rockett; driver, P. F. Rockett
3. Maxwell, 24-h.p.; Charles Fleming; driver, Chas. Fleming

GENTLEMEN'S ROADSTER, PRICE HANDICAP, \$5,000, SCRATCH; ONE SECOND FOR EACH \$200 LESS IN PRICE; OWNERS TO DRIVE.

1. Thomas (10 sec.), 40-h.p.; driver, W. McIlvrid..... 1:11 3-5
2. Stod.-Dayton (9 sec.), 30-h.p.; driver, E. L. Leinbach.....
3. B.L.M. (5 sec.), 24-h.p.; driver, H. G. Moulton.....

CLASS HANDICAP, OPEN TO ALL CARS WITH ESTABLISHED

MARK OF 1:10 OR BETTER ON BEACH TRACK.

1. Stearns (7 sec.), 45-h.p.; driver, Guy Vaughn..... 1:07 2-5
2. Stanley Steamer (4 sec.), 25-h.p.; driver, D. W. Harper...
3. Matheson, 30-h.p.; driver, F. Lescault.....



GENERAL VIEW IN THE VICINITY OF THE GRANDSTAND—NOTE EXCELLENT ROAD WHICH STRETCHES AWAY INTO THE DISTANCE.

MINERVAS FIRST, SECOND, THIRD IN ARDENNES CIRCUIT

BASTOGNE, BELGIUM, July 30.—At an average of 59.8 miles an hour, Moore Brabazon, on a Minerva, rushed over the finishing line on the Ardennes circuit, winner of the 372-mile race under German Emperor rules. Twenty seconds later Kooloven had captured second place, also with a Minerva; fifty-two seconds behind was Lee Guinness, the British sportsman, on a third Minerva; an interval of forty-one seconds and Hanriot had piloted a Benz to fourth place; seven minutes twenty-two seconds behind was Hieronymus on a Gaggenau; four minutes twenty seconds more and Warwick Wright's Minerva was over the line and the race was declared finished, those still running being officially ignored. Lovers of keen sport and close finishes could not ask for anything more exciting than a race in which all the contestants rushed to the finishing line in an interval of less than fourteen minutes.

There were twenty-three machines in line when, at 5 o'clock, the starter sent away Warwick Wright, of London, on his Minerva car from Antwerp. Moore Brabazon and Lee Guinness, also from across the Channel, formed, together with Koolhoven, one of the factory representatives, the quartet for the leading Belgian firm. Other contesting machines were three Gaggenau, three Adler, two Ariès, the sole French representatives, three Imperia, three Benz, three Pipe, with Jenatzy as one of their drivers, one Metallurgique, and one Mercedes.

At the outset the three Pipe machines, driven by Hautvast, Jenatzy, and Deplus, set a rapid pace, shaking off all competitors except the Minervas and the Metallurgique. At a third of the distance the Pipes were leading, with Lee Guinness' Minerva hanging close, when accidents of the course put the three ma-

chines which had given Nazzaro so much trouble on the Taunus circuit entirely out of the contest. *Le Terrible Hautvast*, who on the first round had appeared with the remains of a dog adhering to his starting handle, shot over a ninety-foot embankment on his fourth round and was carried to Brussels with slight injuries. Jenatzy overturned at Martelange with very slight injuries, and almost at the same place his team mate, Deplus, met with a similar accident, causing a broken shoulder and a wound on the head, not considered dangerous.

These eliminated, Minerva remained sure for first place, Hanriot alone, on a German Benz, menacing their position. Hanriot, who since leaving Darracq is open to drive for the best bidder, was dangerous for a long time. He was twelfth at the end of the first round, gained one place on the second, two on the third, five on the fourth, and at half distance was but one minute behind the leader. A blow-out on the last round detained him several minutes and threw him down to fourth position.

At 12 o'clock the race was declared off, those not having completed the course at that time being considered non-finishers. Compared with the German Emperor race on the Taunus circuit, held under the same regulations, the speed of the winning Belgian car is six miles an hour faster than the victorious Fiat. The Taunus circuit was certainly more difficult than the one in Belgium and weather conditions there were not so favorable.

Timed for 100 kilometers, standing start, Hautvast, on a Pipe, gave an average of 66.4 miles an hour. Lee Guinness, on a Minerva, made the two fastest rounds at an average speed of 66.59 miles an hour, Hautvast being a very close second.

In the motorcycle races over two rounds of the Ardennes cir-



BRABAZON, THE MINERVA WINNER, PASSING THROUGH BASTOGNE.



ROBL'S GAGGENAU TAKING ON GASOLINE NEAR GRANDSTAND.

cuit, Contant, on a Werner, was the speediest at an average of 44.3 miles an hour. In the light racer class Bucquet, on a Grifon, finished first at 42.6 miles an hour.

Baron de Caters won the 372-mile open race on a Mercedes in 6:29:10, being an average of 57.5 miles an hour. Lee Guinness on Darracq was 84 seconds behind the winner, Jenatzy (Mercedes) a poor third, and De Laminne fourth. The two British eight-cylinder Weigels did not officially finish. The machines, which had all figured in the Grand Prix—with the exception of the De Laminne—made a poor impression. They consumed more gasoline and were much slower than in the French race, their speed not being equal to that of the German Emperor rule racers of the previous day. Jenatzy, who had gripped valve stems and a broken frame, finished through sheer tenacity; Guinness was beaten in sight of the finishing post.

THAT CALIFORNIA VANDERBILT COURSE.

In its current issue, *Pacific Motoring*, published in Los Angeles, Cal., seems somewhat skeptical concerning the convenient availability of California for the Vanderbilt Cup race. It comments:

Some of the Los Angeles dealers still contend that the great American Derby can be run on roads near to Los Angeles. Of course, with our great hotel accommodations and conveniences for handling tourists, gently and otherwise, it would be very nice to have some good roads handy by. But, alas, the good roads will not materialize near to this great city, and we must go a hundred miles away to find said good roads.

As already stated in these columns, Kern county has the good roads needed for a great automobile race, and these nature made roads are fast, smooth and roomy, besides having little or no dust on them. If such a thing was possible, as the moving of the Vanderbilt Cup race from the Atlantic Coast to California, no better road could be found than across the plains north of Bakersfield. Here is one stretch of 32 miles from Bakersfield suburbs to Delano, like one great billiard table, while to the south of Bakersfield, on the great Tejon Rancho, is miles and miles of this natural road on the mesa—road that is dustless, hard, smooth, and, of course, very fast.

But aside from the mesa roads, California offers the great dry lakes of the desert, which are beyond compare for a big race course. One at Rosamond, near the Kern county line, and near the main railroad from the north to the south, is eight miles long and nearly as wide and perfectly level and smooth, while to the northeast and almost adjoining is a still larger dry lake. As to the question of caring for the spectators, a large city near by is not necessary in California, where climate means so much. Tents by the hundred can be obtained quickly and an automobile camp established, while jackass rabbits are so plentiful out there on the desert that none among all the auto horde need go hungry.

MR. VANDERBILT TO THE A. C. OF FRANCE.

In commemoration of the three Vanderbilt races won by France, three handsome bas-reliefs, designed and executed by Tiffany, have been presented to the Automobile Club of France in the name of W. K. Vanderbilt, Jr. Chairman Jefferson de Mont Thompson, who had charge of the presentation, sent the following letter to the president of the French club:

Monsieur le Baron von Zuylen,

President Automobile Club of France.

I have the honor to inform you that, as Chairman of the Racing Board of the American Automobile Association, and of the Vanderbilt Cup Commission, I am entrusted to present to the Automobile Club of France, in the name of W. K. Vanderbilt, Jr., three bas-reliefs in bronze commemorating the three Vanderbilt races won by France, namely, the first race won on October 8, 1904, by Heath, on a Panhard-Levassor; the second race won on October 14, 1905, by Hemery, on a Darracq, and the third on October 6, 1906, won by Wagner, on a Darracq.

Yours faithfully,

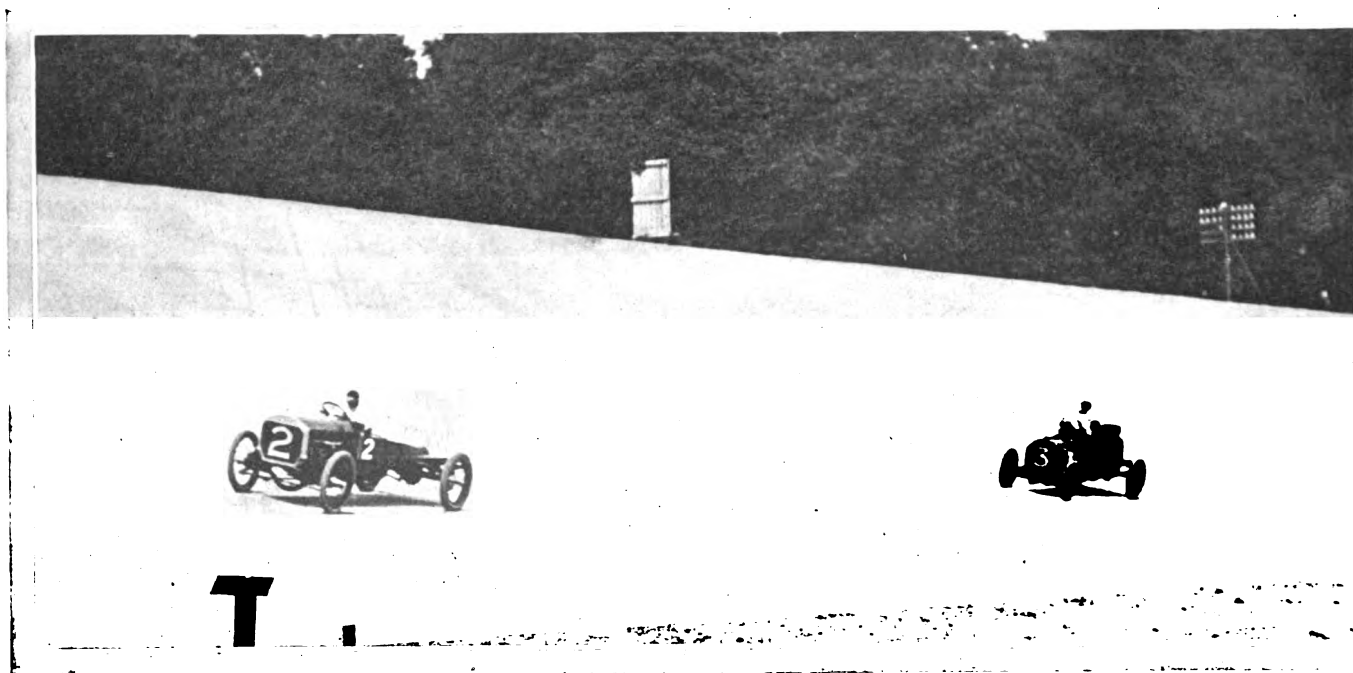
JEFFERSON DE MONT THOMPSON.

SECOND BROOKLANDS MEET FALLS FLAT.

LONDON, July 27.—There was a thinning of the ranks of the public at the second Brooklands automobile track meeting, and but meager sporting interest for those who did attend. Of the six races one was a hopeless failure, and three others were but a procession of cars around the course. Tom Thornycroft, on a Thornycroft, won the \$1,000 Manx stakes for 29.331 miles on a gallon of gasoline, his rivals, Vinot and Gladiator, not finishing for lack of fuel. S. F. Edge, on a Napier, captured the Surrey stakes of \$250, and the Century stakes of \$500 were carried off by Newton driving one of Edge's Napiers, Huntley Walker, on a Darracq, being a close second. In a race between an Ariel-Simplex and a White steamer, the American car was defeated by the blowing out of a safety valve half a mile from home. The only excitement of the day was the burning of an Aries and the jumping of the bank by Huntley Walker's Darracq.

Edge Issues Challenge for a Team Race at Brooklands.

At the third meet S. F. Edge won the international plate, a Dietrich being second and Thornycroft third. Edge has issued a challenge for \$5,000 to race a team of six Napiers against a team of any other make having equal cylinder capacity. Three races are proposed at distances of 300, 200 and 100 miles to be decided on the Brooklands track some time this month.



CLOSE RUNNING AT BROOKLANDS TRACK BETWEEN NEWTON ON NAPIER AND HUNTLEY WALKER ON DARRACQ.

SOME COMMONER CAUSES OF TROUBLE

By CHARLES B. HAYWARD.

NEITHER men nor machines fall seriously ill frequently; the ills of life, both human and mechanical, are usually things of comparatively small moment, though they may appear large at the time. The bit of a sick headache or the touch of nausea that makes a man regard the ordinary routine of life as something to which he is utterly oblivious and has no care to enter, have their counterparts in the small derangements to which any intricate assemblage of mechanical devices, such as constitute the automobile, must ever be heir to, and they likewise cause a cessation of the usual order of things—generally by bringing the car to a halt. Exception may be taken to this characterization of the automobile by those who have had its extreme simplicity constantly dinned into their ears for the past few years, and there is no intention here to attempt to undermine such an impression. The automobile, as it stands to-day, is a marvel of simplicity; it probably has fewer parts for the number of functions its power plant and transmission are called upon to perform than any equivalent piece of machinery, if such there be; but the fact that these functions are necessarily numerous cannot be overlooked, and the number of parts needed to perform them satisfactorily must be correspondingly so.

What Goes Wrong in the Carbureter?

The amateur driver who would familiarize himself with every part of his machine, to an extent where he will know its every whim and be able to diagnose its every ailment without unnecessary search or delay, must bear this in mind: It will be the small troubles that will vex him most, and in practically ninety-nine cases out of a hundred it will be nothing more than comparatively trivial defections that he must exercise his ingenuity on. Knowledge is an excellent thing, but knowing how to repair and assemble a gear-set or rear-axle unit will not prove much aid in locating the will-o'-the-wisp of a little defect that causes the motor to run jerkily or lose power.

Neither the change-speed gear-set nor the rear-axle driving unit go wrong very often, and when they do it is usually a case requiring the attention of a more skilled doctor, with the facilities of a good establishment at his back, than for amateur tinkering. But a motor may run well one hour and show infallible signs of illness the next, without anything very serious having happened in the interim. It is quite certain that it will be ignition or fuel trouble, by the latter of which is meant a defection of any part concerned in the production or introduction of the fuel into the cylinder. The gasoline feed pipe may be partially obstructed, or the jet of the carbureter may be suffering from a similar ailment; the float may have become punctured and have filled, thus flooding the carbureter and making too rich a mixture. Again, pounding over rough roads may have had the same result by shaking the screw of the needle valve loose; the spindle of the float may have become bent and caused erratic working of the valve governing the fuel supply, so that the latter has become intermittent; or, in systems utilizing this form of feed, the pressure may have fallen to an extent where a continuous supply is impossible. Last, but far from least by any means, is that prolific source of puzzlement—the auxiliary air inlet, which alone is frequently responsible for many an hour spent by the roadside. Its refusal to operate as it should will cause the motor to slow down and lose power on opening the throttle, when the reverse action should follow, and the fact that it yields readily to a push of the finger makes the true cause difficult to unearth.

There Is No End of These Little Things.

These are not all the carbureter troubles that can possibly happen, though they do, with the numerous modifications brought about by differing circumstances, come pretty near representing the sum total of small ills that afflict this important essential of

the motor. The carbureter may act indifferently because the needle valve has been tinkered with so much that it is no longer a good fit and the spray cannot be regulated; or, on the other hand, it may have been ground in so often on the assumption that this was the case that the result in the end is the same. It may not be getting sufficient warm air, or it may be getting too much—in one case the mixture will be too rich and in the other too thin, and the trouble may not be one that it is possible to overcome entirely by a change of adjustment. An attempt to explain every one of the ills to which the carbureter could possibly be subject would require a volume, and much of it would make uninteresting reading, as many of the ailments would be rare diseases.

The Most Vulnerable Points of the Ignition.

In treating of the common, every-day troubles of the automobile motor it has usually been customary to give the ignition precedence as a source of minor afflictions, but with the advances made toward providing a high factor of reliability on this extremely important essential of the motor it can hardly be said that there is much to choose between it and the problem of a proper fuel supply. Here the small thing becomes of even greater importance, and the difficulty of locating the defection is usually proportionate to its diminutive size. Naturally, but unfortunately, nevertheless, the ignition system is heir to a number of small ills. Take the high-tension type employing accumulators, as it is the most generally used on American cars to-day, and the best method of making some approximation to a catalogue of its faults and those before which it is most prone to give way is to divide it into its elements. First of all, there is the battery or source of current supply, next comes the timer, and next in the order stated the coils and spark plugs.

A battery of any kind is necessarily a thing of limited duration—its life is short; but it may be prolonged by proper treatment, and, like many other things, it is not always defunct when it gives every appearance of being so. It must be admitted that the battery has had to bear the brunt of many an accusation that should rightly have been directed at some other part, and, when the dry cell was in more general use, many a good set that had weeks of active service in them have been left to repose by the wayside. The chief battery trouble to be guarded against is short circuiting, and to prevent it nothing else should be permitted to occupy the battery box, as the accidental dropping across its terminals of a screwdriver or other piece of metal spells ruination to either a set of dry cells or accumulators, and particularly the latter. In the case of the accumulator there is, of course, a whole list of ills, most of them petty, that need a whole chapter for their proper treatment. They have been reviewed so frequently that it is unnecessary to detail them again here, except to remark that they do not often happen when the accumulator is well taken care of, and when they do the patient should receive the attention of the manufacturer rather than of the amateur driver.

Each Element Plays an Individual Part.

Excessive current consumption is a so-called battery trouble for which the latter is invariably blamed, but it is, of course, really an ailment of the coil, and should be treated under that head. The step next to the battery is the timer, and it is a prolific source of vexation that is not suspected in more than a fraction of the cases in which it is at fault. But it will be self-evident that any interruption here is the practical equivalent of no battery, and the latter is frequently blamed for the defection or a search made in the opposite direction. Probably the now common practise of running the timer in grease has something to do with the failure to trace faults in the ignition system to this source as often as might be the case. Those whose experience dates back to the early days will doubtless vividly recall what a nightmare

this part of the motor's mechanism constituted to the driver. Poor contact sums up in a word the chief ill of the timer, and as the contact must of necessity be a moving one, the reasons for its occasional failure will be apparent. And of these a weakening of the springs is probably the most common, to which may be added dirt and the giving way of the fastening holding the moving member of the timer on its shaft. When the latter is only partial or has been marked by a slight shifting of the position of the moving member on its shaft and their resumed connection, there are few things more difficult to locate by anything other than a thorough examination of this part.

Inherent Defects Are Now Very Rare.

Next to the timer come the coils, and, fortunately, the chief source of ailment here—the trembler—has undergone vast improvement. Present-day coil troubles are not marked half so much by failure of the trembler as by faulty adjustment of the latter, which causes an excessive current consumption and limited battery existence. The tremblers should all be carefully adjusted with the aid of a special ammeter while the motor is working, and then locked in place. If this be done and care taken to see that the relation is maintained there will be little or no trouble from pitted contact points. Poor and half-broken connections must also be guarded against here, and the same, of course, is true to an even greater extent in the case of the battery. Short-circuiting due to moisture is probably about the only other trouble that happens to a coil, short of its burning out by an ill-advised application of excessive current.

The ills to which spark plugs are subject are almost too well known to require detailed mention, and may be summed up briefly as short-circuiting and breaking, and the same is true of the connections forming intermediaries between these various essentials of the ignition system; but, as is the case with the other parts of the latter, a great deal of attention has been lavished on the production of high-proof insulation, as well as upon adequate protection for the wiring and proper connecting terminals, so that as a whole the wiring gives extremely little trouble.

These, in short, are by far the great majority of the common troubles that afflict the carbureter and the ignition system, when the latter is of the high-tension order using coils and batteries.

Some Faults of Magneto Ignition.

Contrary to all popular notions on the part of those poorly informed regarding the magneto, the defection of the latter is about as rare an occurrence as the breaking down of the motor itself, by which is meant something wrong with its vital components, such as a broken camshaft or the like. Piston rings wear and so do bearings, besides which there are numerous other small things that can go wrong, but there is seldom anything serious. This is the case of the magneto in a nutshell, except that there are very few small parts involved. Nothing could be simpler than the low-tension alternating generator used with the make-and-break type of ignition. It represents a close approach to the ideal where immunity from breakdown is concerned and practically its only source of trouble is in the contact breaker, which, by reason of wear or the introduction of dirt, may fail to perform satisfactorily. A periodical inspection will avert such an occurrence on the road and it is nothing unusual for a low-tension magneto to run thousands of miles without ever being looked at.

Except for the fact that the problem is slightly complicated by the introduction of the secondary side of the system, and all that entails the high-tension magneto in its present advanced state of improvement differs but very little on the score of reliability from its far simpler rival. Here, again, the only wearing parts are contact points, and with a little attention to the matter of cleaning and oiling while in the garage, there will seldom, if ever, be any necessity for halting by the roadside to make the tour of inspection that should have been done at home. These are all small matters of the class that the philosopher must have had in mind when he coined that terse but expressive saying about the stitch in time.

A BRAZING FLUX FOR CAST IRON.

It is always annoying to have parts break, whether they are big or little, but I know of nothing more exasperating than to break some small cast-iron piece, the importance of which is away out of proportion to its intrinsic value, says Ethan Viall in *The American Machinist*.

How often has a man spent hours fussing and fuming, trying to patch up a broken casting, when some way to mend it similar to soldering, but stronger, would have saved much time and trouble. Indeed, in some cases, soldering has been resorted to where strength was not required, but as a usual thing a stronger joint was needed and so attempts were made year after year to find a flux that would enable us to braze cast iron. Many a man has had his heart come up into his mouth upon finding, that after repeated attempts, he had actually brazed a piece and the brass had flowed beautifully, but alas, just as he was about to shout "Eureka!" he discovered that the casting was malleable and not cast iron.

The brazing of cast iron had been attempted without success so often, that it was looked upon by most mechanics as being in the same class with soldering aluminum or hardening copper. And it was not until five or six years ago that it was successfully done. A German was, I believe, one of the first to do this, and he obtained a patent on his method, which consisted mainly in coating the joint with a mixture which was principally oxide of copper and borax boiled together, and then brazing with a flux containing carbonate of soda, boric acid and salt. To use this one had to purchase the mixture of certain parties and also have a shop license. The cost was not only prohibitive, but the method insisted upon was clumsy and troublesome. I was one of the first to use this method, under a license, and quite by accident discovered another flux, far better, and entirely different, which could be used exactly as one would use borax in ordinary brazing. I had for years at odd times tried different chemicals alone and in combination, but without success, when a chance remark dropped by a friend of mine, an expert chemist, regarding the properties of common chlorate of potash, furnished me with the hint I needed. After several weeks of experimenting, I evolved the following formula, which is not patented and can be used by anyone who cares to try it, and which I have used for over four years and which has been used by several of my friends. If a similar formula has ever been given I have never heard of it, and this one is entirely my own. The proportions were obtained by careful experiment.

The ingredients may be obtained at any drug store.

The formula is: Boric acid, 1 pound; pulverized chlorate of potash, 4 ounces; carbonate of iron, 3 ounces. They should be mixed together dry and will look like powdered brick dust. The amount specified should cost about fifty cents and when used should be mixed with grain spelter.

After arranging my pieces to be brazed, I heat them to a nice brazing heat and apply my flux and spelter with an iron rod, flattened on the end to a rough spoon shape, just as if I were brazing a bicycle frame in the usual way. The chlorate of potash must be pulverized, but the iron may be what is known as either carbonate or subcarbonate. The mixture should be kept dry, as moisture or long exposure to the air renders it less efficient.

In arranging the pieces for brazing I either lightly clamp them together or use stiff fire clay to hold them in place, but anyone who has done ordinary brazing will readily find a way to fix the pieces. The size of the pieces which can be handled successfully is limited by the heating facilities. A gas or gasoline forge is best, my preference being for the gas. A coal forge may be used, however, though it is not so convenient and when it is used coke or charcoal should be burned, as coal does not make a clean fire. When properly brazed a casting cannot be broken again in the same piece—something that cannot always be said of other methods of repairing which are far from being as easily executed as is the operation just described.

FOR THE AMATEUR OWNER WHO DRIVES

By THE MAN AT THE WHEEL.

BY dint of personal application it is probable that the average person can learn almost anything he makes up his mind to master—a fact which the average amateur owner soon comes to realize while his first extremely hazy notions as to the intricacies of the automobile fade into thin air at the same time. But there are two distinct classes of A. O's; those who are everlastingly tinkering; in fact, those who take as much, if not more, pleasure tinkering with their cars than they do in employing them for more legitimate ends, and those who go to the opposite extreme by not giving the mechanism any attention at all. It may be thought that the latter constitutes a rare and seldom to be met with class, but such is not the case. There is many an owner to-day who can handle the wheel to the great admiration of his friends and who does not leave stripped pinions behind on every occasion of shifting the gear lever, but who is down and out, to take advantage of the vernacular, the moment there is anything wrong. Needless to add, it is not to this class that these hints are directed. Things mechanical are a profound mystery to many an otherwise well-versed individual whose lack of interest in the subject robs him of any incentive to make himself familiar with his car.

Well-groomed Cars Seldom Default.

It is the charity that begins at home that minimizes work while on the road, and if a car is properly taken care of when it should be, which is between its periods of running, there will be scant occasion to interrupt the latter in order to make adjustments or repairs that should have been attended to at home. Given the equivalent of the mechanism of an automobile in the hands of a trained engineer every hour in the day, and its owners would require him to prepare a carefully made out report as to its condition during the entire time it was under his charge, every defection, every cause of stoppage and every repair made would have to be noted, as well as the amount of lubricating oil and fuel it consumed. By comparing these daily reports the owner of such a machine could tell whether it were operating as economically and as efficiently three years after it was installed as it was when first set in operation.

It may be too much to expect of the average amateur owner who prefers to drive his own car to add a burden of clerical labor to his caretaking, but the hint is one that may be availed of to considerable advantage. For instance, a crankcase should be cleaned out at stated intervals and the oil replenished and the same is true of both the gear-set casing and the differential and bevel drive. Nine out of ten drivers could not tell you when this was done last, and while the proper period may not have elapsed, the chances are in favor of it having been considerably exceeded. Cases have come to light where progressive owners have, at the expense of a dollar or so, installed a good-sized blackboard on the wall of their garages, using it to note such data as that just referred to. When a man who has his own best interests at heart sees "Fresh Oil in Gear Case, 3-1-07" staring him in the face week after week, it is safe to say he is far more apt to remember that a change is necessary than if he depended on his own memory.

Serious Expenses May Be Avoided.

It is safe to say that every amateur owner who drives his own car from preference is anxious to avoid those *denouements* that make a heavy draught on the pocket and the absence of the car from its accustomed service. Serious accidents are rare, of course, but they do happen, and if in his regular rounds in looking after small matters the amateur also takes the trouble to keep an observant eye out for the things that lead to serious trouble, the latter may frequently be avoided at a nominal expense for preventives rather than a substantial bill for

the remedy. One fault of many low-priced American cars is an inherent weakness of the rear-axle unit. Not that they are very poorly designed or very poorly built by any means; mounted on skids the mechanism would transmit the full power output of the motor without trouble until it actually wore out, and if all roads were level, by which is meant well-paved, probably the same thing could be said of its service on the car. But every now and again there is the sudden and unexpected meeting with a road gulley or water break into which the rear wheels drop with an ominous thud. Add to this the more or less frequent pounding over car tracks and similar obstructions and it will be realized that the most destructive agency is not the transmission of the power in its wear on the moving parts, but the hammering to which they are subjected. This tends to loosen the nuts of strut and torsion rods, and once the strain on these important stays is relieved disalignment of the rear axle components speedily follows. Of course, this advice would be properly included under the generic head of "keep all bolts and nuts on the car tight by frequent inspection," but there are many of these fittings the temporary loss of which is not attended by grave consequences, although they should naturally be replaced without delay. On the parts in question, their absence is almost certain to lead to one of those discouragingly large repair bills which every amateur driver is so anxious to avoid so they may profitably be made the subject of special attention.

Instances are not wanting where the loss of what would appear to be a most trivial part has been the sole moving cause of one of those sieges at the repair shop, the expense of which proves so discouraging to the autoist who has to count the cost. The cotter dropped off the nut which held one of the bolts of a double-yoke universal situated just back of the gear box on a shaft-driven car; later the nut came off—so much later that an inspection at any time within a fortnight would have prevented the trouble. But it was not made and the forward end of the propeller shaft dropped, caught in the road and played havoc with things generally.

Some Ancient Admonitions Revived.

There has been so much said on the subject of the proper care of tires that it would seem to be worse than carrying coals to Newcastle to attempt to go further into the subject, especially when it is the intention to cover the same ground. Doubtless American tire manufacturers have had sufficient literature printed on this subject to supply every man, woman and child in the country with at least one copy. Yet there are hundreds of owners who cannot see the wisdom of having all their tire troubles at home. That is, all that are not absolutely unavoidable, and the mere fact that a puncture happens twenty miles from home does not put it in this class, for probably if the tire to which it occurred had been properly inflated before leaving the rubber destroyer might not have been able to make its way through the tread.

Look at your tires frequently, keep your eyes on them as much as possible, and by so doing you will be able to do most of your tire work at home. I know from personal experience that if tires were carefully looked over every morning before a car was taken out, the percentage of punctures would be considerably reduced, and to demonstrate this to a skeptical friend I took him with me to make a round of a dozen or more cars drawn up at a railway station. From one we took a horse-shoe nail and from another a good-sized chunk of glass. In either case the closing chapter was only a matter of a short time, for both objects were so situated that the continued pounding on the road would send them through the tread. "Oh, that's nothing," one driver remarked. "We are picking those things up all the time."

GLEANINGS FROM EUROPEAN AUTO PRESS

A CRY of mockery has gone up from certain British journals as the result of the defeat of France in her own long-distance road race. Georges Prade, the versatile editor of *Les Sports*, does not appreciate the joyfully compassionate "Poor France" of a certain London journal and hits back vigorously as follows:

It is a lie that we received Nazzaro coldly. We have won enough races, thank God, to be able to lose one. We also lost, once, the Gordon Bennett Cup in Ireland. I won't speak of the manner in which it was gained in 1902 by S. F. Edge's Napier. Everybody is aware—and the English delegate himself—that the Napier won by a violation of the rules, being pulled out of a bad position by peasants. We have a light heart. We salute Nazzaro as a victor. There were twenty-four French cars at the start; there were twelve at the finish—just 50 per cent. There were fourteen foreign cars at the same starting line; there were four at the finish—not even 30 per cent. That ought to satisfy you Englishmen, lovers of regularity and good order. You will tell me that there was no English machine among them. That is true. Your national industry was never in the game: eighteenth and thirty-sixth on the first round, twenty-eighth and thirty-second on the second round, twenty-fifth and thirty-second on the third round; one of your machines went out on the fourth round and the other, your champion, passed twenty-ninth and disappeared on the fifth round. We should be heartless and insensible to all good taste if we did not say, "Poor England; what a wreck!" Supposing the race had been run as a team test, giving each car the number of points represented by its position at the finish, and the non-finishers the maximum number 38, under such a system the 24 French cars would have received a total of 552 points, or 23 per car. The 14 foreign machines would have received 420 points, or an average of 30 points per car, placing them 7 places behind us. This is the reason why we do not accept your "Poor France."

Parisian Authorities Converted to Tarred Roads.

With the increase of public automobile services throughout the country, says *Omnia*, a serious road problem comes up for settlement. Certain roads in Paris, with their increased loads, are no longer able to stand the heavy traffic. The allowance of material for their upkeep is no longer sufficient, in view of the increased speed and volume of automobile traffic. On certain roads largely used by fast automobiles, says the report to the Department of Public Works, a remade surface only lasts a third of its former time. The Government allowance for roads has diminished successively from 1890 to 1905 from thirty millions and a half to twenty-nine millions. It was only in 1906 that the credit was again brought up to 30,000,000 francs by a special allotment in view of the extra work of road repair men. Some twenty years ago certain provincial engineers and modest road surveyors sprinkled gas tar on the roads, with excellent results, considered extravagant by the authorities. It needed a large amount of perseverance on the part of humble gas tar to overcome the official inertia of Parisian engineers. The tarred road through the Bois de Vincennes was a horrible bog, and the Versailles and Saint-Cyr roads no better, they declared. To-day that has changed and Parisian authorities are busy with the tar brush. The Avenue du Bois de Boulogne has received a good coat of tar—too good, in our opinion; the Champs-Elysees will not escape and the Place de la Concorde will undergo the same treatment. In the report to the Chamber it is stated that the authorities should declare frankly for tarring the road or sections of roads, even in the open country, where there is a big automobile service. Acting on this, the Minister of Public Works has appointed a commission to study the question. As it requires four years to make a test of this nature, we should have to wait a

long time had not more enlightened spirits been at work for the past twelve years, perfecting systems which may be used by the authorities for the whole of the paved streets of Paris. In the provinces they know how to tar the roads without leaving them an ugly black tint, merely by sprinkling a little white sand on the surface before it finally dries. We should have preferred to see this color for the Avenue du Bois de Boulogne in preference to the sad official tint.

Shall Oxygen Be Allowed on Brooklands Race Track?

Since England obtained its automobile speed track it has been pestered with the question, "Shall oxygen be used?" Opinion is divided, as is shown by the shoals of letters daily falling on the editorial tables. The editor of the *Motor* expresses himself on the "problem" as follows:

Oxygen has occasionally been used for hill-climbs, but since the first Brooklands race meeting it has come very much to the front, the possibilities of its use having been then practically demonstrated. Without doubt, engine power can be increased by the use of this gas. Literally, petrol is simply a gas in liquid form, and it seems quite logical to use with it any other gas that can be obtained in convenient form. Oxygen is a commercial product in everyday use, and there is no more difficulty in obtaining it than in obtaining petrol. If oxygen could not be obtained by the general public, if it were a special preparation about which little was known, and only obtainable, perhaps, at a prohibitive price, by few people in the trade, it would not be unreasonable to raise an outcry against its use in competitions. The important fact for the motoring public to be well acquainted with in connection with the matter is that certain risks have to be taken. These are the risks of damaging the engine, injuring oneself, or (what is more serious) of injuring someone else. If, say, a serious explosion occurred on a competitor's car and several spectators were badly injured, it is conceivable that public opinion would be against its further use. But it is absurd to contend that the use of oxygen is not legitimate. It might even be that the development of the internal-combustion motor could be advanced by an increase in the proportion of oxygen already used in carburation, and it would, therefore, be a pity to prevent its use under racing conditions—the very conditions which are admitted to have done so much for the development of the motor car. If, however, it can be scientifically proved that the use of additional oxygen is no advantage, or has serious objections, then it would be wise, on the score of general safety, to prohibit its use. But, if oxygen in the engine is barred, someone will start using light gases in tires, and someone else will object, and nothing but Weybridge air will be permitted to be used. And thus there will be no end to the squabbling, but one of the chief uses for racing will be gone.

Competition Gives Cheap Automobile Cab Fares to Parisians.

It is not true, says *Le Poids Lourd*, that there are as many taximeter tariffs at Paris as there are cabs. Nor is it correct that the cost of travel in all cabs is the same. As a matter of fact, there are exactly seventeen methods of valuing the price to be paid to cabby for a given trip. As all these tariffs are inferior to the official scale, the authorities have not, up to the present, thought it necessary to interfere. Now the Prefect of Police has decided on uniformity and has appointed a commission to consider its realization.

M. F. Mieville, of Chichester, is not persona grata with the police of the district, says the *Automotor Journal*, and they have openly threatened to trap him if they can, as he has shown considerable activity in warning others. Whenever he reaches the trap he and his chauffeur get out and push the car through.

LETTERS INTERESTING AND INSTRUCTIVE

How Can Water-cooled Brakes Be Fitted?

Editor THE AUTOMOBILE:

[848.]—In one of the accounts of the recent A. A. A. Tour which appeared in "The Automobile," I noticed a reference to the fact that not one of the cars carried such a thing as a water-cooled brake in distinction to European cars, and that on this account many of the competitors suffered from brake troubles while traversing that section of the route that lay through the mountainous part of Pennsylvania. Brakes overheated in frequent instances, and in some cases quite badly, while many of the cars had to halt on the way down some of the worst hills in order to give their brakes a chance to cool. The writer of the account that I refer to made mention of the fact that many European cars could have gone down far worse hills at a much higher rate of speed and without any particular trouble owing to their being equipped with water-cooled brakes. I have never seen such a brake on a car in this country, and would like to know if any American cars are built with them; also in what way do they differ from the ordinary type with which we are familiar from their almost universal use on cars made in this country

Allegheny, Pa.

BRAKES.

So far as is known no American cars have ever been built with water-cooled brakes, though there are certainly a sufficient number of localities in this country that would seem to require them. Owing to the uniformly excellent surface of Continental roads, automobilists abroad are accustomed to run down hills at a rate of speed which is utterly out of the question here owing to the poor roads and numerous sharp turns that characterize most of our hill road building. But even were the latter not the case it would not be wise to run an American car down hill at the same rate of speed as is possible with a foreign car, as the provision of braking surface on the latter is usually far more liberal than designers allow here, in addition to the fact that water cooling is also provided.

While to the uninitiated a water-cooled brake may, from its very title, appear to involve considerable complication, this is far from being the case. It is customary to place a water-cooled brake on the countershaft of a side-chain driven car, this type still predominating to a large extent in Europe, though some makers have also applied them to the rear wheel brakes. They consist of the usual type of external contracting brake, the drum of which is generally made of unusually liberal dimensions from an American standpoint. The inner periphery of this drum is provided with a flange about 1-2 or 3-4-inch high, while the drum itself is entirely open to the air. A small supply of water is carried in a tank located wherever convenient on the chassis so the water may be fed by gravity, and a small bore tube, seldom exceeding 1-8-inch in diameter, is led to a point where the stream from it will discharge on this inner face of the drum already described. The flange prevents the escape of the water at the sides, while the centrifugal action set up by the revolution of the drum carries the water around every part of it in a thin sheet. On a bad hill the amount of heat generated is usually sufficient to evaporate the water about as fast as it is fed. Control is either by a separate pedal or by means of an auxiliary pedal attached to the regular operating pedal connected with this brake.

However, it would be unnecessary to install an entirely new system in order to apply water cooling to the average American car of to-day. The enclosing cases now generally employed on the rear wheel drums—the type most commonly employed here for both the running and emergency brakes—could be drilled with a small hole and tapped for the reception of the water-carrying tube, or a nipple on which to screw a union connection. These holes should be drilled on the inner face of the drums and a lead taken to each from a water tank which would not need to hold more than a gallon or two. We should think such a provision would be found of considerable value where a car is constantly used in a mountainous locality.

Opinion Wanted on Overhead Valve Gearing.

Editor THE AUTOMOBILE:

[849.]—I have noticed that there is more or less of a tendency on the part of American manufacturers, not only to come around to the practice of placing the valves in the cylinder heads, which I consider the only proper method of design and years in advance of the outboard port type, but also to elevate the camshaft to the cylinder heads. I think there are now several instances of this kind extant among American cars, and I would like to know if you consider this an improvement of equally great importance as that of eliminating the extended valve-pockets.

Los Angeles, Cal.

VALVES AND CAMS.

No such sweeping comparison of the practice of operating the valves by means of tappets and push rods, as is generally employed, and that of using a superimposed camshaft, may be justly made, owing to the fact that designs differ and efficiency is not always a mere matter of adherence to a certain type. The end to be achieved in placing the camshaft in a superimposed position on the tops of the cylinders is primarily that of simplicity, and insofar as when properly designed this type does tend to greatly lessen the number of small parts, as well as to render the entire valve gear very accessible, it may be considered as the superior of the current type. However, this is largely a matter for personal opinion to decide, and the latter is, in turn, strongly influenced by the fact that the average designer finds himself constrained to turn out what the public wants and not what he thinks is ideal or fundamentally correct from an engineering point of view. The superimposed camshaft has much to recommend it, but it probably also has its disadvantages as well as other forms of construction.

Apparently a Question of Carbureter Adjustment.

Editor THE AUTOMOBILE:

[850.]—As one of the subscribers of "The Automobile," I beg to ask you for information in regard to the car I am running, which is a 30-35 Simplex.

1.—It boils the water until it becomes very hot on high gear as well as on the low gear; everything in the circulation is clean and the pump works all right; circulation is perfect as well as spark perfect and exhaust and timing O. K.

2.—It will not climb hills on third or fourth gear without knocking, and if I retard the spark I seem to lose the power and have to go into second speed. I have made everything tight and have good compression and no misfiring and adjusted the carbureter so that the gasoline level is even with the top of the jet. I have tried making the hole larger and smaller and more and less air, but did not get satisfaction. It pulls very well on level but has not much speed to it. And when the car is not running and I throttle the engine down, it does not fire regularly. I know it has not the speed on hills it should have, as a 30-horsepower Packard can pass me on a hill easy.

Now, I want to know if I was to make the jet longer, so that the gas level would be about 1-16 of an inch below the top with the same size hole, or if I should make the hole larger owing to the higher jet, if it would give me more power. (The carbureter does not flood.) Or what would be the proper level for it on rough roads and hills so that it would develop the actual horsepower and take hills on high gear. The knock produced on hills does not seem like a loose bolt, but a sharp knock same as produced from an overheated engine after the switch is thrown off. I have double ignition and both are perfect, as well as the lubrication.

Greenwich, Conn.

SIMPLEX.

While from your description of the ailments your car has been laboring under, one would be led to judge that something serious was at fault, we think that proper investigation will show quite the contrary to be the case. To tell the truth, it would look as if the matter were merely another instance of "carbureter tinkering," no disparagement of the good intentions of the tinkerer being inferred from that. In all probability the carbureter got out of adjustment and the man in charge of the car, not succeeding in restoring it, set to work to change it according to his own ideas of what should be done. This,

unfortunately, is a more or less common practice and it usually has disastrous results, as the trouble goes from bad to worse until finally the entire car is condemned as worthless.

In the first place altering the size of the hole in the gasoline nozzle was a fatal mistake. If you had stopped to consider the matter before attempting any such questionable improvements you could hardly have failed to come to the conclusion that the size of that orifice was not a matter of guesswork with the makers, but had been determined by calculation and experiment and its correctness verified by actual experience, not with one, but with a large number of cars. As already mentioned, we think the events leading up to the present state of affairs have been such that you are now in a hopeless tangle and would not counsel making any of the alterations mentioned, such as lengthening the jet or changing the level in the float chamber. You have evidently been running the car with a very rich mixture, which would account for the overheating and the latter probably accounts for the knock mentioned as well. The Mercedes type of carbureter with which these cars are equipped is a very simple affair, but like many other things that are so extremely simple it takes one who is perfectly familiar with it to know how to adjust it properly. We should think that even a superficial examination of the jet of such a carbureter would have shown you what an amount of care had been lavished on it to make the nozzle opening accurate to a very small fraction of an inch and that this would have acted as a deterrent to such a radical change as altering this vital part of the device. As you are located within an hour's drive of the city, we should recommend submitting the car to the attention of Mr. Franquist at the factory and have no doubt that a little personal attention on his part will be sufficient to restore things to their normal condition and at a merely nominal expense. We have gone to an unusual length in answering your letter, as the case is one that comes to light so frequently—in fact, it is safe to say that ill-advised tinkering, with the carbureter in particular, has been the means of condemning more than one otherwise good car.

Continued Firing After Cutting Off Current.

Editor THE AUTOMOBILE:

[851.]—Being a subscriber, I take the liberty of asking for a little information. I have a four-cylinder car and a few days ago when out for a ride I concluded to stop and shut off my engine for a few moments, so, after stopping the car, I opened the throttle and pulled out the plug but the engine kept on going forward without losing a stroke and continued to do so for a few minutes, when I closed the throttle and it ceased. The engine had been working beautifully and continued to when I started up again and I had cleaned the cylinders before I started in the morning, which, together with the fact that it ran forward and not backward (without losing a stroke) put the carbon theory out of my mind.

By solving this problem you will confer a favor on me and probably others as well.
G. A. SIMMONS.
Oakland, Cal.

There is little doubt but that the cause of the continued running of the engine lay in a particle of carbon in the cylinder that became incandescent. By "cleaning the cylinders," as expressed in your letter, we take it that you mean kerosene or gasoline was injected into them, or, at most, the piston heads were scraped through the valve openings. In either case the entire amount of carbon in the cylinders was not alone not removed, but some was taken away and some left and the latter was then in a more prominent position than it had been previously. That is, instead of being a smooth, uniform coating of carbon which does not readily become incandescent, it was divided into points, furrows or ridges, and injecting kerosene or gasoline might have had this effect the same as scraping, as it is well known that the deposit is hard in places and soft in others—or, to put it better, not so firmly attached.

The fact that the engine continued to run forward instead of backfiring and coming to a stop, as is usual in cases of pre-ignition due to this cause, does not necessarily refute the carbon

theory as you surmise. The incandescent portions may have been so located that the fresh charge did not reach them until compression was practically completed, as in close proximity to the exhaust valve, for instance; or, the pieces of carbon may not have been sufficiently hot at the moment the fresh charge entered the cylinder to ignite it, but at the end of the compression stroke its temperature may have raised sufficiently to do so. There are many things concerning the action going on inside the cylinder, about which many of the best versed engineers are still in the dark, and a thorough scientific investigation of these phenomena would constitute a valuable addition to the data now extant. The almost inconceivable rapidity with which operations follow one another inside the cylinder without conflicting is only coming to be realized as the result of the success of the high-speed automobile motor.

Non-residents Exempt in Nova Scotia.

Editor THE AUTOMOBILE:

[852.]—In the issue of July 18 of "The Automobile," under the head of Letters Interesting and Instructive, I note that you state in part, in your reply to inquiry No. 823, regarding the conditions under which a car can be taken into Canada temporarily, "It is also necessary to take out a local license."

So far as Nova Scotia is concerned, your reply is in error, as the enclosed copy of the Provincial law will show, and I am also inclined to think that the other provinces extend the same courtesy; I am sure New Brunswick does. I refer you to Section 9 of the law, which is as follows:

"(9) The provisions of this section shall not apply to motor vehicles owned by non-residents of this province, provided the owners thereof have complied with any law requiring the registration of owners of motor vehicles in force in the state or province of their residence, and the registration number, showing the initial of such state or province, shall be affixed to such vehicles, substantially as in this section provided."

Wolfville, N. S.

B. W. M.

We are pleased to note your correction with regard to the eastern provinces in the matter of extending this courtesy to tourists, as while the matter of taking out a local license is a small one and the expense usually nominal, the annoyance attendant upon the process has doubtless proved more than sufficient to deter many tourists from extending their trips over the border. But while the reciprocal courtesy is extended by Nova Scotia and New Brunswick, as you state, we feel quite certain this is not the case with Ontario and Quebec, and it was concerning these provinces that our inquiry was directed. Due to its proximity to the most populous sections of this country, the Province of Ontario is the one into which American tourists most frequently desire entry with their cars and there the requirements are as stated in our issue of July 25, letter number 838, viz.—a nominal bond for the customs, fee \$5, and the regular license fee \$4, besides markers, etc.

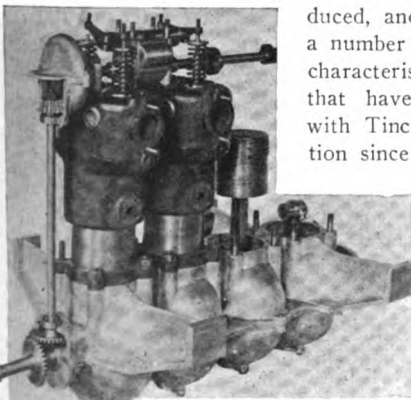
Section 6 of the Quebec Motor Vehicle Law is a reciprocal provision exempting "the owner of a motor vehicle who resides in any other Province of Canada," which clearly brings tourists from the other side of the border within the purview of its remaining provisions. Hence the two most important Provinces of Canada require a license and registration regardless of how short the stay of the tourist may be. However, unless the law is not enforced in this respect, the same thing is true of a Canadian tourist bringing his car into this country, so that there is scant cause for complaint on either side.

Doubtless in the course of time the automobile traffic between the two countries will become so great that the necessity of doing away with the regulations now in force will be imperative and there certainly appears to be little reason at the present why this should not be the case. However, the Canadian Provinces which require compliance with their own laws despite the conformity of the entrant's credentials with the laws of his domicile, are no exception, as we have one or two shining examples of it right at home in the States of New Jersey and Pennsylvania, and forcibly illustrates the need of a national registry law.

The Tincher for 1908

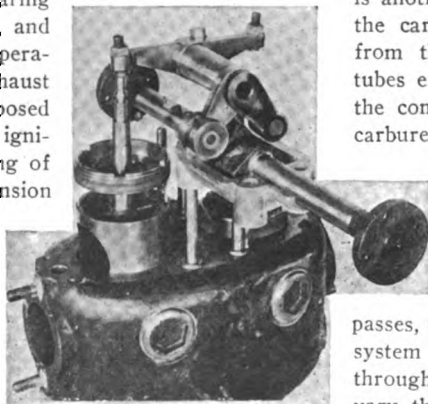


AS the result of its recent reorganization with a capital of \$200,000 and the acquirement of a complete plant at South Bend, Ind., the Tincher Motor Car Company has sprung into activity, so that instead of manufacturing a very limited number of cars, as has been its custom for the past five or six years, the Tincher is to be a factor in the American market for 1908. In many respects the car will remain unaltered, while in others novel features will be introduced, and though there are quite a number of the latter, the salient characteristics of the car are those that have always been identified with Tincher design and construction since its very inception.



CONSTRUCTIONAL DETAILS OF MOTOR.

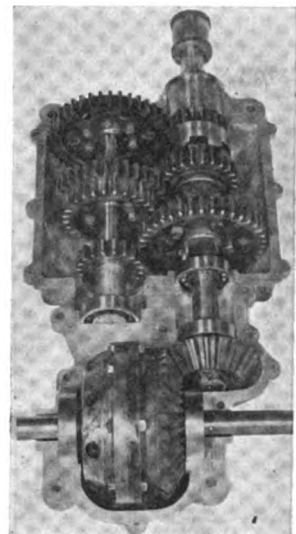
In brief, the new Tincher is a 50-60-horsepower car equipped with 5 by 6-inch four-cylinder motor, band clutch, four-speed selective sliding gear, side chain drive, 127-inch wheel-base, standard tread, 36-inch wheels and tips the scales at 3,000 pounds. This weight has been attained by the liberal use of chrome-nickel steel, much of which is imported from Krupp, as well as the use of drop forgings wherever consistent with good engineering practice. The motor is distinguished by the use of rather an ingenious overhead type of camshaft driven through bevel gearing and a vertical shaft at the front, and having but a single cam for the operation of each set of inlet and exhaust valves which are oppositely disposed in the cylinder heads. Duplicate ignition is provided, one set consisting of a standard, self-contained, high-tension magneto of foreign make, which is forward of and across the front end of the motor. Chrome-nickel steel is employed in the crankshaft and camshaft, while the motor valves are a thirty-five per cent. composition of nickel steel; the former material is also used



VALVE-OPERATING MECHANISM.

in the front and rear axles, gear set shafts, pinions and springs, as well as the main frame, which is further reinforced by filling the side channel members with ash strips of the latter extending from the forward end of the motor to the first cross brace supporting the gear-set. A peculiarity of this frame is the use of a manganese bronze casting across the forward end as an independent radiator support.

Other unusual features are to be found in the front axle, which is minus the usual spring seats. Instead the axle is drilled transversely at the places ordinarily occupied by the spring seats, and the single clip which suffices to hold the spring down upon a removable seating fitted on the axle is passed through. This form of construction is also followed in the rear axle, the latter also being distinguished by a 1 1-2 degree arch between the points of spring attachment, this serving to give the driving wheels an equivalent amount of outward inclination from the vertical, thus tending to prevent side slip. This axle is also dropped 2 1-2 inches immediately inside the hub bearings.



GEAR-SET AND DIFFERENTIAL.

In addition to the points of difference already mentioned in connection with the motor, there is another that is exclusive on the Tincher and has to do with the carbureter. At first sight this does not appear to depart from the conventional, but a closer view reveals four short tubes extending downward on the intake side. These open into the combustion chamber at one end and communicate with the carbureter at the other through a 1-8-inch tube to which each pair is connected in multiple. At the top of these tubes is a spark plug and at the bottom a ball check valve. This by-pass system, for such it is, is intended to supply the motor with sufficient mixture to run it idle, and it comes into full play when the throttle in the manifold, through which the main supply of fuel passes, is shut off. When the car is under way this supplementary system is not shut off, but only a fraction of the supply goes through it. It may be closed altogether or opened to the air to vary the mixture. The lubrication is taken care of by a belt-driven McCord force-feed oiler, having four independent leads.

WORK OF THE LEGISLATIVE BOARD OF THE A. A. A.

AS was made evident by its report, submitted by Chairman Charles Thaddeus Terry at a recent meeting of the A. A. A. Executive Committee, held at the association's headquarters, 437 Fifth avenue, New York City, this board is one of the most valuable adjuncts of the national association. In the course of his report Chairman Terry told of the work on the board in these words:

The Legislative Board has kept in touch, through its chairman, with the legislative situations in the various States, to whose legislatures statutes relating to automobiles or the use of the highways were presented at their last sessions. While the general trend of legislation, as gathered from the data collected by the chairman of the committee, seems to be in the direction of reasonableness and a somewhat larger degree of fairness than heretofore, and to show somewhat of abatement of the unreasoning hostility to the automobile and its use because of their novelty, it is to be regretted that automobile legislation is even yet of so diverse and divergent a nature throughout the several States as to indicate an imperative demand for one of two things, to wit: either (a) the speedy enactment of a Federal law covering the field as far as may be; or (b) the enactment throughout the States of a uniform automobile State law framed upon the model of the best of the present State laws, with improvements thereon if possible.

The Board is prosecuting its work along both of these lines and seeking the earnest co-operation of the individual members of the board to those ends. It will be remembered that the Board prepared and introduced in Congress at its last session a bill providing for the Federal registration of automobiles, and that it is the intention of the Board to press that bill to passage if possible at the coming session of Congress.

This Board, after an examination of the authorities bearing upon the question of the constitutionality of such a statute, and after satisfying itself of the feasibility and constitutionality of such an act, drafted this bill, took it to Washington and had it introduced in Congress. It was referred by the Speaker of the House of Representatives to the Committee on the Judiciary.

In reference to a uniform State motor vehicle law, the Board asks that a copy of the draft of the uniform State motor vehicle law in its final and approved form be sent to each member with the request that each such member of the Board, in case the legislative situation in his State is such as to make it feasible, have the bill introduced into the Legislature of his State, and use his energetic efforts to secure its passage and signature by the Governor of his State.

The limits of such a report as this are too narrow to admit of the recitation of even a digest of the changes in automobile statutes throughout the country during the recent sessions of the legislatures. Such a digest may be prepared later and submitted for the use of the members of this association.

"IN A FEW YEARS WE WON'T NEED SUCH STRICT AUTO LAWS"

HEREWITH is a communication sent to the editor of the Auburn, Ind., *Republican*, telling how one man changed his mind about the automobile. The story is told in a homely sort of style, but is typical of the experience of probably many another one who lives in the country:

Editor REPUBLICAN:

I had a visit from my old friend Smith last week and he certainly did me good on the auto question—but that's ahead of my story. Last Friday about noon I was washing up for dinner when Honk! Honk! and a great, big, red auto comes right up in my side yard. I yells to my wife, "Mol, get me the gun," 'cause I had promised myself to shoot the first one that came about motoring. I had met one or two with the bay mare and she wasn't so bad, but I just knew the others would tear up the ranch. Well, Mol couldn't find the gun (guess I'd left it in the barn) and in the meantime I discovered Smith was running the thing.

Now Smith was an old, old friend, but I was hot and called him down plenty. He took it pretty well, made a pass with his left hand and the red thing was still as a mouse. Then he climbed down; come over and as we shook hands said: "If you give your old pal a square meal, I'll tell you a story about motoring." Motoring, thinks I, what's that? Well, we went in and when things were going good I says "Well, George, what about your gol-dinged motoring?" I wouldn't admit it then but I was getting kind of curious; who wouldn't with a big, red one outside the winder right under your nose? Looked nice, too—for an auto—big, soft cushions and lots of room for your feet.

"Well, I'll tell you," says Smith. "You know I always had horses and down home we have worse places to meet autos than in this country; so for a long time I cursed the machines, same as you do. I never had any trouble though (me either, I admitted to myself), and one day, as I started to nail up the front fence, down the road

come a big machine. Now the kids was playing in the road, where they had no business to be, and they got scared and one falls right under the wheels; but the driver was game, runs the machine right in the ditch, jumps out and picks up the kid. Well I tell you that changed my mind some, 'cause people told me that those automobile fellows would run you down and never stop. Well, I thanked him, and when he wanted to go he found that in running in the ditch he had busted a tire. I was sorry and helped him all I could, he, meanwhile, telling lots of things. Next time I went to town I brought out a can of gasoline and it was not long before I had use for it, about two days I think, when some one comes up and I sees it is the driver who saved the kid. He was out of gasoline and wanted me to drive to town for some. "I'll go you one better," says I, and got him the can. He poured it all in the machine and says, "How much?" I says, "Take me and the missus to the top of the hill and back and we'll call it square." "Take the kids, too," says he, and we did. Well, I got interested. That was two years ago. Now I've got a machine and am more interested and I don't have any trouble with horses when their drivers do half what's right."

"Well, Smith," says I, "I'll admit you have as much right on the road as I—" "There you're wrong," says he. "I don't, the law limits the machine in every way, but I don't kick. It won't always be that way. In a few years we won't need such strict automobile laws, but we may need some for the horse drivers who block the road unnecessarily. Come we'll take a little spin."

Take a little spin! Say, we took what Smith called a little spin; went up to Auburn then down to Sacramento and back and I tell you motoring is all right. It was an eye-opener for me. Instead of continual trouble with horses we had none; instead of continual trouble with the machine we had none. I changed my mind and when I get some dough saved up, it's "motoring" for me.

A SUBSCRIBER.

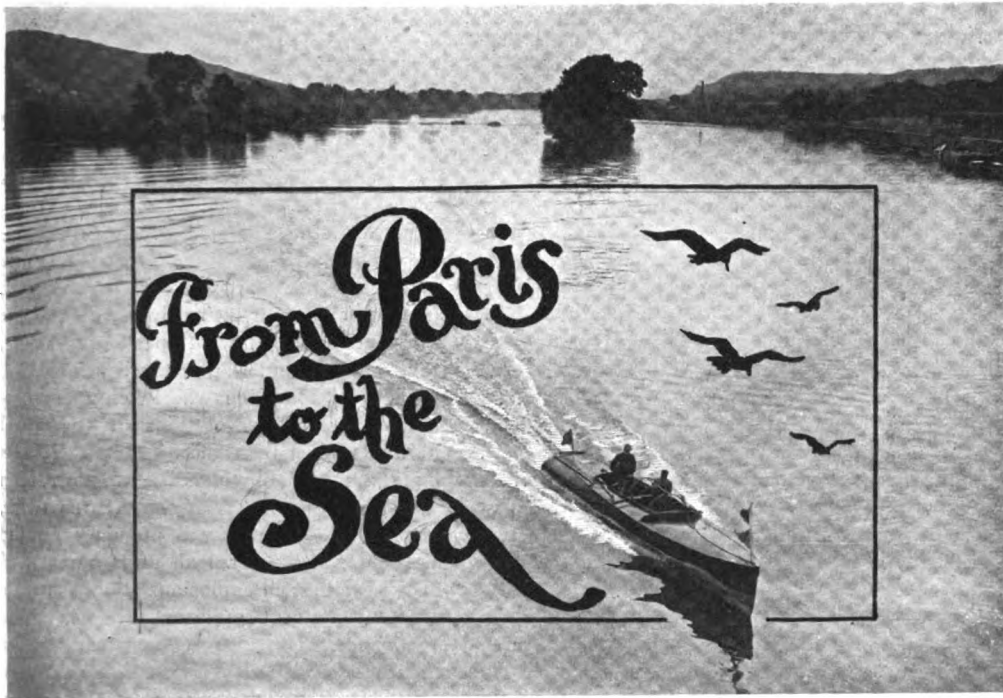
GOOD ROADS AND GOOD WILL OF FARMERS

EVERETT, WASH., Aug. 2.—The Snohomish County Good Roads Association has been organized. This is largely an automobile organization. The following officers were elected: President, Dr. W. C. Cox, Everett; vice-presidents, E. M. Stephens, Monroe; William Hulbert, Everett; W. C. Brokaw, Edmonds; secretary, Elmer E. Johnston, Everett; treasurer, W. G. Swallow, Everett. The initial effort of the association was to assist in the entertainment of the State Press Association, and the editors were taken about for a spin to various points of interest.

The association intends to take an active part in the betterment of everything in the good roads lines, and hopes to cement

a spirit of friendship between the auto class and farmers. It will urge its members to give proper regard to the rights of the farmer and to do everything possible to save him from annoyance and danger in the fear which his horses may have of motor vehicles. The association also went on record as favoring a State law to license all auto drivers and owners, with penalties for the violation of regulations.

Good roads building in Washington State has been receiving an increased amount of attention in the past year and more, and it is not improbable that there will be other county associations formed similar to the one just organized here.



PANHARD-TELLIER ON HER WAY DOWN THE SEINE, FORTY MILES FROM PARIS.

TROUVILLE, FRANCE, July 28.—*Panhard-Tellier* has won the Paris-to-the-Sea race, so successfully revived this year by the Navigation Syndicate after a season of languishing health. Apart from accident, it was a foregone conclusion that Tellier's boat, engined by Panhard-Levassor, would repeat her victories at Monaco, and no one is surprised at the result of this run to the sea. With its numerous locks and its miles of serpentine stream, it was recognized as impossible to hold a through race from Paris to Havre. The committee, therefore, which boldly undertook to atone for the 1905 farce, when one solitary boat covered the distance in isolated dignity, organized a race at Paris for the Paris cup, and a second speed test from Rouen to Trouville, with stages at Caudebec and Havre. The portion of the journey from the Parisian suburb of Suresnes to Rouen was a cruising event for all classes of boats.

Five racers took the start—namely, *Panhard-Levassor* and *La Rapière II*, both with Panhard engines. *Lorraine-Dietrich*, *Itala H*, owned by Henry Fournier, and the *Mercedes*, engined by the German firm but with hull built by Pitre. Twenty-one boats made up the cruiser class; there were three hydroplanes and two were classified as seagoing vedettes.

Some disorder marked the start of the race from the Auteuil Viaduct owing to the presence of a large fleet of pleasure boats, united to watch the arrival of the winners in a long-distance swimming match. *Panhard-Levassor* proved the winner in the run down stream to Suresnes bridge, her time being 11:20. Her smaller sister, *Rapière II*, came second in 12:6, and *Lorraine-Dietrich* third in 12:9. Owing to the crowded state of the river only the *Panhard-Tellier* made a good start. The *Lorraine-Dietrich*, with three separate Dietrich motors and three propellers, was unable to compete on equitable terms with the Panhard craft, and Perignon, her owner and pilot, issued a challenge for a special race. Henry Fournier made the fastest time in the cruiser class with *Itala II* in 19:10. Mlle. Noilhan's *Panthère*, with Bianchi engine, coming second in 21:22.

Running down stream from Vernon to Elbeuf and from Elbeuf to Rouen was a happy pleasure party, each boat wandering along at the fancy of its crew, tying up for lunch at the picturesque waterside villages abounding in this part of Normandy, or anchoring in a shady place, while every man aboard splashed in the clear depths of the placid Seine.

Starting out from below the busy Cathedral City of Rouen,

seasickness. Both *La Rapière* and the *Panhard-Tellier* broke their own records, the latter boat covering the distance at the rate of 32 miles an hour, in 17:46. *Rapière's* time was but 61 seconds slower, or 18:47. Cruisers generally made fast time, but owing to thinly represented classes little comparison could be made between them.

"DIXIE" DEFEATS FAST BRITISH BOAT.

SOUTHAMPTON, August 2.—America's champion motor boat *Dixie* has won the Harmsworth international Championship Cup in Southampton Water against Britain's three best representatives. *Dixie*, who carried her owner, E. J. Schroeder, of the Motor Boat Club of America, and was steered by Capt. Pierce, covered the 35-mile course in 1:15:44 3-5, equal to an average of 27.78 miles an hour. *Daimler II*, the fastest British boat, was second in 1:17:25 2-5.

Perfect weather conditions prevailed when the start was given, and, although *Dixie* took the lead at once, she was closely followed by *Daimler II*. Before the first leg was covered the American craft began to pull away from her rival, and gradually increased the lead to such an extent that, barring accident, her victory was certain. Without a falter from beginning to end, the *Dixie* finished with a lead of three-quarters of a mile, rousing cheers, the hooting of horns and the dipping of the Union Jack by the entire fleet greeting her as she crossed over the line. *Daimler II* ran well, but never had the same speed as her rival from across the Atlantic.

There is general regret that the French boats *Panhard-Tellier* and *Rapière II* were not able to meet the *Dixie*. The entries of these two boats were made after the official date of closing, and, on their acceptance being referred to the Motor Boat Club of America, that body refused its sanction on the grounds that there had been ample time to enter, and failure to do so was not its fault. *Panhard-Tellier*, which is certainly the fastest motor boat ever built in Europe, has beaten *Daimler II* in every contest. In the 200-kilometer Championship of the Sea at Monaco last April, she traveled at an average of 34.77 miles an hour. *Dixie's* fastest time was in a 15-mile race on Lake Worth, when she averaged 32.51 miles an hour. Owing to the immediate return of the American boat to participate in races on the Hudson, it is not likely that she will meet the crack French boats this season, as had been hoped by motor yachtsmen.

A COMMON SENSE TALK ON HILL CLIMBING*

ONE of the great feats which is credited to most every car by its owner is, "She will take any hill, within most any radius, on 'high,'" etc. It is certainly necessary for a car to get over any hill on the road, and it is, no doubt, a pleasure to surmount it on high; but, whether it is advisable to do so is a question answered in some cases immediately by the breaking or straining of one of the parts, or later by the poor condition of all the parts of the mechanism that is an inevitable consequence.

The most important factor in climbing hills fast certainly is in having enough motive power in proportion to the weight of the car. It does not follow, however, that a high powered car should climb hills on the "high" as easily as a light runabout with a good deal less power; first, on account of the difference in weight to be dragged, and mainly on account of the relation of the speed of the motor to the driving wheels. High powered cars are generally geared much higher than cars with smaller motors. This is done so as to be able to run fast on the level without speeding the motor excessively. The average relation of gearing is about three to one of the high on cars having twenty to twenty-five horsepower. In cars of thirty to forty-five horsepower we find the average "high" gear to be about two and one-half to one. Still higher powered cars, say from fifty to sixty horsepower, have a ratio which is often less than two to one, and racing machines are generally geared one to one on high, driving wheels making same speed as the crankshaft.

We speak of these ratios as the average, but there are many high powered cars with lower gear ratios when built for special uses, or when they are air-cooled, etc. When, for example, the ratio three to one is spoken of, it means that the motor shaft turns three times in order to turn the driving wheel once. When figuring the ratio or the speed of the motor when traveling a certain mileage per hour, we must necessarily consider the size of the driving wheels, because when a car mounted on thirty-four-inch drivers has a ratio of three to one, its motor runs slower than one of a car mounted on thirty-two-inch drivers with a three to one gear, both making the same speed. Let us consider what the ratio of gearing has to do with hill climbing abilities of automobiles. The explosions in the cylinders are really pushing the car up the hill. When the motor is allowed to run fast while the car goes slow, the explosions occur often, the flywheel will maintain a uniform speed, and the car will mount easily and without jerking. When, however, the motor turns over slowly, the flywheel not being heavy enough to advance the

car steadily between the intervals of the explosions, the car will jerk at each explosion, and all driving and power transmitting parts will be under a strain for which they were really not designed and are not able to stand very long.

To impress the importance of this subject on your minds, we will figure just how far one explosion in one of the cylinders of a four-cycle, four-cylinder motor geared at two to one ratio, must push a car mounted on thirty-four-inch drivers, and, at the same time, how many revolutions, or at what speed per minute, the motor runs when making sixty miles per hour.

The circumference of a thirty-four-inch wheel being approximately nine feet, it takes about 587 revolutions of the wheel to cover one mile. The motor must then make 1,174 revolutions per minute when running a mile a minute. In this car each cylinder makes one explosion while the crankshaft turns twice, and we get four multiplied by 587, or 2,348 impulses on the motor shaft in one mile, and which figures about two feet and three inches of travel of the car to each explosion. Supposing we negotiate a hill with a 33 1-3 per cent. grade, which means one foot rise in three feet advance. If we ascend it with the car each explosion must push the car with all its weight, and against all the friction, two feet and three inches ahead, and consequently raise it one-third of that distance, which is nine inches. Consider what a tremendous strain there must be on all power transmitting parts, especially when going slowly, for then the flywheel at the speed it turns is not heavy enough to carry the car steadily ahead and upward. Consequently, we believe it to be advisable to climb hills on the lower speeds. In speaking of the ratios of the gears a simple way of easily obtaining them on any car will be of interest. They can be figured, but it requires counting teeth on sprockets or bevel gears, etc., usually enclosed, and always full of grease. Engage the clutch and the gears of which the ratios are to be determined. Mark the driving wheel at its lowest point, and the floor with chalk. Also mark the flywheel so as to be able to count its revolutions. Then push the car, counting the revolutions on the flywheel until the chalk mark on the driving wheel is again at its lowest point. The ratio will be the number of turns of the flywheel to one of the driving wheel. If, for example, the flywheel has turned two and one-quarter times, the ratio is two and one-quarter to one. By measuring the distance between the chalk marks on the floor in feet, and dividing it into 5,280, will give the number of turns the driving wheels make in one mile. Multiplying this quotient by the number of turns made by the flywheel will give the number of revolutions the motor makes in one mile.

*Read before the Long Island Automobile Club by Louis T. Weiss, Chairman Technical Committee.

BRITISHERS WILL ENCOURAGE USE OF ALCOHOL FUEL

LONDON, July 24.—After twelve months musing the British Motor Union has pronounced in favor of alcohol as a substitute for gasoline. In view of the increasing cost of the present fuel they recommend that steps be taken to remove the restrictions on alcohol, that a prize be offered for an essay on this fuel, and that trials be held to test the respective merits of alcohol and gasoline. Regarding other possible solutions, the Union recommends that the use of heavier spirit be encouraged, that efforts be made to modify existing restrictions on the use and distribution of alcohol, competitions be held for kerosene carbureters, and that the use of benzine be encouraged. The government tax on alcohol is at present the greatest difficulty in its adoption as an automobile fuel, but is thought that the revenue authorities' objections can be overcome by the use of an efficient, and at the same time inexpensive, denaturant. The point

that is chiefly emphasized in the report is the fact that there are many possible alternative fuels that may be employed satisfactorily, but all of them are subject to the same disadvantage of being limited by natural causes, just as are present-day fuels, such as gasoline. This has caused a hard-and-fast line of classification to be drawn between alcohol, which is the one fuel of absolutely unlimited production, and those which are limited, these again being subdivided according to whether their origin is coal or petroleum. As a means of obtaining immediate relief, the use of slightly heavier fuels, such as the gasoline imported from the East Indies, is recommended, while emphasis is laid on the fact that the boiling point, rather than the specific gravity, should be followed as a standard in judging its fitness for fuel purposes, since the real criterion is one of boiling point or capability of complete evaporation at normal or below normal temperatures.

EUROPE'S GOOD ROADS RESULT OF SKILL AND LABOR

By Cortlandt Field Bishop, Chairman A.C.A. Map Committee

THERE is a vague impression among American automobilists that Europe's magnificent road system is a glorious heritage handed down from generation to generation and enjoyed by father and son without expenditure of either time or money. There is an enormity of incorrectness in the supposition, for primarily Europe's roads are not all good, and where they have been developed to a stage worthy of the designation perfect it has been by the employment of the highest engineering skill and enormous sacrifices of men and money.

France has won for herself the enviable position of leader in the world's national highways, with a system of roads which far surpasses those of her neighbors and by which, in comparison, the highways of America are a mere scratching on the surface of a continent. Naturally France has profited—and profited largely—by the work of earlier generations. Harking back to the Roman occupation, there were more than thirty thousand kilometers of road in use throughout Gaul, about four thousand of which formed the first four great highways radiating out from Lyons in the Rhone valley to the Rhine and the Meuse valleys, Amiens, Bordeaux and Marseilles.

Under Philippe Auguste a system of arrangement and classification was put into use which, although modified and renamed, has never been changed since the twelfth century. The delightful highway along the right bank of the Loire—known of every American automobilist who has traveled in France—was his special work, while the Route de Bretagne was among his valuable donations to the nation. Louis XI., who created the *Service des Postes*, Louis XII., François I., Henry II., and Charles II. all carried forward the work of improving and extending the national roads. Henry IV., that strange esthetic monarch, passed the law making compulsory the planting of trees by local authorities along the national highways. Colbert, Louis XIVth's most distinguished minister, put up the first mile stone, thus laying the foundation of a system by which in our days all who run can read. Napoleon, engrossed with the military conquest of Europe, found time to attend to the development of the *Grandes Routes Nationales*, thereby leaving a monument of far more durability than his most brilliant military prowess.

French Nation Pays Liberally for Road Maintenance.

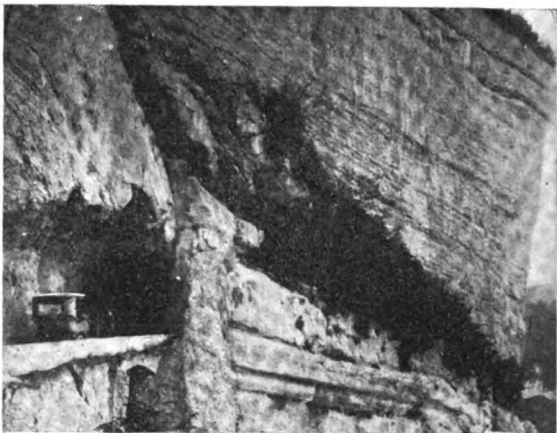
But the work of the present generation is in no way inferior to that done under the old régime, when the peasant did his *corvée* or forced labor on the building and upkeep of highways. Taxation is the modern *corvée*, more equitably distributed over the whole nation; that it is not a light burden is shown by a reference to the official figures of the cost of road maintenance in France for one year. In 1893, according to official reports, the sum of about thirty-two million dollars was expended in the maintenance of the four national systems of highways, namely national roads, departmental roads, communicating paths and country lanes. This large outlay was for road material and labor only; an additional expenditure of from 30 to 50 per cent. must be added for the maintenance of watercourses and sidewalks, the planting of trees and for general administrative expenses. The annual average cost of a kilometer of national road is \$155; departmental roads cost \$120 per kilometer; the humblest country lanes, designated *chemins vicinaux*, are allotted the sum of \$40 per kilometer for their annual upkeep and repair.



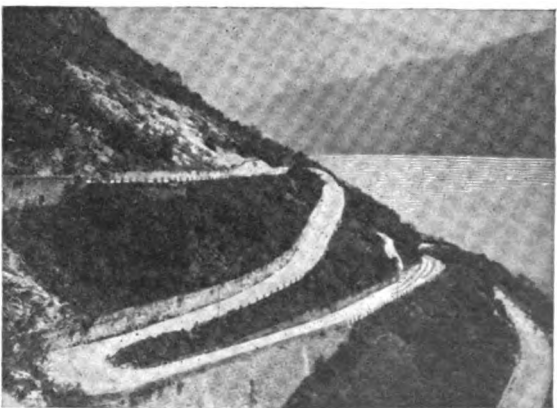
HIGHWAY ACROSS THE GREAT ST. BERNARD.



ROAD SKIRTING PRECIPICE IN FRENCH ALPS.



TUNNELED THROUGH SOLID ROCK NEAR AURILLAC.



EASY GRADE MOUNTAIN ROAD IN SAVOY.

To thoroughly appreciate the value of French road building and at the same time enjoy automobiling in its most exhilarating form it is necessary to explore the mountain districts. Mountain climbing in an automobile is not yet overdone—indeed, it is more correctly in a robust infancy. The Massif Central, with its Domes of Auvergne, forms an introduction to the wilder and more precipitous slopes of the Pyrenees and the French Alps. Here, on highways of such uniform excellence that it was possible to hold an international speed test around snow-capped peaks, and where a special speed track would have been created but for the distance from the capital, there is a magnificent region to be used as a preliminary training ground for the automobile lover of mountain scenery.

The Pyrenees, of recent years increasingly popular with automobilists, present examples of road engineering only slightly inferior in skill to those of the French Alps, while for historic interest, the preservation of ancient customs and grandeur of nature they appeal as forcibly to thousands as their better known rivals on the southeastern frontier.

Mountain Automobiling Fascinates the Cool Headed.

Alpine automobiling demands two conditions—perfect road surfaces and a car that leaves no room for fear regarding its power to pull or ability of its brakes to hold on any grade. Naturally a cool head and a certain ability as an automobile driver are requisite if a trip through the French Alps is to be enjoyed, for although road conditions are made as safe as it is possible for mountain roads to be and the modern automobile rarely fails, there is always a smack of danger on mountain ledges overhanging yawning precipices. Under the charms of nature, however, the sense of danger in mountain automobiling is transformed into an exhilaration unequalled by any other sport.

It is in the French Alps that the finest examples of engineering skill in road building are to be found. The St. Bernard, started by Napoleon, the Petit St. Bernard, the Galiber Pass, the Lauteret Pass, eight thousand feet above the sea and only open two months in the year, the Liorn, the longest road tunnel in France, are a few of the better known examples of skill in road building, the counterpart of which can only be found in America in some of our most daring pieces of railroad work. As an example of how a steep mountain side is climbed, the winding road near Aix-les-Bains, an illustration of which is given, is an excellent piece of work, the road serpentine up the hill side in a series of easy grades, easily climbed by machines of ordinary power. The highest mountain passes, built primarily for military use and only open to traffic a few months in the year, show an enormous expenditure of skill and labor in carving out a roadway where nature seems to rise up as an insurmountable barrier.

SOME EXTREMES THAT ARE MET WITH.

Just to show how far some people will carry a hobby, an instance is recalled of a new owner who made it a custom to take out the spark plugs of his motor and treat them to a careful brushing with gasoline almost as frequently as he lavished the same attention on his teeth—and as he was a careful individual, this was a little more often than the Tennessee mountaineer who was near the three score and ten mark before he saw a man "filing his teeth" for the first time. While such treatment naturally did no harm, it would have been just about as efficacious to have polished the hoofs of a good horse every morning with a view to increasing its speed. There is sufficient necessary work to do about a car without taking the time to put in a lot of useless strokes. It is said that, in the navy, where there are so many men on board a ship, that it is difficult to keep them all busy, work is done by one part of the crew and undone by another in order that a third section may do it over again. The man who takes care of his own car, whether from a desire to economize or from a liking for the work, has no surplus time in which to follow such a round-about way of doing things.

THE CHAUFFEUR'S DREAM.

By A. D. HARD, M.D., MARSHALL, MINN.

The stillness of a Summer night;
Soft zephyrs cool, the moon's pale light,
Combined to soothe in sweet repose,
A weary Chauffeur, and his woes,
At close of day.
A long day's run, his muscles sore,
Reclining on the garage floor,
To catch a moment's fitful sleep,
Forget his aches in slumber deep,
Begrimed he lay.

Sweet dreams: Unfettered flights of mind,
In which we thrust hard facts behind,
And soar in fancy, far and fast,
Or own the earth, and spurn the past—
'Till sleep doth break.
And thus the Chauffeur, as he lay,
In restful peace at close of day,
Was led by Dream-King's fairy hand,
Down where the Sea doth kiss the land,
His wish to make.

He wished that from Utopia far,
Would come for him a perfect car.
Free from all troubles on the road,
That add to life a weary load,
And pleasures dim.
The Dream-King bowed; And off the strand,
Appeared a ship from foreign land.
Upon her deck in bright array,
The Chauffeur's ideal auto lay,
Consigned to him.

A limousine, its fittings fine;
Each graceful curve and beauty line
Bespoke the perfect master's art,
To charm the eye with every part—
It was "A dream."
The wheels were shod with gauzy air;
Pneumatics, but no rubber there.
No fear of blow-outs, cuts and leaks,
No gum-elastic fills, or freaks
That perfect seem.

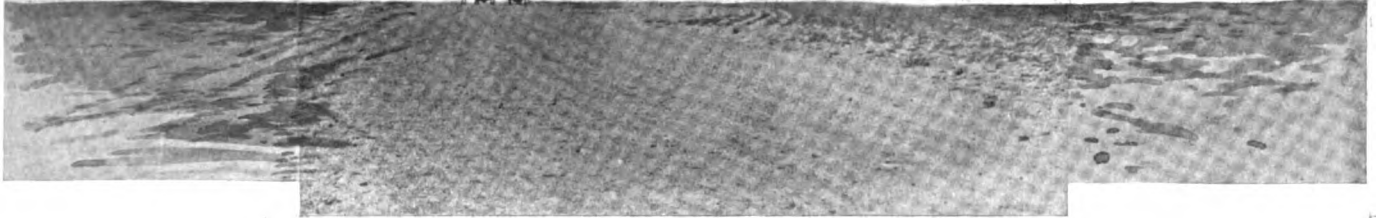
The motor was a "Mighty Six,"
As silent as the River Styx:
No valves, no gears, no wearing parts;
The triumph of mechanic arts—
Perfection kissed.
Ignition! 'Twas a gleam of joy,
Bereft of all that might annoy.
The spark, along its wireless track,
Sped swiftly to each plug and back,
And never missed.

And lubrication! Oh, how fine:
For dirty oil "Dark Afric's" mine
Had given man a secret rare,
And liquid-graphite, clean as air,
Made smooth each part.
No pump, nor syphon, fin or fan,
To curse with trouble mortal man:
The Chemist, delving science deep,
Had solved the cooling problem, cheap,
A simple art.

Thus, one by one each trouble past,
The perfect car appeared, at last,
To charm the Chauffeur's longing heart;
With poetry of motion's art—
But, 'twas a dream.
The wind-slammed door the Chauffeur woke,
He gazed around, but no word spoke.
His dirty, crippled, ungroomed car,
Stood as it stopped, from journey far.
THIS was "no dream."

The Autodrome Commission of the Imperial A. C. of Germany is at present studying the plans of a piece of land, situated near Aix-la-Chapelle, which has been taken into consideration for the proposed motor track. The convenient position of the Aix as one of the most frequented points in Continental railway traffic is one of the most weighty reasons brought forward by the supporters of a course in the Eifel district.

From Peking To Paris



CROSSING THE SEVEN HUNDRED MILES OF DREARY WASTE KNOWN AS THE DESERT OF GOBI.

PARIS, Aug. 1.—Paul Pons, who started as a Peking-Paris tourist with the small caravan which turned its back on the eastern city a couple of months ago, has returned to Paris with bitterness in his heart. Pons mounted a Contal tricar, a robust little machine very ingeniously fitted up for the hard work across wild wastes, which, after a few hundred miles, found itself too heavily loaded in proportion to its horsepower, and had to withdraw. Reports which came in from the party declared that the Contal had been relieved of a large part of its load, but as it was still unable to continue as rapidly as the others, it was finally left behind. Pons swears that the other drivers broke their promise to keep all together, and when he was in difficulties left him behind and made no attempt to find him. He trailed along in their wake until his gasoline supply was exhausted; then, having neither food nor water, he was obliged to abandon his machine and make for Kalgan, 180 miles away, partly on foot and partly by occasional lifts from camel caravans. When the main party reaches Paris Pons declares he will be there and will express his opinion without reserve.

Prince Borghèse, who has a machine of much greater power than any of his competitors—a 40-horsepower Itala, with runabout body—has left the De Dions and Spyker, has pushed ahead, is now at Berlin, and will reach Paris this week. Cormier, the De Dion driver, has telegraphed to Paris that the Italian car has left the route mapped out by *Le Matin*, organizer of the tour, and is pushing on over the district the driver considers most suitable. Replying to this protest, the organizers declare that the road is absolutely free in the Peking-Paris run, and that if a competitor wishes to leave the marked-out course, with its gasoline stations, he is at liberty to do so at his own risks. The performance is not a race but a tour, the only advantage to be gained by first arrival being that of additional publicity.

Latest reports from the two

De Dions piloted by Cormier and Collignon are to the effect that they have reached Petropawlowsk, and should be in Paris ten days later than the Itala, their mileage at that time being about four thousand, leaving only two thousand miles to be covered over daily improving roads. Daily journeys at this stage of the tour average 100 to 150 miles, according to the condition of the country. As the Ural mountains are approached traveling again becomes difficult, but none of the hardships encountered in China or on the dreary wastes of the Gobi desert are met with.

The Spyker, the only Dutch car which entered the test, is still under repairs at Tomsk, in Siberia. When his magneto has been put into working order it is the intention of Godard, the driver, to return to Tchernkovo, the point where he boarded the Trans-Siberian railroad, and continue the journey under his own power, as stipulated in the rules governing the tour.

All the cars taking part in the 6,000-mile transcontinental run are stock chassis with special fittings for the herculean task they have undertaken; Itala has 40 horsepower, the two De Dions are 16-20, and the Spyker is registered as a 24-horsepower model. The French and the Dutch cars have open touring body crowded with the necessary equipment for camping out, carrying extra supplies of gasoline, tires and oil. With its runabout body, having a large rear platform available for big capacity gasoline tank and reserve tires, the Itala has had a distinct advantage over its rivals, its load in proportion to horsepower being very low compared with the others.

Critics have tried to belittle the tour on the ground that liberal aid has been given by camel teams and groups of natives. While it is true that in many places the heavily loaded automobiles had to be helped out by external means, especially in the undeveloped districts of Asia, reports from tourists with the party, and particulars furnished by Pons, show that the drivers are en-



ARRIVAL AT THE GATE OF OURGA IN NORTHERN CHINA.



CHINESE TROOPS GUARDING CARS AND TRAVELERS.

titled to all honor for their plucky performance, and that the automobiles have proved themselves capable of passing over every class of country, with or without roads.

FATAL ACCIDENTS STOP FRENCH CRITERIUM.

PARIS, Aug. 3.—As the result of two automobile accidents resulting in the loss of six lives, the Minister of the Interior has telegraphed to the Prefect of the Gironde ordering him to stop the Criterium of France tour organized by the A. C. F.

On the third stage of the journey, Bordeaux to Nantes, to be covered at an average speed of twenty-one miles an hour, car No. 34, a Martin & Lethimonnier, manned by Sergessmann and Perrett, and carrying two Parisian press photographers, Meurice and Lequin, broke down and smashed into a tree. Lequin was killed and the others slightly injured.

A little later, and only a short time after the first accident, one of the competing cars and a touring car containing Bordeaux newspaper men on their way to inquire about the first disaster, came into violent collision and were reduced to wreckage. Mathieu and Metayer, driver and mechanic of the competing car, were killed on the spot. The two men in charge of the touring car died before reaching hospital, and one of the newspaper men expired immediately on admission.

The Minister's interdiction refers only to the Criterium, and not to the Press Cup race to be run on a guarded course near Lisieux. The contest, which was the proposal of the Marquis de Dion, a strong opponent of racing, was to comprise the Criterium, a four-day touring event, on a daily schedule varying from 19 to 25 miles an hour, and a final speed test on a limited supply of fuel, known as the Press Cup. Whether the final race will be run depends on the decision of the A. C. F.



ALONG THE ROAD NEAR THE GREAT CHINESE WALL.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
- Oct. 31-Nov. 7.—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 14-21.....—St. Louis, Mo., Jai Alai Building, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
- Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.
- April 6-11.....—Buffalo, Convention Hall, Motor Boat and Sportsman's Show. D. H. Lewis, manager.
- Sept. 7.....—Minneapolis, Minn., State Fair Race Meet of the Minnesota State Automobile Association.

Races, Hill-Climbs, Etc.

- Aug. 9.....—Algonquin, Ill., Hill Climb, Chicago Motor Club and Chicago Automobile Trade Association.
- Aug. 9-10.....—New York City, Brighton Beach Track, 24-hour Automobile Race, United States Motor Racing Association.
- Aug. 17.....—Newark, N. J., Olympic Park, Carnival of the New Jersey Automobile and Motor Club.
- Aug. 31.....—Philadelphia, Race Meet under auspices of the Quaker City Motor Club. (Track will be either Point Breeze or Belmont.)
- Sept. 2.....—Harrisburg, Pa., Race Meet of Motor Club of Harrisburg (probably Middletown track).
- Sept. 2.....—Chicago, Harlem Track, Race Meet under the auspices of the Chicago Automobile Club.
- Sept. 2.....—Bridgeport, Conn., Labor Day Hill Climb, Sport Hill, Bridgeport Automobile Club.
- Sept. 5.....—Chicago, Cedar Lake Economy Run, Chicago Motor Club and Chicago Automobile Trade Ass'n.
- Sept. 7.....—Hartford, Conn., Hill Climb, under the auspices of the Automobile Club of Hartford.
- Sept. 14.....—Albany, N. Y., 95-mile Road Race, under the auspices of the Albany Automobile Club.
- Oct. 21.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

Motor Boat Races.

- Aug. 13-15.....—Chippewa Bay, St. Lawrence River, Gold Challenge Cup Race, American Power Boat Ass'n.
- Aug. 22.....—New York to Jamestown (Va.), Annual Cruise, American Power Boat Association.
- Sept. 2-6.....—Jamestown (Va.) Exposition Motor Boat Races.

FOREIGN.

Shows.

- Sept. 28-Oct. 7.—Denmark, Copenhagen International Automobile Show.
- Nov. 11-23.....—London, Olympia Motor Show.
- Nov. 12-Dec. 1.—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France. Applications for space close August 15.
- Jan. 18-Feb. 2.—Turin, Italy, Fifth International Automobile Exposition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.

Races, Hill-Climbs, Etc.

- Aug. 23.....—Belgium, Ostend Motor Boat Meeting.
- Aug. 11-29.....—France, Coupe de Auvergne.
- Sept. 1-2.....—Italy, Brescia Circuit, Florio Cup. A. C. of Italy.
- Sept. 15.....—Austria, Semmering Hill Climb, Austrian Automobile Club.
- Sept. 15.....—France, Chateau-Thierry Hill Climb.
- Oct. 1-15.....—Paris, Electric Vehicle Competition, Automobile Club of France.
- Oct. 20.....—France, Gaillon Hill Climb.
- Nov. 1-15.....—France, Volturette Contest near Paris.
- May 16, 1908.....—Sicily, Targa Florio, Automobile Club of Italy.
- July 14, 1908.....—Paris to London, Aerial Race.

THINGS DOING AMONG THE BUSY CLUBS

New Jersey Endurance Run Winners Receive Prizes.

NEWARK, N. J., August 5.—Contestants who completed with perfect scores the three-day endurance run of the New Jersey Automobile and Motor Club, held May 30-June 1, received their awards last Thursday evening in the shape of a certificate signed by the officials of the contest and a gold watch fob, with the name of the contestant and car neatly engraved on each. The latter was given in the nature of a surprise and was greatly appreciated, as it was not the least expected by either contestant. The committee went a little further in the nature of surprises by presenting each of the contestants who completed the three days' run with an engraved certificate, the only difference being that those awarded to the cars were managed with creditable skill, while the twelve perfect score men are so worded. Each certificate is signed by the committee, which also presented the owner of each official car with one of the gold watch fobs. Those receiving these were W. C. Shanley, George Paddock, Raymond S. Joo, L. T. Wiss, A. H. Whiting and C. F. Boyd. The certificates and fobs for perfect scores went to J. B. Ryall, Matheson touring car; J. W. Mason, Stoddard-Dayton touring car; Richard T. Newton, Stoddard-Dayton runabout; H. J. Koehler, Buick and Corbin runabouts; R. A. Greene, Oldsmobile touring car; Percy H. Johnstone, Grout touring car; F. E. Boland, National touring car; C. H. Peckworth, Knox touring car; C. W. Oathout, Jackson runabout; Charles S. Calvert, Winton touring car, and Henry Setlow, Dragon runabout. The awards were made by Angus Sinclair, president of the club, who reviewed the history of the local organization and the leading part it has taken in New Jersey automobile history.

Chicago Automobile Club Expands in Its New Home.

CHICAGO, Aug. 5.—At the rate at which the Chicago Automobile Club has grown during the past month, which is the first it has been in occupation of its new quarters, it would look as if the latter would shortly become inadequate, despite the liberal scale on which they were planned. In fact, that the need for room will sooner or later become pressing is already apparent, and with this in mind there will be a revision of the features that are to be installed. For instance, a set of bowling alleys were included in the original plans, but it is doubtful now if they will materialize, the space being added to the grillroom. It is suggested that a swimming pool be installed, though this is but one of the many put forward. As yet the garage facilities of the "inside-the-loop" clubhouse have not yet been tested to their capacity, but the new system of checking adopted has already been responsible for a large increase in the demand. To members the fee for checking for twelve hours or less—that is 7 A.M. to 7 P.M., or over night—is but a quarter, while touring cars are stored at the rate of \$25 a month and runabouts \$15, the schedule of prices for washing and the like being proportionately low.

The latest official club circular gives a list of fifty-two new members, the largest number ever admitted at one time. Charles A. Coey has just resigned as a member of the club's racing board, his reasons being that his position as a competitor in track events made his position as a board member an inconsistent one.

Nevada's Mining District to Have a Club.

GOLDFIELD, NEV., Aug. 5.—The automobile has been a very important factor in the development of Nevada, and there are now a great many of the machines in constant use. In order to secure improved roads and promote the interests of automobilists generally, Senator T. L. Oddie and Clarence Oddie have raised the sum of \$3,000 for the purpose of organizing an automobile club, which will be known as the Southern Nevada Automobile Association. Active steps are being taken and the club will shortly be in full swing.

Harrisburgers Arranging for a Labor Day Race Meet.

HARRISBURG, PA., August 5.—Enthusiasm is rampant in this city for a race meet on Labor Day, and the Motor Club of Harrisburg is taking active steps to have the event take place. From the present indications it will be impossible to hold the races on either the Eshenour or the track above the city on the river road, but the scene of activities will shift to the famous Middletown Fair Grounds. During the past few days the talk has centered on the Middletown track, as it is easy of access, contains a grandstand and, the most important point, is in good condition. Autoists who are interested in the pending races think the Middletown track, if it can be secured, will be the real thing, and plans will be made next week to secure the track and make arrangements for the races.

Should the meet be arranged it is likely that the challenge race between H. B. Stillman of Philadelphia, in his Pennsylvania car, and James A. Kline, of York, in his Pullman, would take place. This race is to be for a side purse of \$100, which will be turned over to charity. A Wayne car may also be entered in the race.

Quaker City Motor Club to Hold Meet.

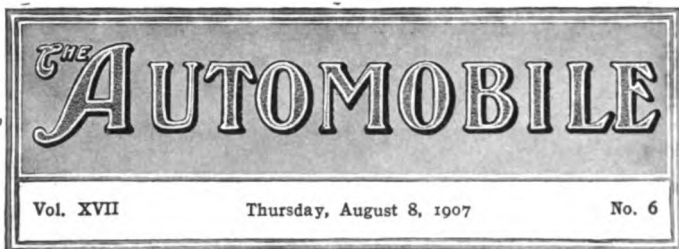
PHILADELPHIA, August 5.—At last week's meeting the Quaker City Motor Club decided to continue its aggressive campaign and promote a monster meet, to be held either on the Point Breeze or Belmont track. Saturday, August 31, was selected, and an effort will be made to bring together all the fastest cars in the country in a trio of events at 25, 50 and 100 miles. There will also be several short-distance races and one for "gentlemen drivers"—that is to say, a strictly amateur event in which owners shall drive their own cars. There is a division of opinion in the minds of the contest committee as to whether Point Breeze or Belmont would furnish the better sport. The former, although more easily reached and therefore more suitable from the "big gate" viewpoint, is handicapped by too-sharp turns and a bad surface. Belmont track, located in the suburbs, has poor transportation facilities, but is wider, a regular oval in shape, and with very easy turns. Both are mile tracks.

Brockton Autoists Protest Against the New Law.

BROCKTON, MASS., August 5.—The Brockton Automobile Club held a meeting last week and entered a vigorous protest against the new Massachusetts law regarding registration, which went into effect August 1 and requires the payment of an additional fee of \$5 for re-registration. The meeting was the largest one held in a year, and President G. W. R. Hill, in his address, stated that it was time for the 20,000 owners of automobiles in this State to see that their interests were looked after in the future. The club voted to request the Massachusetts State Automobile Association, with which the club is affiliated, to test the constitutionality of the law. It was voted that all members paying the new registration fee do so under protest.

The Automobile at the Grand Forks County Fair.

GRAND FORKS, N. D., Aug. 5.—That the automobile is entering more and more into the life of the agricultural community is evident from the action taken by the Grand Forks Automobile Club in making arrangements for the cars which will bring visitors to the county fair. Just as the horses have their hitching-posts and watering-troughs, the cars are to have a special parking space, and that a number are expected is apparent from the fact that a plot 120 by 160 feet has been secured inside the grounds. It will be devoted to the use of automobiles alone, and will be in charge of an attendant, who will take care of the cars during the owners' absence.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
L. R. SMITH FRANK B. BARNETT
W. I. RALPE, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union (including Canada) - - - - - One Year, 3.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hilfe & Sons, Limited, 20, Tudor Street, London, E. C.
FRANCE:—Boysseau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second class matter.
The Automobile is a consolidation of The Automobile (monthly) and the
Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October,
1903, and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905,	- - - - -	730,000
" " in 1906,	- - - - -	791,000
" " This Issue	- - - - -	16,500
" " Since January 1,	- - - - -	521,150

Influence of the Public Demand on Auto Design. Within the past few years there has grown up what has been aptly termed standard practise in connection with automobile design. But, is it a standard set by the engineering forces of the industry, or one modeled by the man who buys the car. A review of the present status of the American industry and its product tends very strongly to the latter opinion, for, though the designer may have clearly defined ideas of his conception of what the finished car should embody, forces that are constantly at work prove much too strong for him. Nominally, the designer of a car has a free hand concerning its technical creation, but actually he has very little latitude, and his initiative is seldom permitted to go beyond the incorporation of details of his own selection, together with improved methods of construction.

For the rest he must look to the business end for guidance, and it is the car not alone that sells, but that sells without the necessity of making a new convert to its particular system every time one is sold, that the sales department wants. It is not to be inferred from this that all cars of a certain price are alike, though they both form a close approach to a uniform standard of excellence in service, for, given the same materials and tools and the same designs, two factories may turn out a very different product. On the whole, it is hardly necessary to be more than usually discerning to note that, after all, it is the man who buys the car who has been responsible for molding its design along certain lines. In the first instance, a few progressive manufacturers introduced changes of a nature that met with lasting favor. So much so that

other makers found themselves compelled to fall in line in order to place their cars on the same level in a competitive market. And the buyer still continues to want that certain type of machine in ever increasing numbers, from which there has arisen the present uniformity in design that is so noticeable. Probably 80 to 90 per cent. of the American automobiles to-day are the same so far as their essential features are concerned, the remainder embodying some special system. Not that this is to be taken in a derogatory sense nor in favor of those that represent a radically different system, but it illustrates to what an extent public opinion molds the design.



A Sidelight on the Ever Vital Problem of Ignition. With the adoption of the custom of providing ignition apparatus in duplicate on such a large number of cars, there has been revived a problem that had only been settled definitely—which, of course, means by general consent—but a short time previous. This is the placing of the spark plug. Extended experience has demonstrated that, for obvious reasons, the best place for this is over the inlet valve. But as two systems of ignition have come to mean two entire sets of equipment that are wholly independent, the question naturally comes to the fore again, for if it is undesirable to have the spark plug anywhere but over the inlet valve, then it follows that both plugs of the two sets should be in that position. Practise up to the present seems to be in favor of locating the second plug either in the center of the cylinder head or over the exhaust valve, and a compromise is effected by making the plug so situated the one called upon solely for starting and emergency use—in short, it is not the running plug.

But why not a twin plug? suggests an English autoist. The temperature existing in the vicinity of the exhaust valve is entirely too high for long-continued satisfactory working, and a central location has not been found to give the same satisfactory service as a plug placed over the inlet, due to the cooling effect of the incoming charge of fresh gas, as well as the fact that the plug is always surrounded by the latter at the time of firing. As at present employed, it is necessary to drill and tap independent holes in different places, so that the expedient of combining the plugs in one, which would be equally simple, would be an advantage from the manufacturing point of view and would also permit of concentrating the wiring to better effect.



Are American Cars Properly Equipped with Brakes? So much has been done toward the improvement of the American car where its braking system is concerned that it may seem totally uncalled for to ask such a question as that here brought to light. But can it be answered in the affirmative? The experience of the competitors in the recent A. A. A. tour when traversing the only mountainous part of the route, that through the corner of southwestern Pennsylvania, would most certainly appear to warrant an answer in the negative. The descent of several miles of down-grade, even at the speed which the contestants in that event found themselves compelled to adopt, should not prove too much for the brakes of any car properly equipped.

The query of a correspondent, which is printed elsewhere in this issue, as to why American cars are not equipped with water-cooled brakes is apropos at the moment, as no trouble would have been experienced had they been fitted in this manner. This practise is quite prevalent abroad, and it also leads to a further comparison—that of the amount of effective braking surface allowed for cars of a certain weight. Doubtless the fact that roads are so uniformly excellent on the other side, from which has sprung a custom of running down hill at a very much faster rate of speed than would be considered within the limits of safety here, has had much to do with the extremely liberal provision of braking surface that is to be noted on Continental cars. No brakes can be too good for any car, and, as this country is not lacking in mountainous roads to try them to their utmost, it would seem that there is still room for improvement in this important essential.

NOT TOO EARLY TO DISCUSS NEXT YEAR'S TOUR.

TRUE it is that the 1908 A. A. A. tour is nearly a year away, but, profiting by the experience of the past, it would appear to be the height of wisdom for the Touring Board of the national organization to begin at once the work of preparation. The annual shows come earlier than ever before, and there should be excellent opportunity to have something definite to discuss during the show fortnight from October 24 to November 27. Now that the recent event can be judged more calmly and dispassionately by all participants, it can be seen that it was a distinct advance over the three previous affairs, and it is plainly apparent that it can be greatly improved in various ways.

THE AUTOMOBILE will be pleased to print the opinions of those who are interested enough to offer suggestions regarding what an ideal tour should be to benefit both the user and the maker of automobiles. Out of the many opinions that may be expressed there should be numerous suggestions of value to the Touring Board, which should plan for next year even though its *personnel* might not remain the same. Experience gained in the Cleveland-Chicago-New York run will be of inestimable help in rule-making for the 1908 "Endurance Tour." Please note that the word "endurance" precedes tour.

What One Maker Thinks of the Recent and Next Tours.

J. D. Maxwell, vice-president of the Maxwell-Briscoe Motor Company, who saw considerable of the recent tour, expresses himself in this manner:

"To my mind the tour just passed was as severe as it is necessary to make it. The public do not want a test which is calculated to break machines up. What they do want is a contest which approximates actual touring conditions. One thing is certain, and that is that no private owner would ever subject his car to conditions as those which the Gliddenites experienced.

"One glaring defect has manifested itself in the rules, and this undoubtedly will have to be changed before another tour. According to the conditions, no driver of a car could replace any broken part unless he carried that extra part with him. To show how unfairly this works out, I will cite an example of one of our own cars.

"While running along a bad road a projecting stone carried away the truss rod from the rear axle. The cost of replacing this rod would have been but fifty cents, yet under the conditions of the tour and because we had failed to bring along an extra truss rod it was necessary to run without it. The expected followed—the axle sagged and the car had to be withdrawn.

"Now take for an example another car which breaks, for instance, an engine. According to the terms of the contest both cars had to be withdrawn. One of them could have been fixed up with a fifty-cent repair, while the other repair was out of the question, yet both were penalized the same amount. As a matter of fact, the axle on this car was repaired by installing a new truss rod and the car finished as a non-contestant.

"Such little points as these are hard to foresee and it will probably take the experience gained from one or even two more tours to formulate a set of rules that will be entirely fair to all. Personally, I am a great believer in the Glidden tour. It is a credit to the American automobile industry that as many cars finished as did."

Some More Statistics of the Tour.

As testified by the official examiners, thirteen cars started in the A. A. A. tour without a single extra part, and two others had provided themselves with nothing more than an extra set of spark plugs. Those believing that their regular equipment was sufficient to carry them over 1,600 miles were: Pierce (5), White steamer (3), Thomas Flyer (2), Royal Tourist (2), Packard, Oldsmobile, and Columbia (1 car each).

It is interesting to note that the best records were made by these machines with no reserve parts in their chests, for no fewer

than ten of them finished with perfect scores. No. 32 Oldsmobile had but three points against it, Pierce No. 21 had 90 penalization, one Royal Tourist continued as a non-contestant, one Pierce overturned, and the Columbia had to withdraw. That 80 per cent. of the cars having no reserve parts—the spark plugs can be ignored—should officially finish such a severe contest with but 93 penalization points among them is a remarkable proof of reliability. The honor roll of perfect scorers—touring and runabout, gasoline and steam—comprises 47.6 per cent. with no reserve parts. This should satisfy the most exacting.

Admirers of steam had reason to be proud of the showing made by their favorites, for all three contesting steamers were among the "no-spare-parts men" and all three figured on the honor roll of perfect scorers. In addition, two steamers started and two finished in the run in the service of the press and of a tire firm.

Concerning "Entertaining" During the Recent Tour.

With possibly a handful of exceptions, those on this year's tour, while appreciating the proffers of entertainment in several of the night stops along the route, were inclined to seek their own enjoyment. Chicago had been particularly eager to have the chance of extending the glad hand to the tourists, but when the opportunity arrived there was something amiss in the heartiness of the greeting—at least that seemed to be the general impression even by those who were specially looked after as a result of old acquaintanceship. One tourist whose usual attitude, it must be confessed, is somewhat pessimistic, commented in this vein after reading an editorial in *Motor Age*:

"We had a good time at the band concert on the night of our arrival, listening to music that wasn't half bad while we bought our own liquid refreshment. The track races the next day were exciting, but hardly worth the dollar we paid to get inside. In the evening, at the Chicago Automobile Club, we did relish the good cigars which Chairman Hower bought and had distributed. Oh, yes! we could buy something to drink. Sunday I didn't go out to that resort where we could hear some more music and again treat ourselves to thirst quenchers. Why didn't I go? Well, I couldn't find the automobiles which were to serve as substitutes for our own, which, under the rules, were held in cold storage in the First Regiment Armory. That editorial in the Chicago paper about the lack of hospitality after the finish in New York gives me a weary feeling. But, then, I suppose when some people get to a real city they are a bit timid about venturing very far from their hotels. As for myself, I wanted none of the big town's hospitality except what I could find myself—and I found a sufficiency without any great effort."

Details of the White vs. Stoddard-Dayton Run-off.

BUFFALO, August 5.—The details of the White vs. Stoddard-Dayton run-off of the Hower trophy tie explains how the gasoline car lost to its steam rival.

When the contestants left Syracuse on Wednesday morning, July 31, the Stoddard-Dayton was suffering from a broken spring, which had been repaired as well as possible without penalization. Fifteen miles from Syracuse the weakened spring snapped, but was patched up without new materials and the car hobbled along to regain lost time. At Batavia the car met the firemen's parade and lost its way trying to avoid this "pageant."

H. K. Sheridan, driving the White runabout, arrived a half hour ahead of time and waited at Main and Eagle streets for the Stoddard-Dayton. Minute after minute passed by; then it came to be a matter of seconds. Secretary Lewis waited for the expiration of the two minutes' grace, and then announced the White car as the winner.

When the Stoddard-Dayton did pull up, limply, as it were, E. L. Leinbach said: "A broken spring and that firemen's parade did it." Secretary Lewis immediately wired to New York City for the Hower trophy to be sent to the White factory.

BEWARE OF AUTO TRAPS IN FREEHOLD, N. J.

FREEHOLD, N. J., Aug. 5.—The police of Freehold ran four traps Sunday and are running two every day, and intend to keep it up. They are located at the edges of town, on the roads to Lakewood and the shore, to Long Branch, to Trenton and Matawan and to New Brunswick. "Vanie" Perrine is the chief pumpkin and gathered about \$150 of the "graft" yesterday. Business is so brisk that the sugar barrel and the cracker boxes at the cross-roads general store have been abandoned and the whole "force" is collecting tribute along the highway.

WARNINGS OF TRAPS CLOSE TO ALBANY, N. Y.

ALBANY, N. Y., Aug. 6.—Albany automobile owners, under the auspices of the Albany Motor Club, have organized a campaign against the auto traps and the rural grafters. A number of signs have been prepared reading "Speed Trap—Albany Auto Club." These are being placed around the roads, wherever the rural constables and justices have set their traps, to warn touring autoists, and a patrol is maintained by the club of stalwart young men on bicycles or in autos or on foot to keep the signs up and to watch the traps and discover every new one they set. That this work may be carried on, subscriptions are being solicited among the local owners and club members, with the result that in the past ten days \$361 have been subscribed.

STATE ENGINEER TO CONFER WITH ROAD USERS.

ALBANY, N. Y., Aug. 6.—State Engineer Skene is charged, by an amendment to the Good Roads law enacted this year, with the duty of making rules for the protection of the State's improved highways.

"Early next month," said State Engineer Skene to-day, "I shall endeavor to get together here in Albany in a sort of convention representatives of the automobile associations, the bicyclists, the road drivers' associations, the supervisors and town officials, so that I may meet with and discuss with them what is advisable and feasible and satisfactory, to all who use the highways, in the way of road rules. I am charged with the duty of formulating such rules by the recent amendment to the Good Roads act, and I am desirous of getting all interested persons together and learning from them what would be the best rules to adopt."

The section of the law now known as Chapter 717, Laws of 1907, which gives him the power to make road rules reads thus:

"The State Engineer is hereby further empowered to make such rules as may from time to time be necessary for the protection of any such highway or section thereof, and any disobedience of such rules shall be punishable by a fine of not less than \$10 and not exceeding \$100, to be recovered by the State Engineer for the benefit of such maintenance fund."

A. M. C. M. A. SECURES LION'S SHARE OF PALACE.

About eighty-five per cent. of the main floor space of the Grand Central Palace show has been taken by the American Motor Car Manufacturers' Association and will be allotted to members by a drawing the latter part of August.

A further increase in the rapidly growing membership of the A. M. C. M. A. has been made by the incorporation of the Chadwick Engineering Works, of Philadelphia, makers of the "Great Chadwick Six," and of the Pullman Motor Car Company, of Chicago. The association now comprises 46 makers.

OLDFIELD SAYS PUBLIC WANTS HIPPODROMES.

DENVER, COL., Aug. 3.—A Denver daily newspaper prints the following: Like Barnum, Barney Oldfield, the dare-devil automobilist who courts death by every turn of the wheel, declares that the (sporting) public likes to be humbugged. In an oratorical outburst Oldfield says that people pine for fake races and hippodrome. Square races are not so spectacular, he avows, and therefore are not so pleasing to the populace. Harken unto Barney the Bold: "I'll admit you can't run a real honest race any more. I found out early in the game that all these affairs must be on the hippodrome order. For instance, early in my career I went against a Frenchman for ten miles, went in to make the best time I could, and beat him a mile. The crowd was sore, and I found out the only kind of a race the grandstands want is one where the racers hang onto each other's heels and see-saw all the way around. The public doesn't know it, but that's the way the racing game is played now. We've got to do it or we couldn't get the crowds."

SOCIETY OF AUTO ENGINEERS FLOURISHING.

The Society of Automobile Engineers, at the recent session held at Buffalo, gave convincing evidence of its activity and value to the industry. The society now contains a hundred members, with forty added during the past two months and indications of many more before the annual meeting to be held in New York City during the automobile shows. The condition of the treasury is excellent. These were the papers read at the Buffalo meeting:

"Some Micro-Structural Considerations," by J. M. Ellsworth and T. J. Fay.

"Pointers on the Equipment of a Hardening Room," by Joseph Schaeffers.

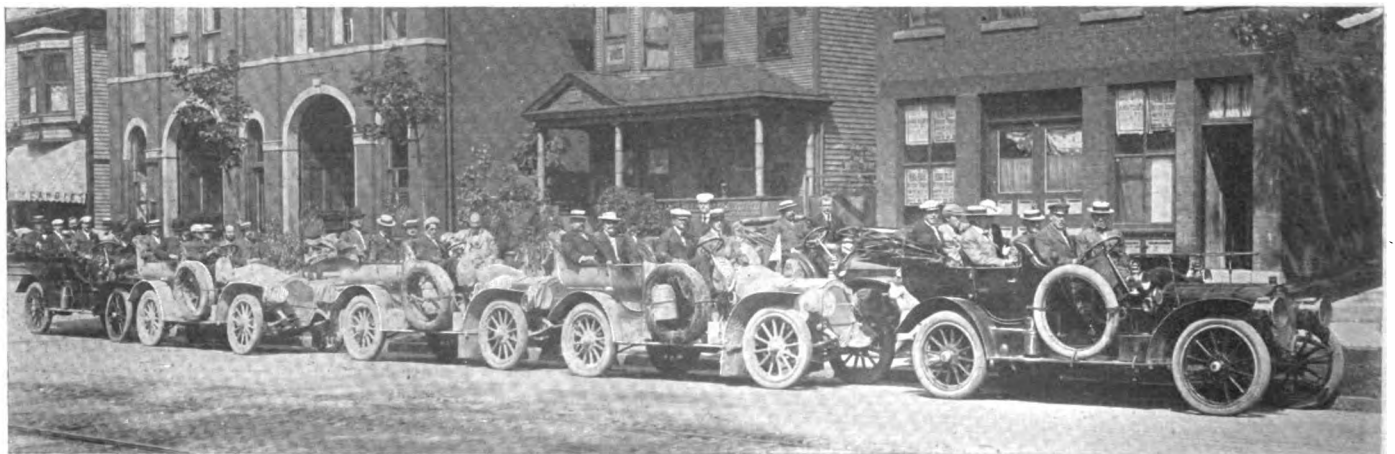
"Motor Vehicle Springs," by John G. Rumley.

"Influence of Acids in Lubricating Oils on Bearings," by Henry Hess.

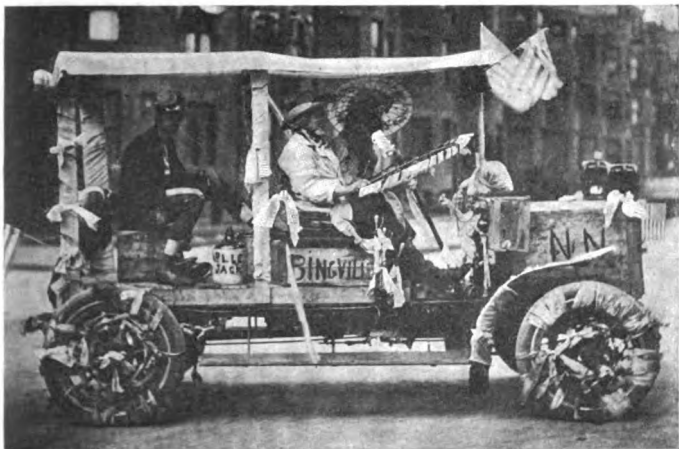
"On Timing Automobile Races," by A. L. McMurtry.

"The Carbureter and Its Functions," by Charles E. Duryea.

During the Buffalo meeting there were inspections of the Pierce and Thomas plants, and a run to Niagara Falls. The papers read were interesting and prompted the usual amount of discussion.



MEMBERS OF THE MECHANICAL BRANCH OF THE ASSOCIATION OF LICENSED AUTOMOBILE MANUFACTURERS LEAVING E. R. THOMAS MOTOR COMPANY'S PLANT, BUFFALO, FOR A RIDE IN THOMAS FLYERS THROUGH THE PARKS OF THAT CITY.



PRIZE-WINNING WHITE IN BOSTON OLD HOME WEEK PARADE.

HUB AUTOISTS CELEBRATE OLD HOME WEEK.

BOSTON, Aug. 3.—The automobile features of Boston's Old-Home Week took place on Thursday, and consisted of a parade through the downtown streets followed by gymkhana games on the Common. The events were arranged by a committee of members of the Boston Automobile Dealers' Association, and, for the middle of summer, a very good representation of cars in both parade and games was secured. Prizes were offered by the Old-Home Week committee, and the competition was keen. The parade, which started at noon from the Back Bay, was made up of about 150 cars, with President L. R. Speare, of the Bay State Automobile Association, as chief marshal.

The touring car prize went to C. W. Wilson, who entered a Winton, while the runabout prize was taken by Arthur Adams with his Oldsmobile roadster. The trophy for the best appointed car driven by a woman, with women passengers, was won by Mrs. J. A. Davis, of Amesbury, with her White tourer. Competition for the prize for the best decorated car was very close, for there were a number of handsome machines entered. The judges, however, decided that the award should go to Mrs. J. H. MacAlman, wife of the Columbia branch manager, who entered a large Columbia adorned with beautiful floral decorations. Some of the other finely decorated cars were Mrs. J. S. Hathaway's White runabout, Dr. J. F. Hovestadt's Buick runabout and J. M. Thomas's Welch.

Competition for the most grotesque car was between a White, entered by J. S. Hathaway, of the local branch, and a Columbia, entered by J. H. MacAlman. The White car was occupied by three rustics and was equipped with all sorts of crude devices. The Columbia car contained a party of country constables who had captured a chauffeur and had him tied to the back of the car. The prize was eventually awarded to the White.

The gymkhana sports on the Common included six events, and the contests were watched with much interest by a good-sized crowd of Old-Home Week visitors. G. H. Kimball, with a Corbin, was the most successful, winning the old clothes race, slow race on the high gear and the brake test. C. J. Pendleton, with a Carter car, won the twelve-mile-an-hour race; Guy Green, with an Orient, the obstacle race, and Harry Murch, with a Cadillac, the tilting contest. The committees in charge were as follows: Parade—J. H. MacAlman, chairman; L. R. Speare, F. A. Hinchcliffe, J. S. Hathaway and James Fortescue. The gymkhana committee consisted of K. M. Blake, chairman; George W. McNear, George H. Lowe, S. K. Dingle and A. E. Morrison.

MANY REGISTER IN NEW YORK DURING JULY.

During the month of July 1,586 automobiles were registered at Albany under the New York State law. Ford headed the list of the new arrivals with 217 cars. Cadillac occupied second position with 91 cars, and Maxwell was third with 88.

RE-REGISTERING UNDER NEW BAY STATE LAW.

BOSTON, August 5.—The new re-registration law in Massachusetts went into effect August 1, and the Highway Commission is literally swamped with the business of re-registering automobiles at \$5 each and motorcycles at \$2 each. Up to the present time the Commission, with a force of a score of extra clerks, has received applications from about one-fifth of the automobile owners, and applications are arriving at the rate of from 600 to 700 a day. About \$16,000 has already been turned into the State in fees.

Some of the automobilists object strongly to the new law and are paying their fees under protest. They claim that the law is unconstitutional, and there is talk of carrying it to a decision before the Supreme Court. The new law is rather rough, particularly on those who bought machines this spring. When they registered their cars in May or June they paid \$2. Now they are called upon to pay \$5, and the first of the year they will have to pay another \$5.

FRESH COMPLICATION OF PATENT SITUATION.

GRAND RAPIDS, MICH., Aug. 5.—It looks as if the controversy over priority in the invention of the propeller shaft drive for automobiles which was so thoroughly thrashed out on the other side between French and English litigants a few years ago were to have its counterpart in this country. Homer L. Boyle, better known as an author, claims that his patent Number 470,175, covering a shaft drive for a vehicle propelled by a gas-engine, is being infringed by a number of automobile manufacturers and he has instructed his attorney to take up the matter of royalties with the latter. At the time of the granting of the patent the claimant attempted to utilize it in the construction of a vehicle, but found it impossible to procure a sufficiently light motor. The patent still has two years to run.

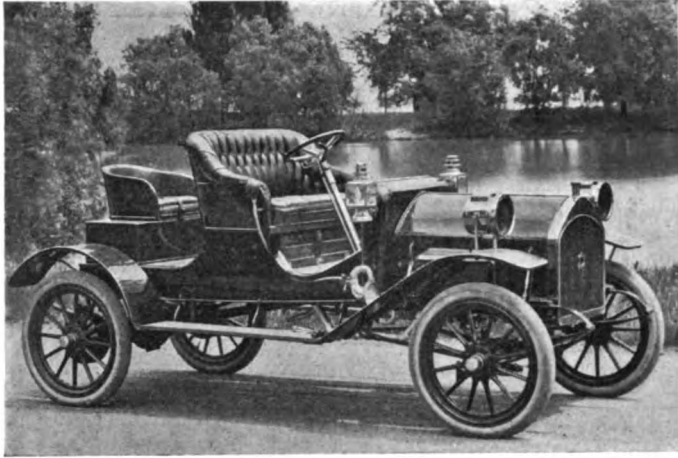
AUTOMOBILE ROW DOES NOT OBSERVE SUNDAY.

It has been called to the attention of New York's chief of police, through the medium of sundry complaints, that the supply dealers along the row are not strict observers of the Sunday closing law. Quite the contrary, most of them are breaking the Sabbath and the law as well by dispensing supplies to cars at their doors just as the law-abiding section of the community is on its way to church. Formal complaint has been made and it is probable some action will be taken by the police. It is said that most of the prominent dealers do not open Sundays and are in favor of the enforcement of the law.



GOVERNOR HANLY OF INDIANA AT CHERRYVALE FRESH AIR FARM.

During the State Encampment near Indianapolis, Governor Hanly expressed a desire to visit the "News" Fresh Air Farm at Cherryvale, and was taken thither with his party in two six-cylinder Premier cars. In the picture with the children are Mrs. Hanly, Mrs. Rogers, her guest, the Governor, and R. I. Eads, sales manager of the Premier Motor Mfg. Company.



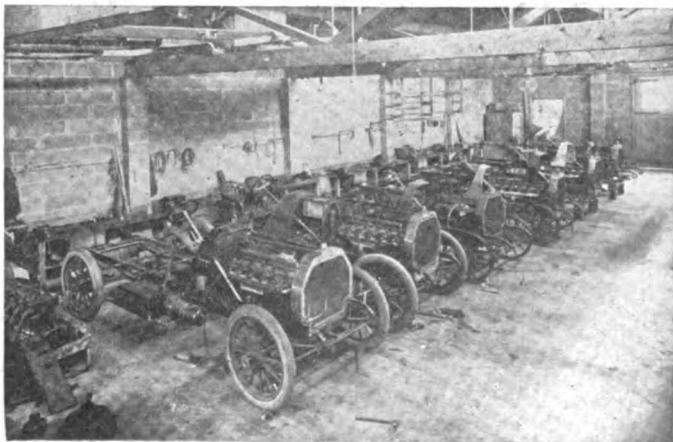
MODEL C, THE LATEST PRODUCT OF THE NORTHERN.

NEW NORTHERN RUNABOUT FOR 1908.

One of the first things to strike the familiar observer about the new Northern runabout shown in the accompanying illustration is its utter absence of side levers. At first sight it would appear to conform to the prevailing standard in this respect, but a second look brings this to light. The use of a two-speed planetary gear placed immediately behind the two-cylinder horizontal opposed engine, and which is controlled by the convenient hand lever shown mounted on the steering column, is responsible for this. The power plant is of the standard type that has been specialized by the Northern Motor Car Company for several years past on their light cars, though its rating under the new formula adopted by the Licensed Association of Automobile Manufacturers is 24.2 horsepower instead of 20 horsepower, as formerly claimed by the makers. The cylinder dimensions are 5 1-2-inch bore by 5 1-4-inch stroke. The remaining specifications are the same as the 1907 model C Northern, though the lines of the body have been altered, making it a most attractive looking car, designed to sell at a moderate figure, as it lists at \$1,600.

BLOMSTROM 1908 MODELS ARE READY.

DETROIT, MICH., August 5.—The 1908 models of the Blomstrom Mfg. Co., Lieb and Wight streets, Detroit, Mich., are out, the chief change over 1907 being the refinement of many details and the increased piston displacement of the motor, the cylinders of which are now made 4 5-8x4 1-2 inches. The output of Blomstrom "30's" for 1908 is already largely under contract to dealers.



GEARLESS CARS IN PROCESS OF CONSTRUCTION.

A peep into the assembling room of the factory of the Gearless Transmission Company, Rochester, N. Y., shows that there is plenty of work in hand. The company reports a rapidly increasing order list.

BENDIX COMPANY BUYS TRIUMPH PLANT.

CHICAGO, August 3.—The Bendix Company, of Chicago, recently organized and capitalized for \$200,000, last week purchased the factory, machinery, and equipment of the Triumph Motor Car Company, at Cragin station, Chicago, and has taken possession of the plant, establishing executive offices there in connection with the manufacturing end of the business. The officers and executive heads of the company are as follows: President, Vincent Bendix; vice-president, Joseph Hagenbuck; secretary, H. Clay Calhoun; superintendent, O. M. Delaunty; engineer and designer, L. P. Sittig; purchasing agent, Fred Patterson. Mr. Bendix, the president, has had an extended experience in the manufacture and sale of automobiles of the buggy type, which is the type of car the Bendix company is manufacturing, having been connected with the Holsman Automobile Company. Mr. Delaunty, superintendent, was formerly with the Holsman Automobile Company in the same capacity, and was previously connected with the manufacturing departments of other large automobile concerns. The 1908 models have been given exhaustive road tests, and shipments of same will commence September 1. With its new factory facilities the company has arranged for an output of about 1,200 cars for next season.



THE THOMAS OF 1901 AND THE THOMAS OF 1907.

Montague Roberts, the well-known Vanderbilt Cup driver, recently discovered at Lakewood, N. J., the first car ever produced by the Thomas factory, in the early part of 1901. The car, which is shown at the left of the picture with Mr. Roberts at the wheel, is still in running order, and was sold July 6, to a Lakewood resident for \$100.

HOW KNOX WILL BE REORGANIZED.

SPRINGFIELD, MASS., Aug. 5.—At a meeting of the stockholders of the Knox Automobile Company, in this city, Friday last, the company was formally assigned to a receiver for the benefit of its creditors, as announced by officials of the company a few days ago. It has been authoritatively announced that the plan for an adjustment which will be presented to the creditors within a week or ten days by the receiver, A. N. Mayo, will involve a capitalization of the company's debts, amounting to \$560,000, into 8 per cent. preferred stock, making the total capital stock of the company nearly \$1,000,000.

The plan which will be presented to the creditors is briefly this: The debts of more than half a million dollars will become preferred stock, cumulative at 8 per cent. per annum, and the present stock of the company, valued at \$363,000, will become common stock. The total stock will amount to \$923,000, or nearly treble the old stock. The reason assigned for the company's action, which was voluntary, was under capitalization, and under the new arrangement it is believed that the company will be able to proceed with its profitable business without danger of a recurrence of its present financial embarrassment.

It is also stated authoritatively that the creditors will accept the plan for adjustment as proposed by the receiver.

ST. LOUIS MOTOR CAR CO. FAILURE.

PEORIA, ILL., August 3.—As the result of a rumor that the St. Louis Motor Car Company at Peoria Heights was disposing of its assets without the consent of its creditors, there was a hurried meeting of some of the largest of the latter, and Saturday morning there was a petition presented to Judge Wright in the United States District Court, praying for the appointment of a receiver. It was granted without opposition and James M. Sholl was duly appointed, giving bonds in the sum of \$20,000. The action which stirred the creditors to life was the shipment to Chicago of a \$3,000 car on Friday and the attempt to send another away the day following, but Jesse French, Jr., in charge of the plant, explained that the cars had been sold and paid for and were simply being delivered.

The total indebtedness of the concern is said to reach \$120,000, while the value of its assets as a going concern will total \$100,000. The petitioning creditors' claims amount to \$64,000, the difference between this sum and the total indebtedness being represented by numerous small accounts, including the pay roll for the past fortnight, amounting to \$2,400.

The creditors who joined in the petition for the appointment of a receiver are as follows: Sholl Bros., \$587.60; National Refining Company, \$554.38; Jesse French, Sr., \$20,000; C. L. French, \$37,000; Olive Street Bank, St. Louis, \$5,500. Jesse French, Sr., is also endorsed to other indebtedness of the concern amounting to \$30,000.

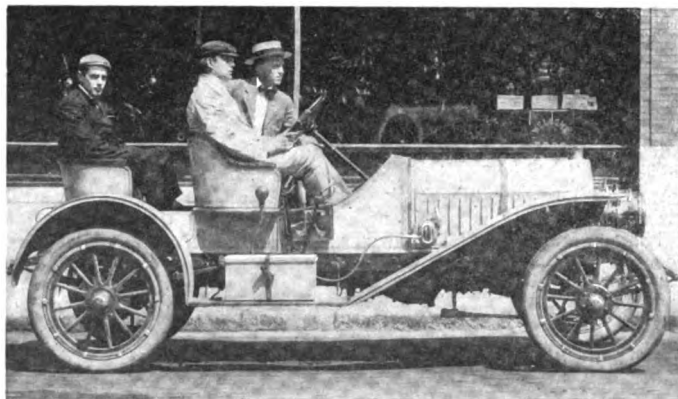
The company has fifty-one automobiles in process of construction for which a ready market can be found at prices ranging from \$2,250 to \$3,000 and has contracts ahead for six months. It is believed that in the hands of the receiver it will be able to pay off all its claims and continue to do a successful business.

AEROCAR COMPANY MAKES AN ASSIGNMENT.

DETROIT, MICH., Aug. 5.—The Aerocar Company will discontinue, application having been made Saturday last for the appointment of a receiver. It is understood that there have been some differences of opinion among the numerous stockholders, and the capitalization was not sufficient to carry along the organization on the extensive plan attempted by the directors.

PEUGEOT TOURING CAR WINS PRESS CUP RACE.

TROUVILLE, FRANCE, Aug. 6.—Renaux, driving a Peugeot, won the Press Cup on the Lisieux circuit to-day in 4:36:35, equal to 53.4 miles an hour. Competitors were touring cars having qualified in a four-day endurance test, racing under full touring conditions, with a gasoline allowance limited to one gallon per 14.8 miles. With two thousand troops guarding the course and a perfect organization, the race was one of the best ever held in France. There were no accidents.



THE NEWEST AUTOCAR LOOKS AS THOUGH IT COULD GO SOME

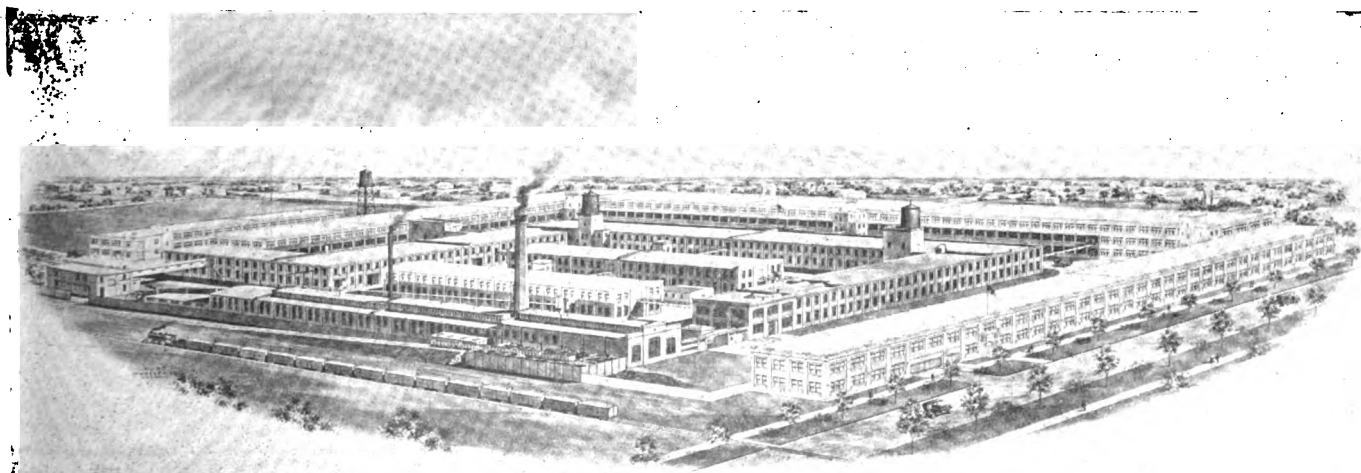
NEW AUTOCAR MILE-A-MINUTE RUNABOUT.

In bringing out its 35-horsepower mile-a-minute roadster, illustrated by the accompanying photograph, the Autocar Company, Ardmore, Pa., has devoted every effort not alone to embody every possible detail of mechanical improvement appropriate in such a car, but has also paid particular attention to the finish. The latter is a pronounced cerulean-blue, set off with crimson, making a most striking contrast with the quiet hues in which the other cars turned out by this firm are finished, and especially as exemplified by the Autocar's physician's car. The combination in question is the result of considerable study, involving an appreciation of road conditions and wear, as well as the selection of a harmonious color scheme that would at the same time not produce a result wholly lacking in the elements of durability.

AERONAUTS NOW HAVE MONTHLY ORGAN.

The *American Magazine for Aeronauts*, published at 142 West Sixty-fifth street, New York, is certain to interest the advocates of air traveling. The July number contained some thirty-five pages of text, including technical articles on the aero problem and aeronautical news from various quarters of the globe. The August number, which will be out the coming week, will be even more interesting than the initial issue. Ernest LaRue Jones, the editor, is secretary of the Aero Club of America.

Ballston Spa, N. Y.—West's garage, recently opened here on Front street and Milton avenue, has bestowed Ballston Spa with one of the best automobile centers of this part of the State. The building, which is of brick with litholite trimmings, has a capacity for 100 machines, and is completely fitted up with engine room and current generating plant, machine shop, etc.



PACKARD MOTOR CAR COMPANY FACTORY AS IT STANDS TO-DAY AT DETROIT.—ITS 435,000 SQUARE FEET, INCLUDING THE 160,000 SQUARE FEET OF ADDITIONS, COVERS TEN ACRES.—HERE WILL BE BUILT 1,500 CARS OF THE PACKARD "30" 1908 MODEL.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY.

An addition to the manufacturing supply trade has been made by the organization of the H. & T. Mfg. Co., Inc., at Worcester, Mass., with a capital stock of \$30,000. Frederick B. Early is president and Ralph D. Thayer, secretary and treasurer, both of Worcester.

Much credit is due to Ray McNamara, one of the youngest drivers in the recent A. A. A. tour, who showed his ability by successfully driving the Premier pilot car, Number 98, from Cleveland to New York. It was his car that used only one quart of water between Indianapolis and New York and was the same model as the Premier that came through the strenuous 1,600-mile run with a perfect score.

Work was begun recently on the new testing plant which is being built at the plant of the Reo Motor Car Company's plant at Lansing, Mich. The original brick track with its cinder surfacing is being torn up and will give way to a new one of planks, as the ice proved to be troublesome to the testing drivers on the brick track in winter. The new track will be properly banked at the turns and will permit of greater speed as well as freedom from danger.

According to George W. Coffin, of Denver, Col., he is on a trip that makes the A. A. A. tour look like thirty cents, to use the vernacular, and at the time of writing he was 432 miles west of Denver in his Model M Winton. He says: "I am now on the western slope of the Continental Divide and have crossed four mountain ranges varying from 10,000 to 11,000 feet high, and in 700 miles of the ruggedest travel have not had a bit of trouble, not even a puncture. Mine is the first automobile seen in this section."

At the regular monthly meeting of the board of directors of the Monarch Motor Car Company, Chicago, Ill., held at its offices at Chicago Heights, an addition was made to the official staff. S. M. Paine succeeds J. A. Ward as secretary and treasurer, the former being promoted to the office of vice-president, while T. A. Quinlan, Jr., has been appointed general manager. Rapid progress is being made on the erection of the new machine shop which is under way at Chicago Heights, and the company expects to take possession about September 1.

Turner Brass Works, formerly of Chicago, has completed its new factory at Sycamore, Ill., and is occupying it. The main factory building has a floor space of 40,000 square feet, with power and heating plants additional. Improved machinery has been installed and facilities enlarged and greatly improved. The plant is located on the main line of the Chicago & Great Western Railway and the Galena Division of the Chicago & Northwestern Railway, with sidetracks to the factory. All correspondence and orders should be sent to the main office at Sycamore.

A. E. Schwartz, the foreign representative of the American Motor Car Manufacturers' Association, who has been in Europe for the past eight months, comes back with the statement that next year should be an important one for American automobile manufacturers in the foreign fields. He says there are tremendous

possibilities for the small car trade and that the greatest demand is for cars of from 14 to 24 horsepower. The A. M. C. M. A. representative is also of the opinion that the tenth annual show this fall in Paris will be the biggest in history. American concerns can arrange with him for space before his return, which will be in about four weeks.

Harry Elder, keeper of a tollgate near Baltimore, Md., has secured a large lantern for the purpose of stopping automobilists at night who do not see his toll house and run by. The lantern is of sufficient candlepower to overcome the combined lamps in front of the automobiles, and it is either a case of plunging ahead into the darkness or stopping and paying. When the machine is near the stopping point he lowers the lantern and takes a look at the car's number. If it is a regular who pays his toll in advance, he is allowed to proceed; if not, the lantern is flashed in the driver's eyes and he is compelled to stop.

The Motor Racing Car Association of Maryland is the name of a new association which has been formed in Baltimore for the promotion of automobiling in the State of Maryland. The following are the officers of the association: President, Thomas G. Young; vice-president, Thomas A. Robinson; secretary and treasurer, James G. B. Davy, and Edward A. Cassidy, general manager. The association was formed for the sole purpose of holding races and contests, and the first of these races will be held at the Gentlemen's Driving Park, Labor Day, September 2. The feature event will be a 50-mile race for stripped cars.

NEW AGENCIES ESTABLISHED.

The Pope-Hartford line, which has heretofore been represented in Philadelphia by the Quaker City Automobile Company, has been transferred to Titman, Leeds & Company, who also handle the Studebaker and Matheson cars.

The Philadelphia representatives of the Mitchell car, the Penn Motor Car Company, have established an Atlantic City branch at 245 North Massachusetts avenue. Manager Walter Cram, of the Philadelphia concern, will also manage the seashore branch.

An important change in Chicago is the taking over of the Stevens-Duryea agency by Louis Geyler, for several years associated with James Levy in handling the Autocar and Lozier lines. The Stevens-Duryea agency will be located at 1532 Michigan avenue.

The Buck Auto, Carriage & Implement Company, Davenport, Ia., has just added the agency for the Oldsmobile to its line, and a carload arrived recently. The firm has already done well with its new line, owing to the reputation enjoyed by the Oldsmobile, and this addition gives it the most complete line of cars and accessories in this part of Iowa.

The Franklin Automobile Company, with branches in Boston, Chicago, and Syracuse, has secured from the H. H. Franklin Mfg. Co., of Syracuse, N. Y., the agency for Franklin cars for New York City territory, which has been held for the past two years by Wyckoff,

Church & Partridge. Salesrooms will be established at Broadway, Amsterdam avenue and Seventy-third street, in the Severn building, about September 1.

PERSONAL TRADE MENTION.

Le Roy Pelletier, the energetic manager of the Ford Motor Company, of Detroit, was in New York City last week. His observations in the matter of the Selden suit developments found considerable space in the daily newspapers.

John S. Gorham, formerly connected with the Baker electric agency and with the Orlando F. Weber Company in Chicago, has been appointed sales manager of the electric branch of the Chicago sales department of the Columbus Buggy Company, at 1409 Michigan avenue.

A. M. Robbins, well known as a result of his energetic handling of the New York City branch of the Aerocar Company and recently selected as its Eastern sales manager, will not remain at liberty very long as a result of the Aerocar failure. Mr. Robbins is already considering several offers of agency managements.

E. E. McMaster has become western sales manager of the Continental Caoutchouc Company of America, with headquarters at Detroit, Mich. His territory will cover the Middle West. Until recently Mr. McMaster was Detroit manager of the Firestone Tire and Rubber Company, and has been connected with pneumatic tire interests over ten years.

Paul G. Niehoff, who has recently accepted the position of manager of J. P. Beck & Co.'s automobile salesroom and garage, at Saginaw, Mich., states that he was very much surprised to note the great number of fine cars in use in that section of the country. J. P. Beck & Co. are agents for the Rambler and Maxwell lines in their territory, and carry a full line of sundries.

George H. Strout, who recently resigned as sales manager of the Electric Vehicle Company, Hartford, Conn., will join the forces of the Apperson Bros. Automobile Company, of Kokomo, Ind., August 15. The position of sales manager has been created for Mr. Strout, and he will have charge of the selling of the product in addition to supervising the company's various branch houses, which will be increased in number to keep pace with an increased output for 1908. This will include the placing of an entirely new model on the market.

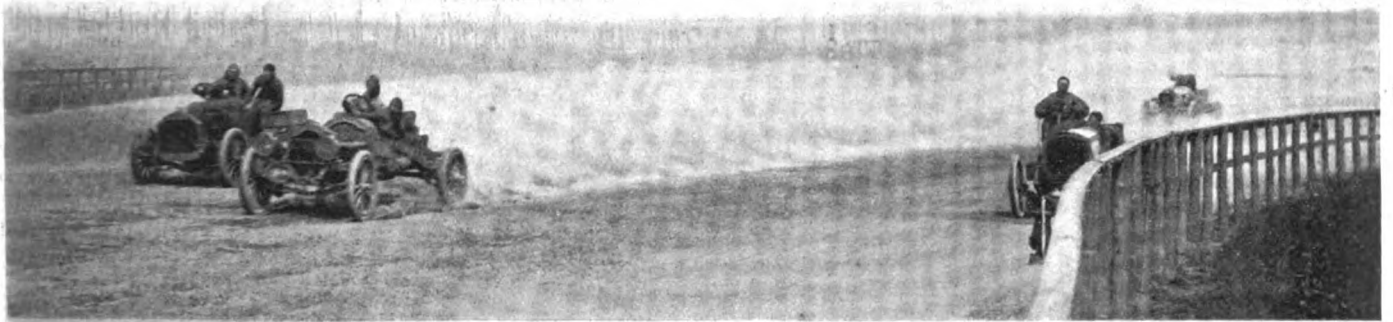
NEW TRADE PUBLICATIONS.

Descriptive of the automobile fittings manufactured by the Rands Manufacturing Company, Detroit, Mich., the firm's catalogue includes illustrations of tops, with samples of material employed, as well as wind shields and such metal fittings as lamp brackets, tire holders, etc.

The Witherbee instruction book, issued by the Witherbee Igniter Company, 541 West Forty-third street, New York, might find a place with advantage in the pocket of every automobilist, for it contains a quantity of useful information on the care of storage batteries, their installation and recharging, as well as useful hints on remedies for ignition difficulties.

THE AUTOMOBILE

Winning of A 24 Hour Record Race



IN winning the 24-hour track race at Brighton Beach with a Thomas Flyer stripped touring car Montague Roberts achieved a double victory by carrying the one-car, two-drivers track record from 833 to 997 miles and staying at the wheel during the entire contest. Although it would be easy to criticise a race of this nature on the ground of sensationalism, the absence of a uniform basis for competitors and the large part which chance plays in a track event, no one will deny that the motors were put to a very severe test and that the highest skill and daring on the part of the drivers was called for. Harry S. Houpt has shown his appreciation of the clever work of his winning driver by offering to put Roberts through an engineering course at Stevens Institute.

Starting at 10:20 o'clock on Friday evening, interest in the race was sustained until the end, and intensified at the last hour by an accident to the Jackson, which, after leading from the seventh hour, had its excellent record marred when victory seemed certain, though tires and a contrary tail-light had caused Roberts the loss of not a few miles. A 40-horsepower Lozier, driven alternately by Smeltzer and Lynch, secured second place with 972 miles, and Burman and Cobe's Jackson, laid up on the outer edge of the track when time was called, took third place with 966 miles. All three broke the track record made by the Jackson at the St. Louis meet.

Mitchell, of lower horsepower and somewhat slower than its competitors, ran a consistent race, finishing in fourth position with 774 miles. These four were the only machines on the track when time was called after twenty-four hours' running. Darracq with 774 miles and Delahaye with 720 were undergoing adjustments at their stands when the race ended. All others, with the exception of the Studebaker, a late starter, and at no time a candidate for first position, had definitely abandoned the contest. Out of fifteen official starters, six only lasted to the end, leaving 60 per cent. unable to stand the 24-hour strain.

BY W.F. BRADLEY

POS.	CAR	DRIVERS	MILES
1	Thomas Flyer	Roberts	997
2	Lozier	Smeltzer-Lynch	972
3	Jackson	Burman-Cobe	966

THE usual roar of open exhausts, the hustling of officials, then the crack of a pistol, and fifteen stripped touring machines—eleven of them American, four French—shot over the line and rushed ahead on the mile track for honors in the 24-hour Brighton Beach automobile derby. In the dim light Knepper's Frayer-Miller tried to jump ahead, but was so closely followed by Michener's

Lozier and Sturewald's Oldsmobile that at the end of the first hour it was a three-cornered try, each machine having 46 miles to its credit. The

"40" Lozier, the Jackson, the Delahaye and the Pilain hung very close to the leaders, all of them with mileages above 40—a fair record for a standing start.

For a dozen rounds Starter Wagner was busily employed flagging machines without tail lights. Matheson was the first to lack illumination; Dietrich had to stop early on this account, and before thirty miles had been run off probably half a dozen cars had lost some time lighting up in the rear. In the center of the ring, where tire and repair stations had been erected for the competitors, business began early. Dietrich, after a round on three cylinders, rushed into the center and was surrounded by a group of French mechanics, who changed a blown-out gasket and put in an additional supply of lubricating oil. Stoddard-Dayton was early in for fresh tires, and for nearly four hours was laid up waiting for a new rim.

At midnight the Frayer-Miller had got a strong lead on its competitors and figured in the eyes of the numerous spectators in the grand stand as the probable winner of the race. With the distinctive roar of its four exhausts it was cheered as it went by the stands and watched with interest as round after round it went ahead of slower machines. After a time some of the other's warmed up to the business and there were interesting matches between the air-cooled engine and water-cooled rivals. No. 14 Oldsmobile caught up the Frayer-Miller and passed finally on one of the bends, while for a long time Michener's Lozier ran it very

close. For three rounds the Frayer-Miller and No. 14 Oldsmobile raced neck and neck, the latter, though shaken off, refused to be beaten, came to the attack again and finally passed the more powerful machine, though not defeating it on score position.

Early Mechanical Trouble.

Mitchell was early in trouble. Before midnight it drove to its stand and had the coil changed, a new radiator fan put in, the bracket of the original one having snapped off, and a new radiator fitted, the fan blades having caused a serious leak. Matheson, pluckily handled by J. B. Ryall with an injured knee cap, was early drawn up near the grand stand for repairs, said to be the replacing of a link in one of the driving chains.

Fuller's Dietrich came in again with its owner cursing his luck in having "brown paper gaskets." A defective igniter was also changed and the French machine went out and did some fast work for a time. Louis Strang, mechanic for Walter Christie in



ROBERTS, A TIRED BUT SMILING WINNER.

radiator filler cap, was carried away and a little injury done to the radiator. A duplicate machine of the same model being available, the radiator and the drag link were changed. On the motor being started up, the car was found to be in good condition with the exception of the steering gear, which was so stiff that it was not considered safe to continue the race.

Some excitement was caused by a fire around the Welch car while work was being done on it at the repair station. Carelessness with a light caused a sudden flare-up before anyone could realize how it had happened. In a few minutes the burning cans were kicked away and the flames on the machine extinguished after a little damage had been done. Over an hour was lost before the car was again got on the track. Numerous idle spectators wandering aimlessly around the gasoline stations made an outbreak of fire always to be feared by their careless handling of matches.

No. 11 Darracq spent a considerable time in its paddock past



ROBERTS COOLING HIS DIAMOND TIRES.



"JACKSON" COBE'S DIRTY FACE.



THE CAMP OF THE CONTINENTAL TIRES.

the Grand Prix, put in with his Pilain from Lyons and had an igniter changed also. As an example of the faulty management at the tire and repair stations, a couple of men struggled ten minutes with a dismountable rim, to discover finally that they had neglected to pay attention to the notice "put this side on first." There were numerous examples of the loss of valuable time through the lack of direction, two or three men tumbling over one another where one would have sufficed, and no one being available to give help where help was most needed. When the cars had been got away again mutual recriminations could be heard around the dimly lighted line of tents. Even the best teams were sulphurous at times.

While running fast on the fourth round, Michener, driving the 60-horsepower Lozier, got into soft sand on the outside of the track, on the curve just past the officials' stand. At this point the track was so badly lighted that it was difficult for the drivers to judge their position. Under the severe strain the Lozier drag link snapped in two and the machine, no longer under control, crashed through the hedge on the inner side of the track, coming to a stop on the grass. On striking the top rail the

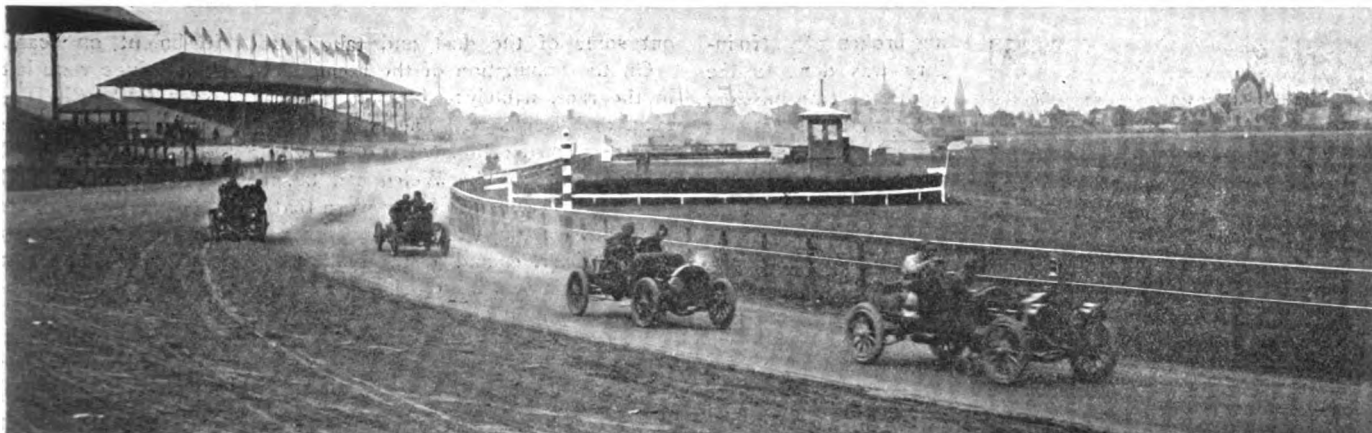
the grand stands, undergoing repairs. Owing to the stripping of several teeth on a gear in the differential, a new rear axle had to be fitted. It is claimed that the defective pinion was not supplied from the factory, but was made in America, of steel which proved to be inferior in quality. Some hours later, while McCalla, a young Irish driver, new to American track racing, was doing

some fine speeding with the Darracq, a rival machine cut in upon him very short, causing a collision, which smashed a front spring just behind the hanger.

In the early morning, while Louis Strang was driving No. 10 Pilain, a French product, on the straight home stretch, the left front wheel of the car suddenly collapsed after a slight skid. At the time of the accident the machine was nearing the opening into the paddocks, Strang driving, according to his custom, as close to the rail as possible. The car dashed onto the grass, carrying away a few yards of the railing, and ran a couple of hundred yards on three wheels before pulling up. On the Pilain the throttle lever is in the center of the steering wheel, and owing to its tendency to close down and the difficulty in such a position of holding it open, the driver had taped it in wide-open position.



"HARRIS OIL" BAILEY AND RACE MANAGER PICKENS FEEDING LOZIER PILOT.



THOMAS, JACKSON, LOZIER, AND WELCH ROUNDING THE LOWER TURN DURING THE MORNING HOURS ON SATURDAY.

It was impossible to unfasten the tape immediately and equally difficult to get out the clutch, which accounts for the machine traveling so far after the wheel broke. Six people standing near the railing—the inside of the track was forbidden to spectators—were more or less seriously injured by the flying wheel and railings. Without delay a car was sent to New York for a new front axle, and in less than three hours the machine was on the track again. A serious crack had been made in the forward end

tor. A little later the Olds was back again, when the radiator was taken down and the leaky tubes carefully soldered.

Daybreak came as a relief to every driver on the track, for, owing to the insufficient lighting, driving had become very dangerous. F. O. Fuller, at the wheel of the Dietrich, complained more than the others of the state of the track, his position indeed being serious, for the only lights he had were oil lamps attached to the dashboard. Several drivers tried to impress on the officials

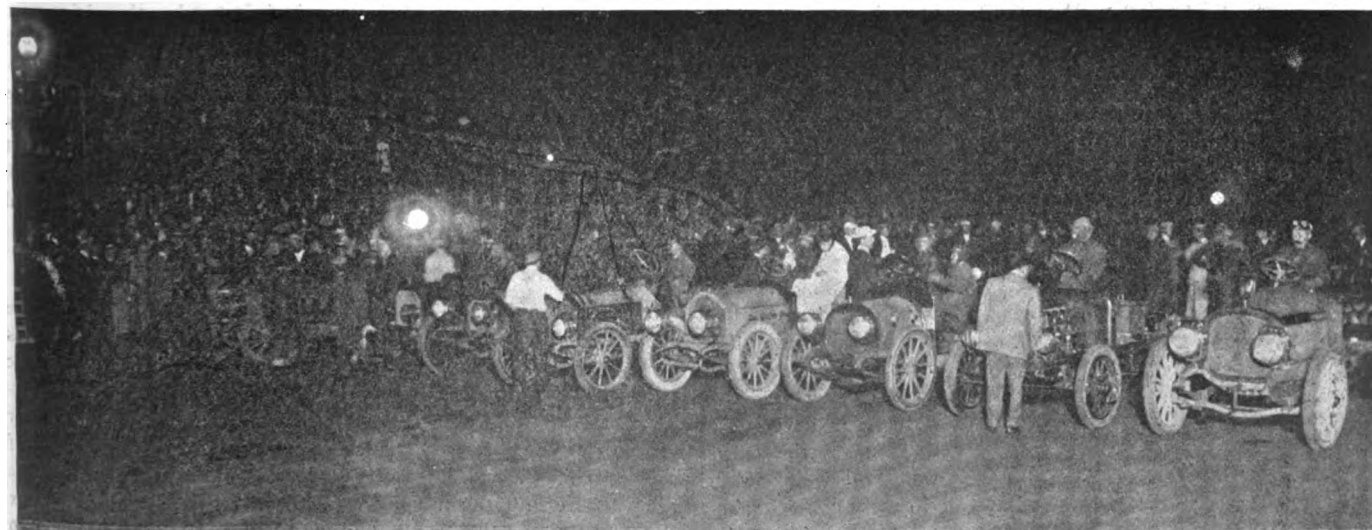
POSITIONS HOUR BY HOUR IN BRIGHTON BEACH 24-HOUR RACE.

CAR AND H.P.	DRIVERS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1. Thomas, 60.	Roberts	40	83	125	...	205	250	293	343	389	414	461	509	550	590	634	673	719	752	793	839	872	913	958	997
2. Lozier, 40.	Smelzer and Lynch	43	83	129	...	199	234	231	330	373	414	457	497	527	578	614	647	693	718	764	803	844	887	925	972
3. Jackson, 40.	Burman and Cobe	43	84	126	170	217	262	308	354	402	450	489	532	580	615	654	691	733	779	810	848	878	920	963	966
4. Mitchell, 40.	Zirbes and Hudson	32	42	76	...	149	...	226	257	300	332	366	394	424	448	481	496	530	565	602	630	661	681	707	774
5. Darracq, 50.	Nuneman and McCalla	17	54	81	...	133	...	252	279	327	367	390	414	457	484	521	540	565	611	635	649	676	719	720	
6. Delehaye, 45.	Mongini and Strang	43	61	79	...	126	...	224	243	261	...	267	...	...	353	...	384	...	429	464	502	544	545	560	
0. Oldsmobile, 35.	Sturewald and Anderson	46	93	109	...	187	...	306	372	391	399	...	410	420	452	491	502	508	Withdrawn						
0. Welch, 50.	Trewin and Greenwood	41	85	128	...	172	...	228	272	301	337	338	416	439	...	444	446	Withdrawn							
0. Mathesen, 40.	Ryall and Reiffenburg	33	37	...	...	107	...	179	217	260	297	...	...	...	391	...	392	Withdrawn							
0. Oldsmobile, 28.20.	A. Light and O. Light	33	68	95	...	112	...	158	172	194	...	...	...	...	222	249	271	Withdrawn							
0. Stod.-Dayton, 35.	Howard and Thomason	18	34	...	...	51	...	...	...	...	...	...	...	...	190	...	...	216	Withdrawn						
0. Plian, 28.32.	Strang and Anderson	41	87	131	158	166	...	...	...	219	Withdrawn														
0. De Dietrich, 60.	Fuller	21	60	...	...	160	...	228	265	311	Withdrawn														
0. Frayer-Miller, 50.	Lawwell and Knepper	46	94	143	183	236	268	269	Withdrawn																
0. Lozier, 60.	Michener and Mulford	46	94	104	Withdrawn																				

of the frame as the result of the accident, and when this was noticed by one of the officials the machine was ordered to quit. Strang then alternated with Mongini on the Delehaye.

No. 17 Stoddard-Dayton, after doing some work on the rear axle and finally obtaining the rim which had put it out of the running for several hours, went out again in the early morning and was followed by No. 15 Oldsmobile, in for a repair to radia-

the necessity of putting more lights around the course, but it was not done. The day brought disaster to the Frayer-Miller, for after it had run off 269 miles and was leading by a fair margin, a front tire blew off the rim, causing the machine to turn completely around and crash through the outer hedge. The forward cross member of the frame was bent inwards, the forward ends of the frame bent and the bolts holding the starting handle bear-



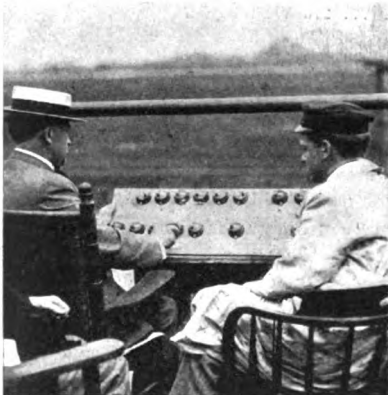
READY FOR THE START OF THE GREAT 24-HOUR RACE—IT WAS NECESSARY TO PLACE SOME CONTESTANTS IN THE SECOND ROW.



ANNOUNCER PUNTY TELLS THE SCORE.



HOUPT TALKING TO ROBERTS.



REFEREE EDWARDS KEEPING SCORE.



"WAG" ASLEEP AT THE SWITCH—CAMACHO ON THE JOB.

ing broken off. No injury was done to the engine or transmission. Most of the spectators having left the track, it was not until late in the day that the failure of the favorite was heard of by the public.

Frayer-Miller out, Jackson went into first position, with the Thomas and the Lozier hanging fairly close. All Saturday morning the three remained in the same relative position, the Lozier once getting up to the mileage of the Thomas, then dropping back to its previous place. Mitchell, after the radiator trouble of the night, did some very steady and consistent driving, working up to the leaders by sheer regularity of running. No. 14 Oldsmobile did some fast work at times, gaining a lot of the lost mileage of the night. The Dietrich cracked the two rear cylinders early in the morning and occupied a stationary position in the paddock for the rest of the day.

After having changed a driving shaft, broken through colliding with a car, the Darracq again made a spectacular display. McCalla, who handled the automobile most of the time, passed every machine on the course at intervals, but had too great a previous loss and had too frequently to leave the track for adjustments to hope to get entirely to the front.

At 5:30 o'clock Saturday evening the race was called off for nearly an hour to allow of the sprinkling of the track, which had become so dusty that driving on the curves was really dangerous. No work could be done on the machines, but drivers took advantage of the interval to wash

out some of the dust and take solid refreshment on board.

On the resumption of the racing only six machines were left in the race, namely: Jackson, Thomas, Lozier, Mitchell, Darracq, and Delahaye. The two Oldsmobiles had gone out, one with a cracked cylinder, the other with a radiator which refused to hold water. The Welch had taken down its crankcase and discovered bearings so badly worn that it did not start again; the Stoddard-Dayton was waiting for a new transmission which failed to arrive, and J. B. Ryall had given official notice that owing to his own injured leg and the tired condition of his companion he would not continue any further.

Numbers Diminished, but Interest Increased for Final Dash.

Thomas, Lozier and Jackson were closely bunched for the final evening dash. About 7:30 o'clock Jackson lost a certain amount of mileage through having to leave the track to change a valve, the spring having broken and damaged the valve stem. Mitchell lost some time through the breaking down of the wooden platform on which were carried the storage batteries. Mongini, driving the Delahaye from Paris, lost a lot of time through trifling matters. One of the driving chains broke twice, eight new tires had to be put on during the afternoon, a single tire sometimes occupying half an hour; then the gasoline tank broke loose and had to be tied up with rope. On breaking loose later, a tank from the Pilain was put in its place. Studebaker, though still running occasionally, was out of the contest.

A most exciting contest was in progress, involving Jackson, Thomas and Lozier, when lights were lit, rendered still more exciting by the uncertainty of the lights to keep burning. The Thomas suffered particularly, its tail lights going out thrice and the car being promptly stopped by the officials to light again. Once in their anxiety to enforce the rules the Jackson car was flagged by mistake and made to slow up while all its lights were burning brightly. After a third stop to light the tail lamp of the Thomas, William McIlvrid jumped onto the rear of the car and carried a lamp in his arms to the end of the race.

At the end of the twenty-third hour Jackson was still leading, but at the beginning of the last hour began to misfire and broke down on the course, unable to reach its stand. A set screw on the timing gear had worked loose, causing a disarrangement of the gears of such a serious nature that it was recognized as impossible to get the machine going before the calling of time.

Mongini's Delahaye had gone in to change a tire during the last hour, and while there took on more gasoline. In the darkness and the confusion the cans were mixed and a certain quantity of water was poured into the tank. After every effort had been made to crank the engine, the tank and carbureter were emptied and fresh fuel put in. A few seconds before the pistol fired the motor began to roar again in healthy tones. Half a dozen yards away the Darracq was being worked upon by the driver and mechanic, the magneto causing trouble. It was not in order when the race was called off.

The Jackson traveling only three miles in the last hour, it was an easy task for the Thomas and Lozier, both of which were running excellently to the finish, to forge ahead and secure first and second places. Mitchell, the only other machine on the track at the last moment, retained fourth position, and Darracq and Delahaye followed in fifth and sixth places.

Some Features of the Handling of the Race.

Credit is due to the officers of the Long Island Automobile Club for the generally efficient manner in which the race was handled. The mechanical timing arrangement, used here for the first time and for which F. G. Webb was responsible, gave perfect satisfaction. The device consisted of a mechanical counter for each competing car fastened to a table, with the number of the machine which it recorded placed in front of it. As one timer called off the number of the car passing the judges' box another pressed the button, and an additional mile was placed to the credit of the car entitled to it. At every moment of the race the exact position of the cars could be obtained, without

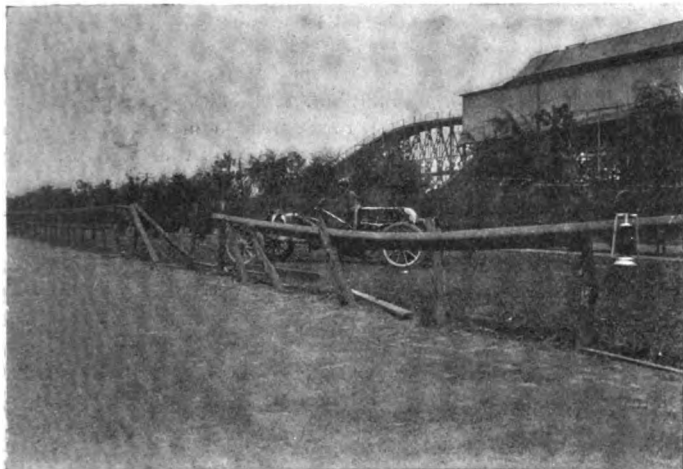
hesitation or delay, and there was a pleasant alacrity in announcing positions to the press and the public.

Thanks to the efforts of Superintendent William Clare, the Brighton track, generally a poor place for fast automobiles, was put into good shape for the race. Had the lighting of the course been more brilliant and the police been more active in keeping idlers out of the center, no fault could have been found with the management of the 24-hour race. A. R. Pardington, F. G. Webb, C. J. Edwards and R. G. Kelsey, prominent among the officials of the Long Island Club, were largely responsible for the success of the meet, the business end of which was capably handled by the United States Motor Racing Association, W. H. Pickens being the leading factor. Starter Wagner and assistants Clinton and Camacho made a trio of energetic officials.

In all probability Brighton Beach will again be the scene of a 24-hour auto race this month. Conditions, as at present drafted, provide for August 23 and 24, with a team race of two cars and three drivers. The first twenty entries only will be accepted.

DETAILS OF THE MOST SUCCESSFUL CARS.

1. Thomas Flyer, 60-horsepower, model 1907. Four cylinders, cast separately, 5 1-2 by 5 1-2 bore and stroke, sliding gear, selective type, four speeds and reverse, double chain drive, metallic clutch, Bosch high-tension magneto and Atwater-Kent spark generator. Diamond tires.
2. Lozier, 40-horsepower, model 1907. Four cylinders cast in pairs, 4 5-8 by 5 1-2 bore and stroke, sliding gear, selective type,



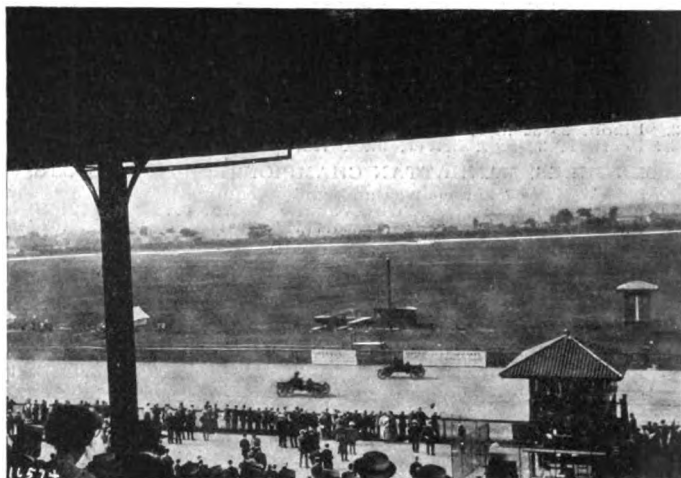
WHERE THE FRAYER-MILLER WENT THROUGH THE FENCE.

four speeds and reverse, double chain drive, multiple disc clutch, Bosch high-tension magneto. Diamond tires.

3. Jackson, 40-horsepower, model G, 1907. Four cylinders, cast separately, 5 by 5 inches bore and stroke, sliding gear, progressive type, three speeds forward and reverse, shaft drive, multiple disc clutch, jump spark and storage battery. Diamond tires.
4. Mitchell, 30-horsepower, model 1907. Four cylinders, cast separately, 4 1-2 by 5 inches, sliding gear, progressive, three speeds forward and reverse, shaft drive, cone clutch, ignition by jump spark. Hartford tires.
5. Darracq, 40-horsepower, model 1907. Four cylinders, cast in pairs, 5.1 by 5.1 inches bore and stroke, sliding gear, selective type, three speeds forward and reverse, shaft drive, cone clutch. Bosch high-tension magneto, accumulator and coil. Continental tires.
6. Delahaye, 50-horsepower, model 1907. Four cylinders, cast separately, 5.5 by 5.9 inches bore and stroke, sliding gear, progressive type, four speeds forward and reverse, chain drive, cone clutch, low-tension Bosch magneto. Continental tires.

How the Wheels of the Racers Were Shod.

Diamond, Continental and Hartford supplied the tires for the competitors in the 24-hour race. Those equipped with the Diamond Company's product were Thomas, Lozier (2), Jackson, Oldsmobile (2), Stoddard-Dayton, Dietrich, Welch, Frayer-Mitter, Studebaker and Matheson. Continental equipped Darracq, Delahaye and Pilain, and Hartford bandaged the Mitchell wheels.



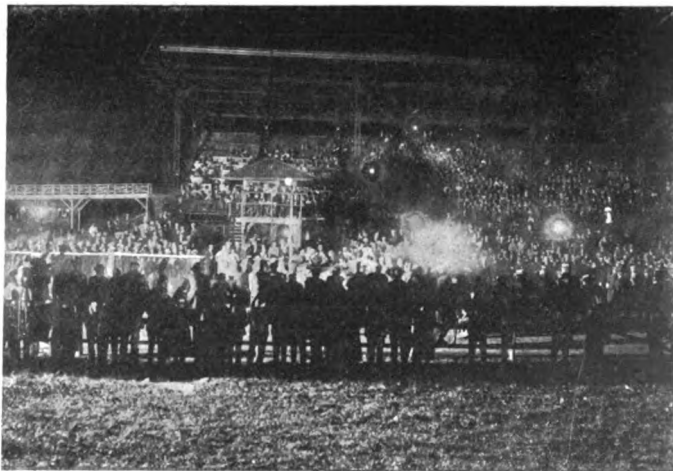
AS IT LOOKED FROM THE GRAND STAND DURING DAYLIGHT.

WHAT PRECEDED THE LONG RACE.

Walter Christie, in the front drive racer which he built for the French Grand Prix, furnished the fastest burst of speed on the Brighton Beach track by doing the mile in 54 3-5 seconds, thereby wiping out Barney Oldfield's time of 1:00 2-5, which had stood for two years. It was the first occasion the American public had had of witnessing Christie's new machine at work.

Guy Vaughn, driving a 30-horsepower Stearns, won the ten-mile contest for runabouts of 30-horsepower, and was also winner of the ten-mile Manhattan championship for runabouts of 60-horsepower and under. In the five-mile Atlantic sweepstakes Vaughn secured his third victory with a Stearns, in 5:11; J. B. Ryall, driving a Matheson, was second in 5:38 1-5; F. O. Fuller's Dietrich came third in 5:57.

Owing to the late start lights had been lit on the track before H. Michener, in a 60-horsepower Lozier, captured first place in the 100-mile championship for stock touring cars, his time being 2:06:21. A 30-horsepower Packard, driven by Stewart Elliott, came second in 2:12; Studebaker, 30-horsepower, driven by W. Dittman, covered 99 miles; Thomas, 40 horsepower, driven by William McIlvrid, traveled 98 miles, and Guy Vaughn, on a 30-horsepower Stearns, furnished 96 miles. A series of minor troubles marred the race. Guy Vaughn led for 47 miles, then lost his position through the breaking of a gasoline feed pipe. The Packard, driven by Stewart Elliott, then took first place until tire trouble put it down, and the Stearns forged ahead again, only to be set back by the breaking of a driving chain. Michener's Lozier then came ahead and won in fine style, with the Packard second, minus a rear tire for the last nine miles.



A NIGHT VIEW OF THE SPECTACULAR CONTEST.

The Dietrich and the Matheson dropped out early. The summary of the afternoon's events is as follows:

TEN MILES, RUNABOUTS, 35 HORSEPOWER AND UNDER.

1. Stearns, 30-h.p.; driver, Guy Vaughn.....11:23
2. Pflain, 28-32-h.p.; driver, Louis Strang.....13:16 3-5
3. Peerless, 30-h.p.; driver, Jack Rutherford.....13:20 4-5

TEN MILES, MANHATTAN CHAMPIONSHIP, RUNABOUTS.

60 horsepower and under, equipped.

1. Stearns, 30-h.p.; driver, Guy Vaughn.....12:01 1-5
2. Packard, 30-h.p.; driver, Stewart Elliott.....12:02 1-5

FIVE MILES, ATLANTIC SWEEPSTAKES, OPEN.

1. Stearns, 30-h.p.; driver, Guy Vaughn.....5:11
2. Matheson, 50-h.p.; driver, J. B. Ryan.....5:28 1-5
3. De Dietrich, 30-h.p.; driver, F. O. Fuller.....5:57

100 MILES, STOCK TOURING CARS AND RUNABOUTS, 60 H.P. AND UNDER.

1. Lozier, 60-h.p.; driver, H. Michener.....2:06:21
2. Packard, 30-h.p.; driver, Stewart Elliott.....2:12
3. Studebaker, 30-h.p.; driver, W. Dittman (covering 99 miles).
4. Thomas, 40-h.p.; driver, W. McIlvrid (covering 98 miles).
5. Stearns, 30-h.p.; driver, Guy Vaughn (covering 96 miles).

WILL FEATURE STRIPPED CHASSIS RACERS.

BOSTON, MASS., Aug. 12.—Active preparations are being made for what will mark a departure in the annals of track racing in this country at the meet to be held on the Readville track on Labor Day, September 2. In the first place, the card will be made up almost entirely of long-distance races, and secondly, the feature of the meet is to be a stripped-chassis race on much the same order as the event planned to follow the Vanderbilt race here, had the latter been held. That is, a stripped touring car race along the lines advocated by R. H. Smith, of the Premier Motor Car Company, and Edgar Apperson, of the Apperson Brothers Automobile Company. There are to be five events in all, leading off with a 25-mile race for gasoline stock touring cars, followed by a second event at the same distance for gasoline runabouts; then there will be a 10-mile open for stock steamers, followed by a 50-mile open-for-all stripped stock chassis, winding up the program with a 5-mile open for cars constructed prior to 1905. It will be noticed that both the two last-named events are of a novel nature, and the racing committee, consisting of L. R. Spere and F. A. Hinchcliffe, are of the opinion that they will meet with considerable popular favor.

SOUTH AMBOY BRIDGE NOT YET OPEN.

Numerous inquiries are constantly being received at the office of the Automobile Official A. A. A. Blue Book as to the present status of the bridge connecting Perth Amboy with South Amboy, N. J., across the Raritan River. As this provides a direct route to Jersey coast resorts and means a saving of fully thirty miles, most inquirers wish to know if the bridge has been reopened to traffic. This is not the case as yet, and it is doubtful at present whether it will be opened much before September 1. In the meantime all tourists going to north Jersey resorts should take the route via New Brunswick.

TO DO AWAY WITH THE WATER BREAKERS.

WILLIAMSPORT, PA., Aug. 13.—The roads in this part of Pennsylvania are well built on a limestone foundation, but they are distinguished by that most objectionable of all road obstructions, the water breaker, built diagonally across the highway at intervals of about every 200 feet, making running at more than a very slow pace impossible. The Center County Automobile Club is now taking up the matter of starting a movement to improve the roads, and this will be the first object of attention.

TRYING OUT THE ROYAL FOR 1908

CLEVELAND, O., Aug. 12.—Roert Jardine and Archie McLaughlin, of the Royal Motor Car Company, accompanied by J. E. Iams and S. K. Clark, of Iams Bros. & Co., Pittsburg agents for the Royal, left Cleveland last week on a long trying-out trip with the 1908 Royal. The party went to Jamestown, N. Y., and then south into the mountain country of Pennsylvania.

POPE CO. IN RECEIVER'S HANDS.

HARTFORD, CONN., Aug. 14.—The Pope Manufacturing Company, of this city, together with its subsidiary concerns, the Pope Motor Car Company and the Federal Manufacturing Company, to-day were placed by the Chancery Court of New Jersey in the hands of Egbert J. Tamblin, attorney, as receiver. Albert L. Pope has been appointed receiver in Connecticut and the Northern and Southern Federal districts of New York.

Similar proceedings will at once be taken in every other State in which the company has property. The latter is a New Jersey corporation organized in 1903 to succeed to the properties of the then defunct American Bicycle Company. It owns all the capital stock of the other companies mentioned, amounting to \$10,000,000, of which \$1,000,000 is common, \$2,390,976 first preferred, and \$8,633,100 second preferred.

According to the counsel to the receiver, the nominal assets of the Pope Manufacturing Company are \$7,500,000, with liabilities of about \$1,500,000, while the assets of the Pope Motor Car Company are placed at \$3,250,000, with liabilities of but \$1,000,000, the total estimate therefore making the combined assets \$10,750,000 and the liabilities \$2,900,000. The company's balance sheet for July, 1906, showed total assets of \$23,717,155, and after deducting liabilities the surplus was only \$23,860 as against \$23,859 in 1905 and \$50,993 in 1904.

Albert Rathbone, of Joline, Larkin & Rathbone, of counsel to the receiver, said to-day:

"The necessity for the present proceeding arises from the curtailment of credit and reduction of loans on notes. In other words, the receivership proceedings are the direct outcome of the present rigid money conditions. Loans were falling due and the company was unable to raise money with which to meet them, so that the placing of the company in the hands of a receiver seemed to be the only alternative that would conserve the rights of the creditors. We have every reason to believe that the assets are worth many times the amount of the liabilities."

The company has factories at Hartford, Conn., Hagerstown, Md., Toledo and Cleveland, O., and Indianapolis, Ind.

The officers are: Albert A. Pope, president; Albert L. Pope, vice-president; C. E. Walker, second vice-president; George Pope, treasurer, and W. C. Walker, secretary. According to the latest list available, the directors are: W. A. Read, Colgate Hoyt, F. S. Smithers, and George F. Crane, of New York; Albert A. Pope, Albert L. Pope, and George Pope, of Hartford, Conn.; Charles Hayden and A. W. Pope, of Boston, Mass., and Paul Wilton, of Ridgewood, N. J.

Pope automobile products have had a varied career from the technical standpoint, and their builders have been unfortunate in that their improvements in the evolution of up-to-date designs have not always met with the approval of the automobiling public. It will be recalled that the Pope-Toledo, made at the western factory in Ohio, proved very popular up to last year, when the design was abolished and something totally new substituted. For one reason or another, the Pope-Tribune, the product of the Hagerstown, Md., plant, has never achieved any great sale, and up to last year the Pope-Hartford was not over-successful, a number of the 1905 models being marketed at a sacrifice at the end of the season. A sweeping revision on the design—in fact, the creation of a totally new car under the name of Pope-Hartford—reversed matters where the Connecticut plant was concerned, and its output has been very successful.

PLANS FOR THE NEW GARFORD CAR.

CLEVELAND, O., Aug. 13.—The Garford Motor Company, the new corporation recently organized to market complete automobiles, will put out a car under its own name the coming season. Albert R. Davis has been appointed secretary and sales manager of the company. The entrance of the Garford people into the field of complete automobiles brings into the industry another very strong concern, destined to become a leader.

ALGONQUIN HILL CLIMB HONORS DISTRIBUTED

CHICAGO, August 12.—Hills that are hills in the prairie States are as scarce as the proverbial hen's teeth, but that the autoists of the Middle West know how to take full advantage of the occasional lonely excrescence that dots the plain is amply evident from the report of the Algonquin hill climb, held under the auspices of the Chicago Motor Club last Friday. What

Welant's 22-horsepower Buick, which took 1:12, was awarded the victory. Frank Nutt's 50-horsepower Haynes made it in :38; but the palm was awarded to H. Branstetter's 20-horsepower Moon, which required 41 3-5 seconds to complete the distance.

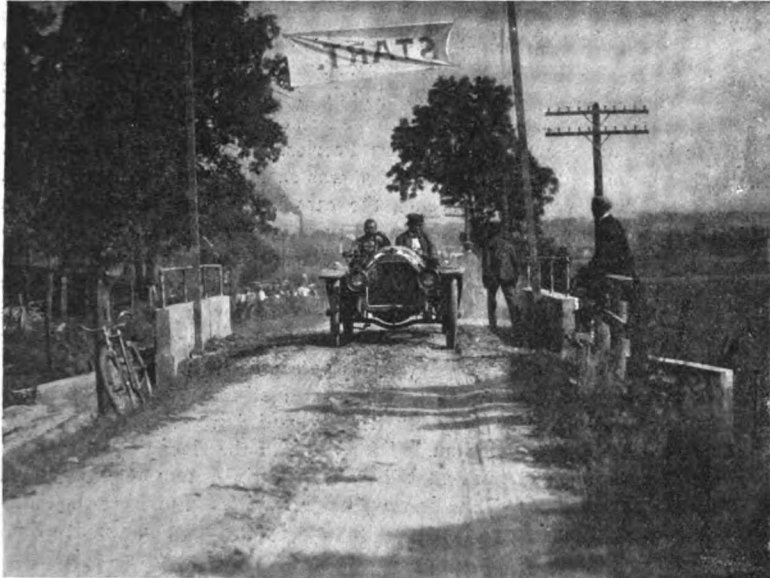
It was a day of general record breaking, and though the road was in no better condition than last year, the distance was about fifty feet less. Late in the day Phil Kirk, in the big "Jack Rabbit," got things down to :27 2-5, and Charles Van Sicklen's smaller car of the same make did it in :32, while the Stearns 30-horsepower, driven by Leland, tied its former record. Not the least novel event of the day was the work of a small fleet of electrics, entered by Carl Metzger, of the Woods Motor Vehicle Company, at the last moment. From a standing start F. J. Newman piloted one of them up in :56 flat, and was followed by Metzger himself in another, which could not do better than 1:05 1-5, while the third was still slower, taking 1:10, though the first bettered the times of no less than twelve of the gasoline machines.

Mathematical victories may be all very well for the sharps, but the man at the roadside wanted real victories that he could see. Consequently interest was centered in the free-for-all. The events of Class 5, which preceded it, showed how evenly matched were the Stearns and the Apperson, the former making it in :33 1-5 and the latter in :33 flat, though, owing to their great piston displacement due to having six cylinders and their light weight by comparison, neither was in the figuring, only getting fifth and ninth.

In the free-for-all actual times up both hills counted.

Leland led off, and while making a fast pace lost a tire from his right rear wheel at the last turn, but showed his masterly control of the car by keeping it in hand and finishing in :34. He was followed in by the tire, which, after running 200 yards or more, still had sufficient force left to bowl over a young girl; no damage resulting, however. Then Kirk made an essay at it, and, bounding, swaying and bumping in the Apperson up over the turns and bad spots like a rubber ball out of a gun, succeeded in making it in :33 4-5, which cut down the 1-5 second lead the Stearns gained in the morning.

There was some talk of running off the tie, but Referee Donald refused to sanction it owing to the poor condition of the



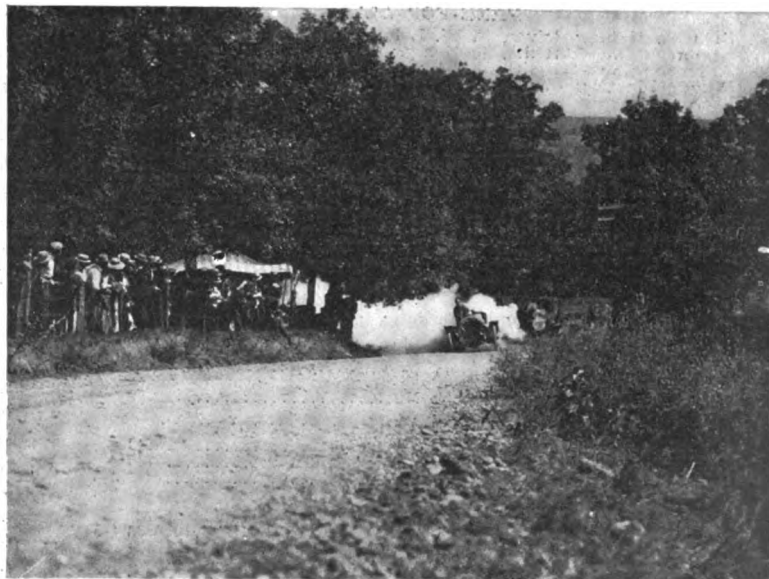
LELAND AND HIS SIX-CYLINDER STEARNS AT THE STARTING POINT.

might have proved a mishap of so serious a nature as to have caused the abandonment of the event happened the day before when Phil Kirk, at the wheel of the Apperson racer built for the 1906 Vanderbilt Cup race, smashed into a Maxwell runabout in one of his preliminary trials. With the exception of David Beecroft, who was on the running board of the racer and who received a sprained ankle, bruises were the most serious injuries, though the little car was picked up and thrown into the ditch.

The climb itself was divided into two sessions, one in the forenoon on Perry Hill, a quarter-mile long elevation which the contestants were required to tackle from a standstill, and the ascent of both Perry and Phillips hills in the afternoon from what was jocularly termed a broad jump, as this was what the flying start was converted into by the presence of a bad water breaker right at the foot of the hill which sent the cars high in the air when they hit it.

Interest throughout the day centered in the performances of the Stearns six-cylinder runabout, driven by F. W. Leland, and the Apperson "Jack Rabbit," handled by Phil Kirk. Last year's mark of :34 for Perry Hill, made by the Pierce Arrow, was cut to :26 1-5 by Leland, and to :28 by Kirk's pink "Jack Rabbit," both of these machines being placed in Class 5, according to the system of handicapping based on the total piston area of the cars, time, and weight of car and driver, the area being multiplied by the combined times up the two hills and divided by the third factor of weight.

The three thousand or more spectators were intensely interested in the actual events, but regarded the method of figuring somewhat in the light of mathematical juggling, while some of the victories were popularly put down to mental arithmetic, though the entrants themselves made no protest. For instance, the 14-horsepower Maxwell in Class 2, driven by W. B. Jameson, made the morning climb in :56 flat, but E. L.



PHILIP KIRK IN APPERSON "JACK RABBIT" ROUNDING TURN ON THE HILL.

road. The Stearns contingent had earlier entered a protest to the effect that neither of the Apperson cars was from stock owing to the use of rubber guards on one and the absence of a muffler on the other, but withdrew both. The Berliet was also protested by the Packard backers as not having a regulation body and this was referred to the committee for decision and will be brought up for consideration later.

Honors were very well divided, no car taking more than one event. The 12-horsepower Autocars, driven by F. C. Vaughn and James Levy, ran first and second in Class 1, the event in which they figured favorably last year, while in Class 2 the 22-horsepower Buick, handled by E. L. Welant, made the best time in its class both morning and afternoon. In Class 3 the 24-horsepower Columbia, skillfully handled by P. Bellew, beat its rivals in point of time on both, and its aggregate percentage was considerably the best of the day by quite a margin.

The 30-horsepower Moon, which was entered in Class 4, calling for a piston area of 65 to 90 square inches, ran as a dark horse, the same as it did last year, only being listed at the eleventh hour by H. Branstetter. Likewise he repeated his performance of last year by carrying off the handicap honors in his class as he did in 1906 with the Queen under similar circumstances. It was Frank Nutt's Haynes roadster that made the best time in this class. The 40-horsepower Pierce-Arrow, driven by P. Hoffman, carried off the victory in Class 5, known as the "big bunch," as it called for cars having a piston area of 90 square inches and over. It will be recalled that it was Hoffman who carried off all the honors last year by making the fastest times in the big Pierce. J. W. Norden's 40-horsepower Berliet took a close second in both Class 3 and Class 5.

Summaries of Morning Events on Perry Hill.

CLASS 1—PISTON AREA UNDER 35 SQUARE INCHES.

- 1. Autocar, 12-h.p.; driver, F. C. Vaughn.....1:03 1-5
2. Autocar, 12-h.p.; driver, James Levy.....1:05 2-5
3. Holman, 10-h.p.; driver, J. M. Renegar.....1:20

CLASS 2—PISTON AREA 35-50 SQUARE INCHES.

- 1. Maxwell, 12-14-h.p.; driver, W. B. Jameson.....0:56
2. Buick, 22-h.p.; driver, E. L. Welant.....1:12
3. Reliable Dayton, 12-h.p.; driver, J. S. Blything.....1:35

CLASS 3—PISTON AREA 50-60 SQUARE INCHES.

- 1. Columbia, 24-h.p.; driver, P. Bellew.....0:43
2. Jackson.....0:43 2-5
3. Jackson.....0:51

CLASS 4—PISTON AREA 65-90 SQUARE INCHES.

- 1. Haynes, 50-h.p.; driver, Frank Nutt.....0:38
2. Moon, 20-h.p.; driver, Harry Branstetter.....0:41 3-5
3. Buick, 24-h.p.; driver, A. D. Trumbull.....0:44 3-5

CLASS 5—PISTON AREA OVER 90 SQUARE INCHES.

- 1. Stearns, 45-h.p.; driver, F. W. Leland.....0:32
2. Pierce-Arrow, 40-45-h.p.; driver, Paul Hoffman.....0:35
3. Berliet.....0:41 3-5

FREE-FOR-ALL.

- 1. Stearns, 45-h.p.; driver, F. W. Leland.....0:27 1-5
2. Apperson Jack-Rabblitt, 60-65-h.p.; driver, Phil Kirk.....0:27 2-5
3. Apperson Jack-Rabblitt, 50-h.p.; driver, C. F. VanSicklen.....0:32
Woods Electric; driver, F. J. Newman.....0:56

Summaries for Both Morning and Afternoon.

CLASS 1—PISTON AREA UNDER 35 SQUARE INCHES.

- 1. Autocar, 12-h.p.; driver, James Levy.....1:03
2. Holman, 10-h.p.; driver, J. M. Renegar.....1:05 2-5
3. Autocar, 12-h.p.; driver, F. C. Vaughn.....1:20

CLASS 2—PISTON AREA 35-50 SQUARE INCHES.

- 1. Maxwell, 12-14-h.p.; driver, W. B. Jameson.....0:56
2. Buick, 22-h.p.; driver, E. L. Welant.....1:12
3. Reliable Dayton, 12-h.p.; driver, J. S. Blything.....1:35

CLASS 3—PISTON AREA 50-65 SQUARE INCHES...

- 1. Columbia, 24-h.p.; driver, P. Bellew.....0:43

CLASS 4—PISTON AREA 65-90 SQUARE INCHES.

- 1. Haynes, 50-h.p.; driver, Frank Nutt.....0:38

CLASS 5—PISTON AREA OVER 90 SQUARE INCHES.

- 1. Stearns, 45-h.p.; driver, F. W. Leland.....0:32
2. Pierce-Arrow, 40-45-h.p.; driver, Paul Hoffman.....0:35
3. Berliet, 40-h.p.; driver, J. W. Norden.....0:41 3-5

CLASS 6—FREE-FOR-ALL.

- 1. Apperson Jack-Rabblitt, 60-65-h.p.; driver, Phil Kirk.....0:33 4-5
2. Stearns, 45-h.p.; driver, F. W. Leland.....0:34
3. Apperson Jack-Rabblitt, 50-h.p.; driver, C. F. Van Sicklen
Woods Electric; driver, C. J. Metzger.....0:56
Woods Electric; driver, S. J. Peterson.....1:05 1-5
Woods Electric; driver, F. J. Newman.....1:10

Combined Handicap Summaries by Formula.

CLASS 1—PISTON AREA UNDER 35 SQUARE INCHES.

Autocar, 8.63; Autocar, 9.889; Holman, 14.65.

CLASS 2—PISTON AREA 35-50 SQUARE INCHES.

Buick, 8.11; Maxwell, 10.995; Reliable Dayton, 15.68.

CLASS 3—PISTON AREA 50-65 SQUARE INCHES.

Columbia, 7.14.

CLASS 4—PISTON AREA 65-90 SQUARE INCHES.

Moon, 9.053.

CLASS 5—PISTON AREA OVER 90 SQUARE INCHES.

Pierce-Arrow, 7.02; Berliet, 7.96; Stearns, 10.18.

MILWAUKEE'S SUCCESSFUL HILL CLIMB.

MILWAUKEE, WIS., Aug. 12.—With a large field in all classes, ideal weather conditions, and well-matched contestants in all the events, the first annual hill climb of the Milwaukee Automobile Trade Association proved a huge success. It was held on Sentinel Hill and the work of No. 23 Peerless, driven by August Jonas, who made the climb in :29 3-5, was easily the feature of the day.

There were eight events, the cars being listed according to a price classification in seven of them, while the last was a free-for-all. With the exception of Class 2, open to cars listing at \$1,350 and under, for which the Schandain Cup was offered, the other six events in the price class were for cups offered by the association, while the free-for-all was for a trophy donated by the Milwaukee Sentinel, which was captured by the Peerless.

With its numerous bad turns and stiff grades, the hill was well calculated to test both the cars and drivers, and a bad twist right at the start accounted for some of the slow times made.

A Ford runabout, entered by the Curtis Automobile Company, was the winner of the first event for small cars, making the climb in :46 2-5, which was cut to :45 2-5 by the same car next event.

A 22-horsepower Buick, entered by Bates-Odenbrett, brought this down to :41 1-5 in Class 3, cars listed at \$2,000 and under, and then it suffered a great drop to :35 2-5 after the attack of the 35-40-horsepower Rambler, driven by A. W. Shattuck, who was the winner in Class 4, \$3,000 and under. This car made the best time of the day for touring cars with four passengers up. In Class 5 Shattuck bettered his own record by two seconds, making the lowest figures up to that time—:33 2-5.

The 30-horsepower four-cylinder Jackson came very close to the record in the free-for-all, making the climb in :30 4-5, the next best time of :32 1-5 being made by a Wayne of the Solliday Motor Car Company, with Shattuck's Rambler next in :32 2-5. The two-cylinder cars distinguished themselves, the Buick being the only one of this class to win a cup, and the Jackson, which made a mark of :35 2-5 in the free-for-all, taking the difficult rise on the high gear.

CHICAGO'S MUCHLY MUDDLED 24-HOUR RACE.

CHICAGO, August 12.—The muchly muddled scoring of the 24-hour race at the Harlem track, July 12 and 13, makes it a certainty that the Racing Board of the A. A. A. will have a task in trying to figure out a winner. Perhaps this will be an impossibility, though it would appear that C. A. Coey, the announced winner, will be shorn of his supposed laurels. Affidavits of C. H. Barnes and E. E. Esch, two of the scorers, tell of alleged irregularities on the part of the chief scorer, L. H. Jackman. A charitable conclusion of the whole affair shows that the scoring was badly done, though there is no absolute proof of an understanding to make Coey the winner. The impression prevails that the Chicago Automobile Club will not permit another meet to be held, apparently under its auspices, without giving the most careful attention to the official list, and especially to those entrusted with the scoring of any long-distance event. The United States Automobile Racing Association contents itself with saying, through W. H. Pickens, that the club was to have supplied the officials, and the best possible was done when the club failed to attend to this part of the meet.

CAST ALUMINUM FOR AUTOMOBILE WORK*

By THOS. J. FAY, E. E.

TIME was when aluminum appeared as the most useful of all the cast metals from the point of view of the automobile, but time has cast its shadow on this wonderously light product, and it stands to-day stripped of every qualification save the two redeeming features, viz.:

- (a) It may be cast into intricate shapes.
- (b) It is of low specific gravity, hence it is of light weight.

As the tests—see records Nos. XI to XV inclusive—will show, none of the cast aluminum products are strong, while the best of

TABLE I.—PHYSICAL PROPERTIES OF ALUMINUM.
Tests of Unmachined Castings.
Tests on Aluminum Bars for National Car Wheel Company.
Averages.

Alloy	Size	Tensile Strength per sq. in.	Elastic Limit per sq. in.	*Per Cent. Elongation	Tensile Strength per sq. in.	Elastic Limit per sq. in.	Per Cent. Elongation
No. 1.....	1-2 in. sq.	16960	8000	2 1-2	17066	6480	1 15-16
	1-2 in. rd.	16240	6700	1 7-8			
	3-8 in. sq.	18130	6720	2 1-8			
	3-8 in. rd.	17780	7480	1 1-4			
No. 3.....	1-4 in. sq.	16480	5000	2	17462	8890	13-16
	1-4 in. rd.	16810	5000	1 7-8			
	1-2 in. sq.	15880	9700	1			
	1-2 in. rd.	17820	9180	7-8			
No. 5.....	3-8 in. sq.	17770	8830	1	17146	7340	15-8
	3-8 in. rd.	16995	8200	3-4			
	1-4 in. sq.	18320	9430	3-4			
	1-4 in. rd.	17990	8000	1-2			
	1-2 in. sq.	15625	7420	1 1-2			
	1-2 in. rd.	16950	7750	1 7-8			
	3-8 in. sq.	16150	7330	1 5-8			
	3-8 in. rd.	17360	7170	1 1-2			
1-4 in. sq.	17480	7120	1 1-4				
1-4 in. rd.	19320	7250	2				

*Elongation in inches. Yield point not well-defined.
(Signed) ALLEN S. CROCKER, M. E.,
Rochester Athenæum and Mechanics' Institute.
Rochester, N. Y., Feb. 7, 1905.

them are difficult to cast. Of the large number of castings in the shape of motor and transmission cases used from time to time under the direction of the author, the major portion possessed a low strength and in no single instance is it believed the tensile strength of any casting good enough to use exceeded 20,000 pounds per square inch at the outside, whereas, the best castings—castings free from imperfections—probably did not possess a tensile strength exceeding one-half of this value.

It is far from the purpose here to decry the use of aluminum for motor and transmission cases, for, in spite of the low average strength of the product, it does serve the purpose very well indeed, but the truth about it is that is all it can lay claim to. In the early days, when aluminum was a "boomed metal," it was used for diverse purposes as brakedrums, and, in fact, to the exclusion of the heavier and far stronger products as steel castings, steel-bronze and die-forgings of steel. Failures in service were the harvest, and a little investigation disclosed a discrepancy as between the promises and the facts so great as to be astounding. Some of these tests of promised strength emanated from sources that were regarded as authoritative, and it is not easy to understand how this false idea could have been engendered.

With a view to affording an adequate volume of data to substantiate the position the author takes in the matter, the Table I is offered in addition to the test records above referred to, and there is much other evidence to be had at every hand.

If, then, it is true that aluminum, in spite of its low strength, is a desirable metal to employ for certain specific places in automobiles, it will be well to know how to get the most out of it by way of strength without sacrificing lightness to an extent likely to render steel-bronze a better selection.

Aluminum is of increasing strength for decreasing thickness of walls, measuring this strength in pounds per square inch. It

follows, then, that thin walls should be aimed at from the strength point of view, but there is a limit to the extent that this phenomenon can be taken advantage of. The limit referred to is the foundry limit of thickness that can be cast if it is taken for granted that thin walls will not contribute unduly to the noise in operation. Undoubtedly thin walls tend to noisiness and for a perfectly quiet motor thickened walls of the motor case would contribute a quota.

The foundry limit for thin walls is about 3-16 inch, and this is a wall thin enough to have some effect upon the amount of noise likely to be experienced. At all events, many motor cases are now in service with walls as thin as 3-16 inch, and as a rule properly designed cases with walls of this thickness turn out good sound castings, although if this matter were left to the foundry the walls would be 1-4 inch or even 5-16 inch thick. Besides having the walls thin to attain the maximum unit strength and lightness dictated by the use of aluminum, the radius should be great and all inequalities of section should be avoided. Sweeping curves, plain patterns free from "draw backs" and, in so far as it is possible to do so, the avoidance of cores, loose pieces and other complex pattern work would augur success.

The specific gravity of aluminum for castings is about 3.00—see test record XI—hence the weight of one cubic inch of this product would be:

$$W = \frac{62.425}{1728 \times 3.0} = 0.11836 \text{ pounds, whereas steel-bronze has a}$$

weight per cubic inch of about 0.2991 pounds. It therefore follows that:

$$\text{Ratio} = \frac{0.291}{0.108} = 2.7, \text{ nearly.}$$

If, then, steel-bronze cases were to be cast one-tenth of an inch thick and aluminum was cast 0.27 inches thick, the weight would

CHEMICAL COMPOSITION			
CARBON	TOTAL		
	COMBINED		
	GRAPHITE		
	FERRITE		
	PEARLITE		
	CEMENTITE		
Cr.		Ni.	NONE
V.		W.	
Mn.	0.84	Si.	0.17
Al.	0.69	Cu.	7.82
S.		P.	
Sn.		Zn.	3.60
Pb.		Sb.	
As.		Fe.	0.79
PHYSICAL PROPERTIES			
T.S.	LBS. PER SQUARE INCH	9390	
E.L.		9390	
EX.	PER CENT.	0.15	
CO.			
PROOF	DIAM. "	1" X 1"	
	LENGTH "	6"	
FRACTURE		OPEN	
RATING	U.		
	H.		
TREATMENT			

SUBJECT: CAST ALUMINUM
NUMBER: XI MARK: BLUM

NEW YORK 417-07 19

THIS PRODUCT WAS SAID TO BE A WONDERFUL NICKEL ALUMINUM COMPOSITION. THE ENTIRE ABSENCE OF NICKEL AND ITS LOW STRENGTH WAS THE FINDING. IRON IS TOO HIGH. COPPER IS TOO HIGH. ZINC IS TOO LOW.

*Extract from "Part III," "Materials for Automobile Construction," by Thomas J. Fay, E.E. Published by the Class Journal Publishing Co., New York.

CHEMICAL COMPOSITION			
CARBON	TOTAL		
	COMBINED		
	GRAPHITE		
	FERRITE		
	PEARLITE		
	CEMENTITE		
Cr.	Ni.		
V.	W.		
Mn.	2.48	Si.	
Al.	91.24	Cu.	5.44
S.		P.	
Sn.		Zn.	NONE
Pb.		Sb.	
As.		Fe.	0.40
PHYSICAL PROPERTIES			
T.S.	LBS. PER SQUARE INCH	9,740	
E.L.	INCH	9.740	
EX.	CENT.	0.14	
CO.			
PROOF	DIAM.	0.75	
	LENGTH	8.00	
FRACTURE			
RATING	U.		
	H.		
TREATMENT			

SUBJECT: CAST ALUMINUM
 NUMBER: XII MARK: SPECIAL
 NEW YORK, 4-17-07

THIS SPECIAL ALUMINUM WAS REPRESENTED TO BE QUITE SUPERIOR. IRON IS AN IMPURITY AND TENDS TO REDUCE STRENGTH IN ALUMINUM-ZINC-COPPER ALLOY SEEMS TO SERVE THE PURPOSE FAR BETTER. ZINC CAN BE USED EVEN UP TO 15% BUT THE CASTINGS ARE THEN OF A ROUGH APPEARANCE.

CHEMICAL COMPOSITION			
CARBON	TOTAL		
	COMBINED		
	GRAPHITE		
	FERRITE		
	PEARLITE		
	CEMENTITE		
Cr.	Ni.		
V.	W.		
Mn.	NONE	Si.	
Al.	86.79	Cu.	4.50
S.		P.	
Sn.	0.74	Zn.	7.22
Pb.		Sb.	
As.		Fe.	0.59
PHYSICAL PROPERTIES			
T.S.	LBS. PER SQUARE INCH	22900	
E.L.	INCH	2.2900	
EX.	PER CENT.	n.l.	
CO.		n.l.	
PROOF	DIAM.	0.353	
	LENGTH	2.00	
FRACTURE			
RATING	U.		
	H.		
TREATMENT			

SUBJECT: CAST ALUMINUM
 NUMBER: XIV MARK: PHYSICAL
 NEW YORK, 4-17-07

THE PRODUCT TESTS MUCH BETTER THAN THE AVERAGE MIXTURE BUT IT DOES NOT SEEM TO DOMINATE THE MARKET EVEN SO THERE IS QUITE SOME QUESTION ABOUT MAKING CASTINGS WITH THE ALUMINUM MIXTURES SHOWING OVER MUCH STRENGTH. THE STRENGTH OF ALUMINUM CHANGES WITH THE THICKNESS OF THE CASTING ABOUT AS FOLLOWS. THICKNESS IN INCHES.

0.10	0.20	0.30	0.40	0.50
100	0.95	0.90	0.86	0.87

be the same for both, but the strength would not be the same, for the relative strength values are not the same as the relative weight values. If aluminum is accredited with a tensile strength of 10,000 pounds per square inch, and that is about all to be figured upon with safety, steel-bronze will be seven times as strong on an equally safe basis of figuring. Coupons cut from cases, then, would show up relatively as follows:

Steel-bronze $1" \times 0.1 \times 70,000 = 7,000$ pounds
 Aluminum $1" \times 0.27 \times 10,000 = 2,700$ pounds

And $\frac{7,000}{2,700} = 2.6$, nearly = strength of bronze over aluminum for equal weight.

These deductions come very near to showing what can be done if the question of noise does not enter into the calculation. The steel-bronze 0.10 inch thickness of walls, while thin, to be sure, can be cast quite as readily as the aluminum 0.27 inch thickness of walls, whereas, from the cost point of view, the steel-bronze would cost about one-half as much as the aluminum. To sum up, then, it might be said:

- (a) Steel-bronze would offer 2.6 times greater strength for equal weight under the conditions set down.
- (b) Steel-bronze would cost one-half as much as aluminum under the same conditions.

This way of looking at it puts aluminum in a rather unfavorable light, because many aluminum castings are made less than 0.27 inch thick, and they seem to hold out against breakages, but the thinner castings would fall off in strength, so that what is gained in one way is lost in another; hence, it may be said that the sparing use of steel-bronze affords a measure of strength for a weight possible to tolerate that renders the steel-bronze a good competitor of the aluminum.

In practice, while aluminum is used very extensively for the purposes in question, steel-bronze is used but very little; indeed, the Locomobile is about the only notable instance of persistently holding to steel-bronze for motor cases in the past. The makers put steel-bronze in the motor case of the B. L. & M. racing car for 1906 and found it quite desirable in many ways. This hap-

pened after repeated failures to procure good aluminum castings because the walls were very thin and the shape was irregular. This instance proved that steel-bronze castings could be made thin, whereas aluminum did not so readily lend itself to this end.

The author, in his capacity as consulting engineer, examined a broken aluminum motor-case of a well-known foreign car but recently, and while the walls were quite thick and the motor arms were very deep and massive, about 8 mm. thickness, the case failed in service and an examination of the casting disclosed alarming conditions. As a matter of fact, a few light taps with a hammer caused the arms to fly into pieces, and, no matter what part of the case was so treated, the same brittle tendencies were manifested. This motor-case was not designed for lightness at all, nor would it have been difficult to make a case for this motor of steel-bronze and have it much lighter, whereas, from the strength point of view, steel-bronze would have been vastly superior.

Aluminum is a product very easy to render brittle in the process of casting, as, for illustration, a little overheating will do the trick, or the use of scrap aluminum is enough to render the castings unfit for automobile work. Iron—as an impurity—has a decidedly weakening tendency, even though the increment present be but slight. The alloys of aluminum, zinc and copper seem to afford the best static strength results and the zinc can be as high as 15 per cent. This element tends to rough-looking castings as well as brittleness, and may render the castings a little unruly, but the tests available show a decided increase in strength over other products thus far examined.

The specific gravity of aluminum itself is 2.6 to 2.7, hence the alloys are considerably heavier, since some of them have a specific gravity of 3.00 and even slightly more. The melting

point of aluminum is $1,160^{\circ} F. = \frac{(1,160 - 32) \times 5}{9} = 626.6^{\circ} \text{Centi-}$

grade; hence, aluminum is a metal with a low melting point and it also "burns" easily; moreover, it will not stand "soaking."

Aluminum, while it dissolves in alkaloids and in hydrochloric acid readily, is not seriously affected by sea water, as some are wont to claim, and it is not therefore debarred from use for

motor and transmission cases in motor-boat work. The author has been able to experiment upon this phase of the question at considerable length and has had to do with aluminum cases in such motor boats as *Simplex III*, *Challenger*, *Dixie*, *Vingt et un II*, *Simplex I*, *Simplex II* and other products. Even at the end of three or four seasons the aluminum cases were found to be in thoroughly good condition.

Aluminum is highly electro-positive, and if it is permitted to form a couple with some other metal, submerged in sea water, the electrolysis will be very serious, and it is more likely than not this fact gave vent to the opinion that aluminum may not serve in motor-boat work. On the other hand, aluminum in motor and transmission cases is protected by the oil both in and outside and on this account sea water does not act upon it.

In carbureters this metal was widely employed some three years ago (1904), but it was soon found that in contact with liquid hydro-carbons a jelly-like consistency was formed that stopped up the openings and caused much trouble. It is not now considered desirable to employ aluminum for carbureter floats, and the author has abandoned its use for any part of carbureters, preferring phosphor or arsenic bronze.

Aluminum castings are made in both green and dry sand moulds, but the shrinkage is more irregular, making it always something of a problem to fix upon the shrink allowance for patterns. The exact shrinkage depends upon the alloying elements and the percentages of the components in the mixture. In general it is said an allowance of one-tenth of an inch to the foot will suffice. The best way, perhaps, will be to measure the like sizes of castings and allow accordingly, for in all truth there are several factors likely to influence the results.

In castings this product is prone to warp and cool, hence finish faces should be provided with a good thickness of "finish" metal, else castings are likely not to "clean up."

Much of the early talk about the extraordinary qualities of aluminum were no doubt due to the strength developed in aluminum-bronze, which product holds from 90 to 97 per cent. copper and the remaining content is aluminum, barring some slight impurities. Aluminum-bronze, then, is a high copper

alloy and has a high specific gravity to match; hence, alightness of aluminum castings as used for automobile work is conspicuous for its absence.

Aluminum has many valuable uses, besides, in casting: automobile parts, as for electrical conductors, aluminum-b parts, as before stated, and steel-aluminum for many purposes: body facings, etc. In the manufacture of steel, aluminum an important part, in that small doses of it, when added to "teeming mass," prevents the included gases from remaining in the steel, hence the ingots are made more solid and perfect has been found that as little as from 2 to 8 ounces of aluminum to the ton, added in the ladle, renders steel ingots far smoother and perfect than the ingots would be in the absence of such a slight amount of this material.

Cast aluminum bodies are at present quite prevalent, they have numerous possible advantages, among which, however, low cost may not be found. The future bodies for automobiles can scarcely be in the direction of aluminum for reasons, at least, viz.:

- (a) Aluminum is non-dynamic in the extreme.
- (b) The aluminum supply does not equal the requirements of bodies not considered.

While bodies do not require dynamic properties in the materials used to any noticeable extent, yet, even so, no one would suggest using glass for body work. True, cast aluminum is less brittle than glass, but it is far more brittle than sheet aluminum and the weight of cast aluminum in body work is something that has to be taken into account.

There are diverse ways of making light, strong bodies without casting them in aluminum, and most makers seem to prefer to resort to the other methods. Of course, cast aluminum bodies are far better than some wood bodies with open joints stuffed full of putty, and for that matter cast bodies are not as light as aluminum bodies with plaster of Paris as a backing or large aggregations of wood for framing and elsewhere. At all events, if cast aluminum bodies are lighter than some other bodies not employing cast aluminum, it is because the other bodies are not properly made.

CHEMICAL COMPOSITION			
CARBON	TOTAL		
	COMBINED		
	GRAPHITE		
	FERRITE		
	PEARLITE		
	CEMENTITE		
Cr.	Ni.		
V.	W.		
Mn.	Si.		
Al.	Cu.	24.8	
S.	P.		
Sn.	Zn.	16.10	
Pb.	Sb.		
As.			
PHYSICAL PROPERTIES			
T.S.	LBS. PER SQUARE INCH	2500	
E.L.			
EX.	PER CENT.	24.1	
CO.			
PROOF	DIAM. "		
	LENGTH "		
FRACTURE			
RATING	U.		
	H.		
TREATMENT			

SUBJECT: ALUMINUM CASTING
 NUMBER: XV MARK: 10891
 FROM: LIGHT MFG. & FOUNDRY CO.
 NEW YORK, 4-17-07

VARIOUS THICKNESSES OF THIS PRODUCT TESTED AS FOLLOWS:

THICKNESS	T.S.
0.10"	27,200
0.20"	25,800
0.30"	24,600
0.40"	23,600
0.50"	22,500

THE SPECIFIC GRAVITY OF THIS PRODUCT WAS FOR A 1" SQUARE 2.964 FOR VARIOUS OTHER THICKNESSES IT WAS:

THICKNESS	SPEC. GR.
1-8"	3.007
1-4"	3.007
3-8"	3.024
1-2"	3.012
9-16"	3.004
5-8"	3.002
3-4"	3.004

REPORT OF —
 MECH. BRANCH F.L.A.M.F.P.R.
 G.-1906. Test of Aluminum.

CHEMICAL COMPOSITION			
CARBON	TOTAL		
	COMBINED		
	GRAPHITE		
	FERRITE		
	PEARLITE		
	CEMENTITE		
Cr.	Ni.		
V.	W.		
Mn.	Si.	0.012	
Al.	Cu.	56.23	
S.	P.		
Sn.	Zn.	41.16	
Pb.	Sb.	0.019	
As.	Fe.	1.41	
PHYSICAL PROPERTIES			
T.S.	LBS. PER SQUARE INCH	71429	
E.L.		38197	
EX.	PER CENT.	24.5	
CO.		24.8	
PROOF	DIAM. "	1.00	
	LENGTH "	2.00	
FRACTURE			
RATING	U.		
	H.		
TREATMENT <u>CASTING</u>			

SUBJECT: STEEL BRONZE
 NUMBER: XIX MARK: 10895
 FROM: WILLIAM CRAMP & SON
 J.B.E. CO. NEW YORK, 4-17-07

TEST OF THE "KRUPP" STEEL BRONZE SHOW ABOUT THE SAME QUALITIES.

HOW FAR SKIDDING IS DUE TO ROAD SURFACES*

By DOUGLAS MACKENZIE, M.I.A.E., A.M.I., M.E.C.H.E.

THE construction of roads from the point of view of the skidding to which self-propelled vehicles would be liable necessitates some study of the phenomena of skidding. Under normal conditions the wheels of the vehicle are supposed to roll on the road surface, the actual point or line of the periphery in contact with the road being quite stationary. Under such conditions the smoother the tire, and the smoother the road, the more would be the resistance to rolling action. This would be exactly true if there were no forces acting on the wheels, but the point of fact there are numerous forces, and these are the cause of all the troubles in actual practice. With a wheel that is not driving the vehicle, there is the friction at the hub, which tends to prevent it rolling freely. The driving wheel, on the other hand, has forces exactly opposite trying to force the wheel to roll faster than the actual rolling, but immediately the driving forces, and the brakes are applied, exactly the reverse forces are acting. Again, the steering wheels have to resist the tendency of the vehicle to travel in a straight line, and there is a force tending to push these wheels sideways when they are steered through an angle. Lastly, there is the force of gravity, which is of no moment, so long as it is at right angles to the road surface, but is very important when the road surface is inclined. The existence of this force renders it necessary to obtain considerable adhesion between the tire of the wheel and the surface of the road, so that there shall be very great frictional resistance to any rubbing of the tire over the road surface as opposed to free rolling. This adhesion must not be hindered by any stickiness, which would prevent the tire from rolling freely from the road as the wheel rolls forward; it must be purely friction between the actual surfaces of contact. The pneumatic tire introduces some further problems, but it is not necessary to consider them separately, but from the foregoing observations it is clear that a finely roughed surface is necessary to produce the required friction. Therefore, the primary necessity in selecting a material for a non-skidding road is to have a road surface composed of two or more substances, differing in the degree of hardness, but these materials must be finely divided that the road is sufficiently smooth for perfectly free rolling. The coefficient of friction on such compound surfaces is very high, amounting to as much as .8, but another consideration of equal importance is that none of the substances of which the surface is composed should be able to form a grease or lubricating substance under attrition of traffic.

Granite Road Surface and Its Advantages.

Granite is an ideal substance for this purpose, because it is composed of crystals of different materials differing in their degree of hardness, but it is impracticable to make roads of granite perfectly monolithic—that is to say, in complete slabs—the full width of the road. In order to make it practicable to construct a granite road, the material has to be divided into blocks of a sufficient size for convenient handling. The most perfect granite surfaces are to be seen in Hamburg, where large setts are used, cut with extreme accuracy, so that the surface is perfectly flat, and the joints are so small as to be practically indistinguishable. This is quite a different class of road to the granite-sett roads in our English towns, where the surfaces of the individual setts are very much rounded, and the tires of wheeled vehicles, instead of rolling smoothly, have to bounce from sett to sett. Granite roads made with perfect setts are almost noiseless, the only sound being due to the hammering of horses' shoes, and as this antiquated form of haulage is rapidly reduced, the noise will be inappreciable.

An approximation to this form of granite surface—very much smoother—is that employed on many of the German country roads,

*Read before Royal Automobile Club of Great Britain and Ireland.

and which is known there as "Kleinpflaster." It is introduced into this country under the title of "Cubette Paving" or "Durax Paving," and is composed of small setts laid at random, and broken by special machines to about 4½-inch cubes. As the joints are none of them square to the direction of motion, the wheel is always riding on two or more of them, and does not jump from sett to sett. Consequently the wear on these setts tends to smoothen the road instead of roughening it as with common town setts.

Materials Suitable for Treating Granite Surfaces.

Next to the first-class quality setts employed in Hamburg, the best surfaces are obtained by breaking granite to about 1½-inch cubes, and binding it by means of an elastic matrix. It is, however, necessary to remember that the interspaces between the pieces of broken granite should be very small, and therefore the 1½-inch granite should be mixed with some ½-inch, some ⅜-inch and some granite dust, so that the quantity of matrix required is very small, and the joints between the pieces of granite in the road surface will never be more than ⅜ inch under the most adverse circumstances. There seems to be a great difficulty in getting tar to adhere to granite, and so the tar has to be treated by distillation, and also by the addition of various substances so as to considerably alter its nature. There are half-a-dozen such materials now on the market, and they will not only adhere to granite, but they are unaffected by English temperatures and do not become soft in summer and brittle in winter, as is the case with untreated tar. These materials give an exceedingly good surface from the non-skidding point of view, because not only do you have the advantage of the compound nature of the granite, but you have the addition of another substance of a different degree of hardness in a sufficiently fine state of subdivision to give you the ideal roughened surface. It is also practical with such a matrix to use limestone in a state of fine subdivision where limestone is much more easily obtained than granite, but this is not quite such a suitable substance, as finely-ground limestone has certain lubricating properties; and therefore the mud arising from this surface in wet weather makes a nasty, slippery grease.

Great objection is raised by some councils to the cost of improved roads made on this system, especially for country roads, but it must be remembered that a great deal of the deterioration of country roads is due to the effect of weather instead of traffic, and if a thoroughly waterproof road is constructed in the first instance it is absolutely weatherproof, and therefore does not deteriorate from any other cause than the attrition of passing traffic.

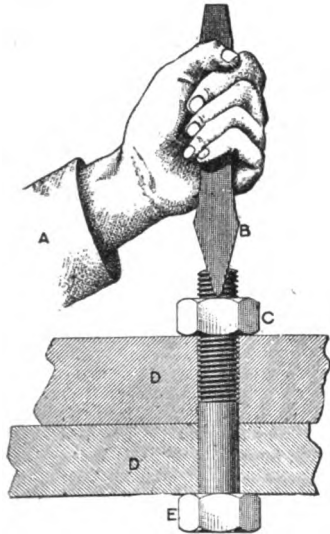
Proper Camber of Road Surfaces Very Important.

I have already mentioned that one source of skidding is due to the action of gravity when the surfaces are inclined, and with a properly waterproof surface the water will run off with much less camber than the old-fashioned roads. Probably a camber of 1 in 50 will be quite sufficient for these roads, and therefore the skidding due to the pull of gravity towards the gutter need not be at all a serious matter. The mistake has been made in some parts of the country of adopting waterproof roads with the same road contour as that previously in use, but one of the great advantages of modern materials is the reduction of the camber which they will permit.

To make a cement for cast iron take 16 ounces cast-iron borings, 2 ounces sal ammoniac and 1 ounce of sulphur; mix well and keep dry. When ready to use take one part of this powder to 20 parts of cast-iron borings and mix thoroughly into a stiff paste, adding a little water.

PRACTICAL HINTS FOR THE AUTO OWNER

AFTER a certain length of service, the cylinders of an automobile have a tendency to ovalize, says *Omnia*, owing to the movement of the pistons causing pressure on two opposite points. Naturally the piston rings ovalize at the same time. If, after taking down the cylinders, the rings are put back in exactly the same position, no inconvenience will be felt from this



TO REMOVE AN OBSTINATE NUT.

uneven wear, for the cylinders will not be losing compression. Some conscientious constructors use a stud which prevents the piston rings turning. It is an excellent precaution. But this does not prevent the piston rings being transposed. As the ovalization of a cylinder by usage is far from being symmetrical, care should be taken to mount the rings in the same groove and in the same position as before. Neglect to do this is frequently a cause of loss of power.

What to Do When a Nut Cannot Be Moved.

Sometimes a nut is so solidly rusted to a bolt that it is impossible to move it by ordinary means. To force it with a wrench would only result in breaking the bolt and causing a large amount of extra work. The only thing to be done is to sacrifice the nut by splitting it with a chisel, as shown in illustration.

Two Views on the Possibilities of Cast-iron Valves.

Whenever it has been attempted to replace steel for cast iron in cylinders, piston rings, etc., it has been found that the steel wore out much more rapidly than cast iron. Of all metals cast iron is the one which best resists the action of heat. Steel and bronze, used in cannon or on gas and steam engines, will not resist the erosive action of gases passing at high speed; cast iron, on the other hand, is never subject to erosion, unless chemical agents are present. The use of cast iron for cylinders and valves is to be recommended. Care, however, should be taken in its selection in view of the work it has to perform. Experience has shown that on automobile motors steel valves deteriorate quickly, while cast iron seatings resist and give good service.

Another view on the subject by a French constructor writing to the same journal is that cast iron valves rarely corrode or become pitted, only need grinding at long intervals, and are exceedingly gas tight. The reason why they are not generally employed on automobiles is owing to the difficulty of attaching them to the valve stem. On slow speed stationary engines they give satisfactory results, but will not hold together on high speed automobile engines. In addition, cast iron valves are heavier and thicker than steel ones, thus reducing the power of the engine to such an extent that there is little possibility of their use extending beyond the domain of stationary engines.

Where the Chauffeur-Mechanic Can Best Attend to Business.

Placing the chauffeur on a small seat hanging over the left running board, with his feet on the latter, is becoming more and more common among European automobilists who drive their own cars and object to placing the mechanic in the tonneau whenever a friend is carried on the left front seat. Certainly it would be impossible to find a position in which the mechanic

is more conveniently placed for attending to the motor than a spider over the running board. A simplification of the European mechanic's seat was noticed on a large Italian car in New York garage recently. Hinged outwards from the left hand side of the car was a simple padded seat supported by a couple of metal legs to the running board. When not in use the seat folded inwards under the feet of the left front passenger. To secure the mechanic from being thrown out by a broad strap could be clipped onto the dashboard and a handle on the side of the car body. When not used the ordinary arrangement of the car were in no way changed.

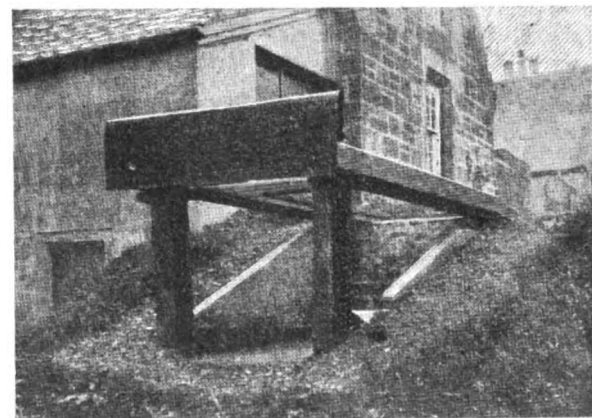
How One Owner Found a Substitute for a Bolt.

A novel makeshift repair when a 10-12-horsepower two-cylinder car shed the bolt holding the universal joint between the axle box and cardan shaft is described by a writer in *Autocar*. The owner found that he had no bolt near the size, and it was some miles to the nearest town where one could be obtained. After a little thought, he found a way out of the difficulty in the following manner: The sprag wire was cut, then threaded three times through the bolt hole, the ends afterwards being displayed and bound up securely with copper wire. With car driving he was enabled to complete his journey.

Automobile Pits Within the Reach of the Amateur.

Constructing the ordinary type of dugout automobile pit is an undertaking that the average autoist hesitates to take. One substitute occasionally seen on private garages consists of a couple of parallel rails, mounted on stout supports, about six feet and a half feet from the ground, and of sufficient length to suit the wheelbase of the car. By as gentle a gradient as space renders possible, one extremity of the platform is connected to the ground by stout rails. A winch fixed up at the opposite end of the platform allows a car to be drawn up with ease, a ratchet being fitted, to be held at all points in perfect safety.

Another type of substitute pit easily constructed by the amateur is described by an English writer in *Autocar*. "It is constructed, as may be seen by the accompanying photographs, as a sort of pier off the hillside on which our stables stand,



AN EASILY CONSTRUCTED AUTOMOBILE PIT.

will take any size of car. It could be easily protected by a light roof if desired, and when so covered in it would be a light to work in, even in dull weather. The following are the dimensions which I have used and have found satisfactory after three years: Length of rails, 12 feet; width of rails, 11 inches between inside of raised edges; thickness, 4 inches; track, in measurement 3 feet 2 1/2 inches, outside 5 feet 4 inches; height of track at outer end of rails, 4 feet 4 inches above pit floor;

th 4 feet 5 inches, length 9 feet, including step; step is 1 foot inches high and 2 feet 4 inches from back to front. The supporting uprights at the outer end of the track are 10 inches diameter; both rails and uprights are of pitch pine, painted. A buffer at the end is shown covered with sheet zinc to protect it from the wet; the zinc covers for the rails have been removed. The lean-to shown is the motor house adjoining the rails. A cinder path round the pit allows of free movement of cars. Both the pit and the step are floored with paving stones, and sloped slightly towards the front towards a drain provided to carry off the water."

Current Leakages Through Insulation.

When overhauling a single-cylinder machine a short time ago, to determine the cause of the engine not firing—although the trembler, which had been giving trouble, was buzzing merely—we accidentally moved the high-tension cable slightly when the double buzz was heard, says *Autocar*. One was the metallic rattle of the trembler, while the other was a sharp, short spitting, clearly indicating that a fault in the cable insulation was allowing the high-tension current to short to earth, the flaw being readily closed up to the engine. As no spare wire was carried, the cable was taken down and reversed, that is to say, the coil end was connected to the plug, while the end that was originally connected up to the plug was connected to the coil. This arrangement brought the fault in the cable to such a position that it was quite clear of the engine, and, consequently, being unable to get short anywhere, the current resumed its correct path through the plug. The difficulty of tracing this derangement is due to the fact that when trying to start the engine the jolting of the high-tension cable so that a short could occur, which it was for the same reason inaudible. When, however, the contact maker was put on contact, and the switch put on, the double buzzes were immediately heard, but not till after the accidental moving of the high-tension cable, which brought the short circuit into operation, and the dismantling of the carbureter to prevent a possible stoppage of the jet. The time on the latter job, however, was well repaid by the improved running of the machine, as both the float and jet chambers were found in need of attention.

Slow Working of Tremblers May Cause Misfiring.

Some tests which have recently been made with induction coils show that misfiring at high speeds is due to the slow action of the trembler blades, and not to faulty carburation. Only the rapid action coils should be used to get the most satisfactory results from an engine.

When a coil trembler persists in sticking, the trouble will often be found in the small helical vertical spring which keeps the trembler blade up against the platinum-tipped screw—that is, of course, if the coil is fitted with a trembler of the pattern. If the trembler screw is readjusted and this spring slightly elongated, it will be found to give a more vigorous action to the trembler.

STORAGE AS A SAFETY OF ALCOHOL.

Alcohol as a fuel has certain advantages over gasoline in the matter of storage, says *The Iron Age*. If a can of gasoline be opened near a flame, it is likely to explode by the ignition of its vapor. This could never occur with alcohol. Then, again, water is useless to quench burning gasoline, serving only to spread the fire by floating the burning liquid. Alcohol can never present this danger, for it mixes with water in all proportions, and in so doing becomes non-inflammable. In the use of the fuel in submarines, or in other hazardous places, the superior safety of alcohol might lead to its ultimate adoption. Its advantages in this respect in such unusually hazardous places must also fit it for use as automobile fuel without equal; that the risk of fire and explosion on the car is no small item can readily be appreciated from a review of the number of such vehicles that have been destroyed in this manner during the past few years.

**THE AUTOMOBILE CALENDAR.
AMERICAN.**

Shows and Meetings.

- Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
- Oct. 31-Nov. 7...—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
- Nov. 29-Dec. 6...—Chicago, Casino Garden, Second Annual Auto Parts Show. A. M. Andrews, Secretary, 184 La Salle Street.
- Nov. 30-Dec. 7...—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 14-21.....—St. Louis, Mo., Jal Alai Building, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
- Dec. 28-Jan. 4...—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.
- April 6-11.....—Buffalo, Convention Hall, Motor Boat and Sportsman's Show. D. H. Lewis, manager.
- Sept. 7.....—Minneapolis, Minn., State Fair Race Meet of the Minnesota State Automobile Association.

Races, Hill-Climbs, Etc.

- Aug. 17.....—Newark, N. J., Olympic Park, Carnival of the New Jersey Automobile and Motor Club.
- Aug. 31.....—Philadelphia, Race Meet under auspices of the Quaker City Motor Club. (Track will be either Point Breeze or Belmont.)
- Sept. 2.....—Harrisburg, Pa., Race Meet of Motor Club of Harrisburg (probably Middletown track).
- Sept. 2.....—Chicago, Harlem Track, Race Meet under the auspices of the Chicago Automobile Club.
- Sept. 2.....—Bridgeport, Conn., Labor Day Hill Climb, Sport Hill, Bridgeport Automobile Club.
- Sept. 5.....—Chicago, Cedar Lake Economy Run, Chicago Motor Club and Chicago Automobile Trade Ass'n.
- Sept. 7.....—Hartford, Conn., Hill Climb, under the auspices of the Automobile Club of Hartford.
- Sept. 14.....—Jamestown (Va.) Exposition, Aeroplane Contest for "Scientific American" Prize.
- Sept. 14.....—Albany, N. Y., 95-mile Road Race, under the auspices of the Albany Automobile Club.
- Sept. 20.....—Milwaukee, Wis., State Fair Grounds Track, Race Meet, Milwaukee Automobile Club and Milwaukee Dealers' Association.
- Oct. 21.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

Motor Boat Races.

- Aug. 22.....—New York to Jamestown (Va.), Annual Cruise, American Power Boat Association.
- Sept. 2-6.....—Jamestown (Va.) Exposition Motor Boat Races.

FOREIGN.

Shows.

- Aug. 1-Sept. 30.—Holland, Amsterdam, International Exhibition of Motors and Machines, Palace of Industry.
- Sept. 28-Oct. 7...—Denmark, Copenhagen International Automobile Show.
- Nov. 11-23.....—London, Olympia Motor Show.
- Nov. 12-Dec. 1...—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
- Jan. 18-Feb. 2...—Turin, Italy, Fifth International Automobile Exposition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.

Races, Hill-Climbs, Etc.

- Aug. 23.....—Belgium, Ostend Motor Boat Meeting.
- Aug. 11-29.....—France, Coupe de Auvergne.
- Sept. 1-2.....—Italy, Brescia Circuit, Florio Cup. A. C. of Italy.
- Sept. 15.....—Austria, Semmering Hill Climb, Austrian Automobile Club.
- Sept. 15.....—France, Chateau-Thierry Hill Climb.
- Oct. 1-15.....—Paris, Electric Vehicle Competition, Automobile Club of France.
- Oct. 20.....—France, Gaillon Hill Climb.
- Nov. 1-15.....—France, Volturette Contest near Paris.
- May 16, 1908....—Sicily, Targa Florio, Automobile Club of Italy.
- July 14, 1908....—Paris to London, Aerial Race.

LETTERS INTERESTING AND INSTRUCTIVE

DATA WANTED FOR AN AIRSHIP ENGINE.

Editor THE AUTOMOBILE:

[853.]—I have read a great deal of valuable information concerning automobile engines in "The Automobile," and wish to know if you can give me some help on an engine that I am planning.

This motor must be as light as possible and produce a great deal of power. I have planned an airship, and as soon as I can get out the design of a good engine I intend to build it. I wish to have an engine of about 40 to 50 horsepower, if possible. I intend to make it with eight cylinders and of the horizontal type, and would like to have the best dimensions possible for the cylinders so as to get the highest speed out of them. Kindly give me the best dimensions for the cylinders, crankshaft, piston, stroke of piston, intake valve, exhaust pipe and all the other parts of the engine. Also the best kind of material to use for the crankshaft, etc., thickness of the cylinder castings, and the like. It is to be an air-cooled engine, and as simple as possible.

I am only 17 years of age, and have been trying to get this information for some time before I came across "The Automobile."
Chicago, Ill. FREDERICK G. GRIME.

Without wishing to discourage you, we think by far the best advice we can give you regarding the building of such an engine is that of the philosopher regarding matrimony. Don't. More would-be aeronauts who think they have solved the problem of aerial navigation have had their hopes wrecked on the reef of a homemade motor than it would be possible to count. Whether there was ever anything in their ideas of an airship could not be told, because the motors they had built would never work, or at least not long enough to show whether the idea was of any value or not. And by "homemade" in this connection we do not necessarily mean motors that the aeronauts have constructed themselves, though we presume that is your intention, but engines which they planned and had built for them.

If your idea of aviation is of any value, go ahead and build it, and leave the building of the motor to people who are not only familiar with it, but who have the facilities for doing such intricate work. There are several makers in this country who devote a great deal of attention to the building of air-cooled motors for flying-machines, and you can buy such an engine complete and ready to run for a fraction of what you could either build it yourself or have it built for you. Then, a year or so later, when you have come to the sad conclusion that your idea of what an airship should be was not quite correct after all, you will have an engine that you can either use or get a fairly good price for if you wish to sell it—something that would not be the case if you built it yourself or had it built according to some startlingly original conception. The writer's personal experience extends to a case where an aeronaut who has been studying and experimenting for a number of years invested two or three thousand dollars in experiments of exactly the nature you have in mind. One was a six-cylinder, horizontal-opposed, air-cooled engine of the four-cycle type and the other a two-cycle, four-cylinder, horizontal-opposed motor, both of them air-cooled, and both of them as light and as powerful as it is possible to build a motor, theoretically. Though they cost more than \$3,000, they could probably be bought for \$30 to-day, if anyone could be found to bid that much. This is but one example of many of the same kind, which accounts for our going out of our way to tell you of it, rather than give you the dimensions asked for without comment.

MORE INFORMATION ON REVERSIBLE ENGINE.

Editor THE AUTOMOBILE:

[854.]—Can you give me any further information regarding the reversible four-cycle marine motor described on page 136 of the issue of "The Automobile" of July 25, 1907?

New York City. W. H. SCHOONMAKER.

The only information we had concerning this motor was contained in the description of it which appeared in the German paper, *Die Yacht*, published in Hamburg, Germany.

WHAT CAUSES THIS KIND OF TROUBLE?

Editor THE AUTOMOBILE:

[855.]—If it is not too much bother, will you help me out of some trouble I have been having for quite a long time? I have a four-cylinder, shaft-drive car with sliding gear transmission. Now I can throw into low, reverse, or high and not make a sound, but when I attempt to throw into second it can be heard for three or four blocks, and then I have got to shove on the lever as hard as I can. This car always did make more noise going into second than any other speed, but it is worse now. The teeth are rounded off as much on second as on any other gear, and of course the clutch comes out as much for second as when I throw into the other speeds. I have done everything I can and cannot fix it. Will be in hopes of getting a reply from you or some reader that will help me.
F. R. ZEIGLER.

Oregon, Ill.

The fact that you have difficulty in engaging the pinions of that particular speed is indicative of a sprung shaft or similar lack of adjustment which prevents these two pinions from coming together as they should. Without a drawing of the gear-set of your car, or any particulars as to its design, it is difficult to say definitely just what can be afflicting it as you state. But there is no doubt that either the engaging pinion or the fast pinion of the second speed is not in its proper place, and the necessity of shoving hard on the gear-shifting lever to make them come together represents the amount of effort required to spring them into proper alignment so that they will engage. Take the gear-set down or remove the body of the car so that it will be readily accessible and test the shafts for alignment and also try the bearings for looseness. There should be no difficulty in remedying the trouble.

SOME QUERIES REGARDING EXPLOSIVE ACTION.

Editor THE AUTOMOBILE:

[856.]—Will you be so good as to answer, to the best of your ability, through the Letters Interesting and Instructive column, the following questions?

1. Would it be possible for an engine to exhaust by the expansive force of its exploded gases through an outlet valve sufficiently to draw in an explosive charge by atmospheric pressure alone (piston not moving)?

2. If not, could the charge be forced into the chamber by compressed air, and what effect would the burnt gases remaining in the chamber have upon the explosion?

3. If an explosion with 60 pounds initial compression gives a pressure of 230 pounds, will not an explosion without compression give a pressure of 170 pounds? If not, why not?

Jamesburg, N. J.

W. H. CONNERS.

1. But little consideration of the conditions implied by this question is required to show that a plain cylinder, which we assume is intended by the expression "piston not moving," cannot exhaust itself through one valve as the result of an explosion so that a fresh charge will enter by atmospheric pressure alone through another. While the utility of exploding a charge in such a cylinder without imparting the pressure thus developed to a moving part and thus converting it into useful work is not plain, it may be assumed that the pressure developed by such an explosion reaches 100 pounds to the square inch. No data being supplied on the subject, it may further be assumed that the exhaust, or outlet valve, opens at this point of maximum pressure. The pent-up gases will rush out through this opening with great force at first, gradually diminishing until the remaining contents of the cylinder reach a pressure equivalent to that of the surrounding atmosphere, after which there will be no further action. As no depression or vacuum is created in the cylinder, the second valve cannot open by atmospheric pressure.

2. There is nothing to prevent forcing a second charge into the cylinder through the medium of compressed air, it being assumed that the exhaust valve has closed in the interim, and the only effect any burnt gases remaining in the cylinder would have would be that of weakening the subsequent explosion in a

measure dependent upon the proportion of burnt gas to fresh charge. Probably very few internal combustion motors on the market to-day, at least of those designed for automobile use, explode an entirely fresh charge at each power stroke—a fact that is readily apparent in the extra heavy impulse that results every time there is an explosion following one or two missed strokes.

3. If it necessarily followed that the only advantage accruing from a prior compression of the charge amounted to exactly the gain represented by the extent of this initial compression, as assumed by your figures, the compression type of engine as current to-day would not have marked such a tremendous advance over the constant-burning types such as the Brayton and Lenoir which it supplanted. Explosive pressures vary to a considerable extent in proportion to the compression, as well as to the difference in fuel value and the proportions of the mixtures. For instance, a properly proportioned mixture of gasoline vapor and air, when exploded in a closed vessel without any prior compression, has been found to reach as high as 90 pounds to the square inch. Owing to the greater difficulty in igniting an un-compressed mixture of either alcohol vapor and air or kerosene vapor and air, doubtless neither of these fuels would give as high a pressure under the circumstances, though kerosene is credited with a greater number of B. T. U. per pound than gasoline. The great increase in the pressures realized from a compressed mixture as compared with one not previously compressed, is due to a variety of causes. Pressure in this instance is synonymous with heat, and as the initial compression raises the temperature of the mixture considerably before it is fired, it will readily be seen that this is one cause of increase; then, the molecules or particles of air and gas are in far more intimate contact in the compressed mixture and less energy is required by the components of the mixture to bring about their chemical union. One of the chief causes is that, with high compression, the minimum amount of cylinder surface is presented to the heat of the explosion, and thus far less of the total amount of heat generated is wasted in the cylinder walls. This inquiry of yours brings up a question that was first definitely settled almost half a century ago by Beau de Rochas, who invented the principle of the four-cycle engine of to-day, in 1862, though the idea was not practically applied until Otto's invention of several years later. While not strictly analogous, the action of gunpowder when fired in the open air and when fired in a gun or as a blast, furnishes the most striking illustration of the advantages of compression. In the former case, even a large quantity of powder will not produce more than a puff, but confined in a cartridge or in a hole drilled in rock, a comparatively small quantity is required to develop a tremendous amount of energy.

INFORMATION ABOUT DOUBLE-ENGINE CARS.

Editor THE AUTOMOBILE:

[857.]—I would like to know if there is a car built that is equipped with two engines, each independent of the other, or is there a car that has both a gasoline motor and a steam engine on the same chassis?
JAMES T. EDWORTHY.

Flandreau, S. D.

There is a car built in this country with two independent gasoline engines. It is known as the Carter Two-Engine Car. We have never heard of a gasoline motor and a steam engine being used on the same car.

IS THERE A SPARK-PLUG STANDARD?

Editor THE AUTOMOBILE:

[858.]—Will you kindly inform me if any steps have been taken toward standardizing the diameter and pitch of the tapping for spark plugs used in automobile construction? If so, where can I obtain the data respecting such action?
C. R. HARRIS.

New York City.

The Mechanical Branch of the Association of Licensed Automobile Manufacturers took up the matter of standardizing spark plugs early this year, and, after considerable deliberation, adopted a plug 7-8 inch in diameter, 18 threads to the inch, the latter,

we believe, being the U. S. standard. Coker F. Clarkson, in charge of the publication department of the association, 7 East Forty-second street, New York City, will doubtless supply any further information desired. These plugs, known as the A. L. A. M. standard, have now been on the market some time and probably can be bought of the majority of supply dealers.

MORE LIGHT ON THE SUBJECT OF ALUMINUM.

Editor THE AUTOMOBILE:

[859.]—The somewhat petulant letter of Mr. Birdsall, in your issue of August 1, would indicate that aluminum was in grave danger, but a real serious engineer should have located the trouble with those gear boxes in short order, very easily.

I enjoyed Mr. Blough's article, and there was a good fund of information in it; he cited the properties of various alloys, and that was all he should do. The only thing he could do in addition would be to give the percentages of the metals in the alloy; this would be dangerous, as there is not one chance in a hundred that they would be mixed right, and the value of the resulting alloy turns on this point. Take the same amounts, of the same metals, and mix in a different order, at a different heat, and cast; the chemical analysis of each result will be the same, but the grain of the alloy, the elastic limit and the tensile strength, will be different; one will be weak and the other strong, one brittle and the other elastic, one will give good service and the other is of no value.

Bearing this in mind, every serious engineer should thank The Pittsburg Reduction Company for the pains taken to give us aluminum alloys, properly mixed, in ingot form, and there is no good excuse for poor results with them; the one and only requirement at your end is to simply KNOW HOW to handle the foundry.

Mr. Birdsall wants the composition of an alloy. Here is a very good one of the rigid class: Aluminum 800, tin 20, zinc 150, copper 20, manganese 5, iron 5. Have this made by a person who knows how these should be mixed, and it will make a very strong metal, but I hardly think the Funk Foundry would get there.

If Mr. Birdsall will simply order his ingots from The Reduction Company, and cite his conditions fully, they will give him the proper metal. If he will see that it is melted in a plumbago crucible—a charcoal fire is the better—a coke fire is all right if you use 72-hour coke, but do not use 48-hour coke, or gas coke, see that the metal is not heated above a cherry color, have the molds gated properly, as aluminum requires much more study than iron on this point, aim to have the heavier sections at the top, where they will cool last and feed back from the risers, use large risers and have them large close down to the sprues, and it will be an easy matter to get good strong castings that will do the work expected of them.

Don't let the foundryman get scared because he thinks this metal is too cold to run, a few heats will convince him, and remember that to overheat aluminum is to ruin it every time.

Aluminum is in its most fluid state just before it starts to congeal, then comes a time when it is very rotten, and slight strains cause flaws; and this fact, coupled with the fact that both nitrogen and hydro-carbon gases are specially liable to be absorbed by slightly overheated aluminum, making porous castings, will account for much of the trouble with this metal.

It is unfortunate that Mr. Fay made some of the remarks that he did regarding aluminum in his article of June 6. They are quite correct for an alloy such as he cites, but the chemical analysis tells the story; it is an art alloy, a brittle, crystalline, gray-white metal, which would run very liquid and be fine for casting tin solders or small images, but of no earthly value in mechanics. He cites the values given in the Lake articles as impossible; but I should expect them to be readily attained. If I had a foundryman who had been given the proper alloy ingots and he did not turn out castings which would test as high as the Lake test No. 2, there would either be a change in short order or a new man.

In "The Automobile" of June 13, Elwood Haines gives aluminum a value of from 20,000 to 30,000 pounds. He has had quite a little experience with it, as he has been with the auto since its first baby days, and his machines stand up.

In short, for general auto work we have two alloys, nickel aluminum with an elastic limit of 8,000 to 12,000 pounds, ultimate tensile strength of 15,000 to 28,000 pounds, reduction of area 6 to 8 per cent., specific gravity 2.85, and modull of elasticity 11,500,000 pounds; this would be used in cases where we wished a metal which would give before rupture. For cases where we can use a rigid metal, we can use zinc aluminum, or Sibley metal; these metals can be made as strong as good grades of cast iron, they are easily worked, take a fine finish, and do not give the trouble with cutting tools that the nickel alloy does.

The weak point of aluminum is not tensile stress, it is compressive stress; as the nickel aluminum cited above, under compression, will have an elastic limit of only 6,000 to 10,000 pounds, and an ultimate strength of only 16,000 to 24,000 pounds, and this for columns only 2 diameters long. It is so very rare to find a metal

that is weaker in compression than in stress that there may be some excuse for a neglect to give the matter proper consideration. We are not quite serious enough.

Everyone is not aware that it only requires 51.4 heat units to melt a pound of aluminum, the same number that would heat a quart of water 24.7 degrees.

EDWARD F. EDGECOMBE.

Cuyahoga Falls, Ohio.

SOMETHING ABOUT TEST-PROOF LENGTHS.

Editor THE AUTOMOBILE:

[860.]—Edward F. Edgecomb, in his communication (No. 845), in commenting upon the testing of materials, states, among other things, the following: “* * * and it is hard to understand why some persons in the automobile industry are so ready to ignore the fact which the experience of years has taught. We test materials to secure facts, and it has been found that short pieces are

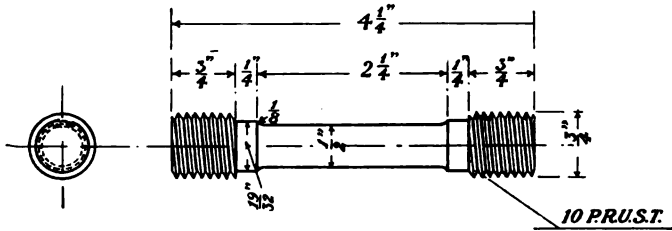


FIG. 1.—Specimen of standard international test-proof.

misleading, the eight-inch test piece has become a standard. We must not lose sight of the fact that when a test piece has been pulled, it never pulls evenly, its main elongation and reduction take place in a space of about two inches in the center of the specimen. This being the fact, it is readily seen that a four-inch test piece gives a wrong percentage of elongation.”

Mr. Edgecomb will find it extremely difficult to sustain any part of his statements as quoted above for reasons, viz.,

- (a) Standards become obsolete as fast as new standards take their place.
- (b) The present general practice is to use test specimens as set down by The International Society for Testing Materials—see Fig. 1—and among those who have for a considerable time used this standard are the United States Government, the Association of Licensed Automobile Manufacturers, numerous steel mills, many laboratories, authorities in general, and some persons in the automobile industry to boot.
- (c) The elongation and reduction of area would not be wrongly expressed on a four-inch test specimen, any more than it would were a four-inch specimen used or for that matter a two-inch specimen, but one would not be warranted in comparing results as obtained on a proof of one length, with results as realized from another, unless one knows how to adjust for certain differences brought about by the fact that the elongation has two components, i. e. (1) the uniform elongation in proportion to length between enlargements; (2) the subsequent local elongation. The subsequent local elongation depends upon diameter, while the proportional elongation depends upon length.

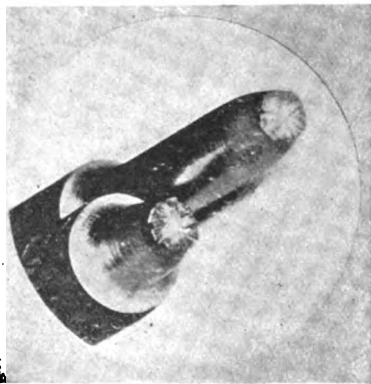


FIG. 2.—Contraction at point of rupture.

- (d) Rupture does not necessarily take place at the mid-distance between enlargements, but at the weakest point, and the local elongation, as well as the greatest reduction of area, will be in the zone of rupture.
- (e) The international “proof” obtains for all steel work, of a nature enabling one to turn a specimen of the desired dimensions from the material to be tested, and as this test-proof or specimen, is the smallest of all so far generally used, it enables one to cut a “cupon” from a part to be investigated, even if the part is quite small. Plates of course, cannot conform to this requirement unless the plates are over one-half inch in thickness, and in plate

work for boilers, etc., it is not uncommon to tal distance six inches between enlargements.

- (f) Figure 2 illustrates the local contraction when an intional test specimen is pulled to rupture, and for diameters, considering precisely the same material in case, length would not alter this phase of the test, but uniform elongation takes into account the length between enlargements, and is, of course, a function of length in products as cast iron or aluminum, in which the phenomena of local contraction is absent, the distance between enlargements might well be, and generally is, eight inches, the object being that of enabling one to realize real values, since without local phenomena the elongation per unit length is but slight.
- (g) Sudden changes of shape, grooves, shoulders and irregularities of any sort between enlargements would have a marked effect on the readings, and it is to such one might look for false accounts.
- (h) Suddenly applied loads during test would augment the variation readings, while tensility might show greater prolonging the time of test.

In conclusion, then, the distance between enlargements test specimen can be mostly anything between, say, two inches, and still show the strength of the material; but comparison is best made if the length is common for all test specimens, where error can result from methods not mentioned by Mr. Edgecomb New York City.

THOS. J. I

WHAT IS THE CAUSE OF THIS FLOODING

Editor THE AUTOMOBILE:

[861.]—I have a Schebler carbureter and have trouble with flooding. I put in a new float and do not think the priming is too long, as it does not always flood. Some times after it is awhile, it will be all right, and then again my gasoline runs over the street. I have come to the conclusion that the trouble is dirt, and thought of putting a strainer on in the feed pipe. You think that will fix it? I notice an ad of the Hatcher Strainer in your paper, on page 70, July 4 issue, which I thought I might mention. Oakland, Cal.

J. F. McMA

There appears to be little doubt, from your statement of the nature of the trouble, that the latter will be found to be some derangement of the float valve and not at all to the float you have supposed. A strainer is an excellent precaution, but I do not think dirt is the cause of the trouble. The float valve on a Schebler carbureter is of the annular type, surrounding the float chamber, and unless you found that the old float had become so heavy or so loggy as to float much below its accustomed level there was no necessity of replacing it. The valve gear is found attached at a point on the circumference of the float valve, to the end of which is attached the shutting off the flow of gasoline when the float reaches the determined level. It is the failure of this valve to seat properly that causes the flooding and the intermittent nature of the trouble. It is due to the fact that it is only at times that the valve does not work. Examine all the parts carefully and see if either the float or the vertical rod is not slightly bent, or if any of the connections have worked loose, as the amount of movement necessary is so slight that very little derangement is needed to prevent the proper working of this part of a carbureter. Doubtless in your case the trouble is slight, and as long as the car runs over smooth roads it does not appear, but as soon as it is subjected to a more or less severe jolt the parts are jarred out of place, the result that the float does not do its duty by closing the valve. If an examination does not disclose the defect, compare it with a new Schebler or communicate with the makers.

A TIMELY WARNING FROM PENNSYLVANIA

Editor THE AUTOMOBILE:

[862.]—Notify all tourists that expect to come over the N. Pike from Wheeling east, that at Brownsville, Pa., where the crossing the Monongahela river is carried on a toll bridge, the authorities await their arrival, and if not supplied with Pennsylvania license tags, they are promptly charged \$10 a day, or order taken for the tags at \$3, with a necessary hold-up of several days, or arrangements may be made to have the tags delivered at the objective point, to be ready for the return trip.

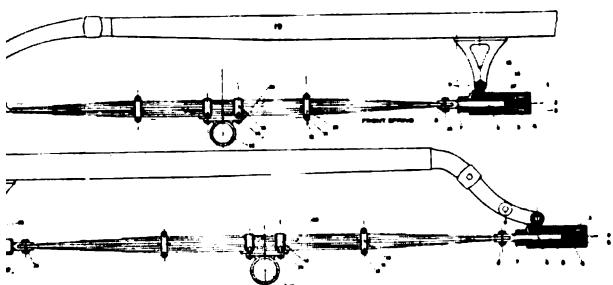
As this point is 10 miles in from the State line, there is no escape of the fine, so it will be less trouble and cheaper for the tourists to arrive here fully equipped with the legal requirements. Brownsville, Pa.

ALFRED C. SMITH,

NOVEL FORM OF SPRING SUSPENSION.

Under the title of the Burgess double-tension spring, there has been invented what may most aptly be termed a combined springs and shock absorbers for the purpose of improving vehicle suspension. While this will serve to give a rough general idea of the construction of the device, which will further be made clear by reference to the drawings showing a front and side view of this type, there are a number of other differences which will serve to place these springs in a class of their own, and the following description written by the inventor himself, Charles Burgess, Jr., Wenona, Ill., will best suffice to make these numerous points clear:

Referring particularly to the drawings, the axle (15) of the vehicle in which the wheels thereof are secured is attached to the main spring (20) by means of the plates (14) and clips (13), which are of the common form of construction. The spring (20) consists of a center leaf as shown, with laminations secured thereto on either side, the number of laminations depending entirely upon the strength required, which is determined according to the static load of the car body or the maximum weight of the car body, according to the preferred form of computing what the strength of the spring should be. The laminations being interposed on either side of the main or central spring (20), I provide the same with guards, which are formed integral therewith and on each



DETAILS OF THE BURGESS DOUBLE-TENSION SPRING.

side thereof, through which vertical guides are slidably mounted, and roller eyes (12) at each end thereof in which the roller bearings are journaled and are normally in contact with the upper and lower leaves. When the spring is deflected there is a movement of the laminations, either forward or backward, longitudinal of the main spring, and by the employment of the vertical guides (10) the laminations or leaves are kept in alignment during movement and are greatly assisted by the roller bearings, thus eliminating the friction between the leaves to a great extent. The depending hangers (18) are not preferably constructed, as the cylinders may be secured either above, below, in center or on either side of same, but in the drawings they are secured above, between the depending lugs, with bolts (16), which pass through the hangers at the lower portion of the depending hanger (18) as shown, as well as through the aperture formed integral with the cylinder head. This construction gives the cylinder a free, vertical, sliding movement between the lower portion of the depending hanger (18), thus eliminating all friction of working parts of the suspension, the longitudinal axial line of springs and buffer springs being in the same horizontal plane. The cylinder (17) and head are cast in one, with the head aperture to receive a packing gland (7), through which the piston rod (6) is adapted to pass. The caps of the cylinder, containing a male thread, are secured to the ends thereof by means of a female thread within the cylinders. Adjustably mounted upon the piston rod (6) is the piston (1), the adjustable feature being accomplished by means of the piston rod being threaded as shown and adapted to cooperate with a bore provided with a female thread within the cylinder. The piston is provided with a cross sectional slot for the purpose of containing the key, which passes through and is secured by the apertures in the piston rod (2). Interposed between the piston and cylinder-head of the cylinder is the buffer spring (3) the size of the buffer springs being governed entirely by the

end tension sought to be procured to the main spring (20). Each cylinder is provided with an oil plug (9) in order that oil may be inserted, not only to serve as a lubricant, but also to act as a fluid brake therein. Each cylinder is completely filled with oil, and upon the forward or backward movement of the piston the oil is forced on either side thereof through the longitudinal aperture (4), thus giving resistance to the piston according to its movement, allowing the spring to move quickly when idle and slowly when working; that is, it absorbs the jars in the movement of the piston instead of transmitting them into a series of jumps to the body of the car. The piston rod (6) of each cylinder extends out and beyond the cylinder head and is provided with a slot (21) adopted to co-operate with the center leaf at each end of the main spring, and is constructed so that the piston rod (6) and center leaf of the main spring are solidly secured together by means of the bolts passing through the end of the center leaf of the main spring, this being suitably apertured, thereby preventing any vertical or horizontal movement between the piston rod and the center leaf of the main spring relative to each other."

From the foregoing it will be apparent that, while the springs themselves differ in a great many detailed points from those in current use, the invention is practically a combined spring and shock-absorber.

WHAT ONE AMERICAN LEARNED ABROAD.

Emil Grossman, president of the Motor Car Equipment Co., the National Sales Corporation of New York, and the International Sales Corporation of Paris, who left for an extensive European trip May 23, recently returned on the *Kronprinz Wilhelm*. Mr. Grossman made exclusive selling agencies in France, Italy, Germany, England, Russia, Sweden, Denmark, Belgium and Holland for the line of goods handled by the National Sales Corporation, and also made advantageous arrangements with several European manufacturers for representation in America.

"The automobile outlook in Europe is exceedingly good," says Mr. Grossman, "particularly in the manufacture of commercial vehicles and taximeter cabs. The industry in these lines is becoming enormous; practically every large mercantile house, as well as factories, and more particularly breweries, are employing these trucks. The gasoline trucks are growing in favor, although a large number of electric trucks are also manufactured. Several of the automobile manufacturers have orders for thousands of taximeter cabs to be delivered within the next two years. As a rule, the taximeter cabs are light in construction, of medium horsepower and very easy to control. They are well patronized everywhere, costing only about 10 to 15 per cent. more than the horse cab.

"A very large number of touring cars are being rented by visitors for trips of one to three weeks at an expenditure of 100 to 125 francs per day (\$20 to \$25), which includes all expenses of machine, supplies and driver. Considering the annoyance caused to foreigners who do not understand the customs regulations of the different countries, and the expense of tires, benzine (which costs nearly three times as much as in America) and other expenses, this new method is a pleasant and less expensive form in which to tour than to use one's own car. The machines are insured against accident by the companies renting them. The company doing the largest touring car business in France is the Co-operative Association of Chauffeurs, each driver being a stockholder in the company; and, naturally, the drivers are careful not to meet with accidents or to expend large sums for tires and supplies.

"In every factory of any size American machinery is employed. In one of the largest factories visited, out of 1,680 machines in use over 1,200 were of American manufacture. The German manufacturers, however, are making great inroads on the American manufacturers of automatic machines, and unless radical improvements are made in America the German manufacturers are sure to capture a big share of the automatic machinery trade in Europe."



AFTER a sufficient interval to realize the full import of the unification of race conditions decided upon at the Ostend conference, European constructors and automobilists express themselves as satisfied. The leaders of the industry are not absolutely united on the best working basis to improve the breed of automobiles and give interesting racing, but they are all convinced that the conditions for 1908 are infinitely better than the muddle of the past two or three years. A few French automobilists try to belittle the work of the conference by pointing out that, although every motoring nation, except America, formally agreed to the new conditions, none of them is bound to put the laws into practice, and the multiplicity of conditions in 1907 may continue in 1908.

Mervyn O'Gorman, a British delegate, while approving the decision of the conference, believes that full liberty in construction may lead to progress at present believed impossible, and offers an "O'Gorman No-limit Trophy" to be competed for annually over not less than 100 miles on the Brooklands track. It is obvious, however, that the conference conditions will predominate next year. A few organizing bodies may conservatively stick to their present rules, only to find, when it is too late to remedy the evil, that manufacturers do not build cars for their own pleasure and prefer to produce racers eligible for the largest number of events.

An example of the evils of multiplicity in automobile race conditions was shown in European motor-boat events a couple of years ago, when an interesting sport became the laughing stock of the world and received such a blow that it is yet in a sickly condition.

This year there have been three limited-fuel races in France, with 30, 15 and 19 liters to the 100 kilometers; two in England on different allowances of gasoline; special conditions for the Targa Florio, the Ardennes circuit, and the German Emperor's race. One more meet, on the Brescia circuit, has yet to be held, with two distinct conditions. The Vanderbilt race, had that event been possible this year, would probably have added further tints to the coat of many colors.

Next season there will be one set of racers for practically all the national tests, the characteristics of the machines being bore not exceeding 155 millimeters (6.1 inches) for four-cylinder engines, and a minimum weight of 1,100 kilos (2,425 pounds). Track races, hill-climbs and short-distance events will not be affected by the new rules. Thus an outlet will be provided for those objecting to being bound down by fixed rules.

Of the varied methods of classification adopted this year, limited cylinder area (bore and stroke) has united the largest number of competitors, being employed for the German Emperor's race, one of the Ardennes races, and for the coming Florio cup race in Italy. Yet it is the one which has been most severely criticised. Perhaps there is a little jealousy in their charges, but it is instructive to note the objections brought against a limited cylinder area by French leaders. Simplicity, ease of application and an increase of power are admitted to be in its favor. The charges against it are that it develops high-speed motors which suffer from abnormal wear and vibration, and that the increase in power is only obtained at the cost of excessive fuel consumption. The Fiat which won the German Emperor's race and the Fiat victorious in the French Grand Prix consumed prac-

tically the same amount of gasoline per 100 kilometers, yet the former had thirty horsepower less than the latter. The increased power obtained does not fascinate the French critic, one well-known writer declaring that a motor 152 by 110 bore and stroke and another 130 by 150 require as fuel 50 liters an hour for the former and 35 liters for the latter. The first develops 100 horsepower, the second 70. Supposing them of equal weight, for five hours' running without refilling the tank the weight per horsepower of the group motor and fuel tank is the same. The conclusion drawn, and which is generally acquiesced in, is that the regulation by cylinder area should be abandoned. Conditions considered the most advantageous are as long a stroke as possible with a moderate engine speed.

When the matter came before the conference opinion immediately rallied to a limitation of the bore only, leaving the determination of engine stroke to the fancy of constructors. France would have preferred a bore of 160 millimeters, which is only slightly below the average of Grand Prix racers, their object in maintaining this standard being to impress the public with the high rate of travel and to put tires to the most severe test, abolishing the use of dismountable rims to further this end. Germany did not defend her own bore and stroke limitation scheme, but asked for a bore limited to 135 millimeters, with the object of creating a *rapprochement* between the racer and the ordinary touring car. England acted as a mediator, and finally got the two extremists to unite on a bore of 155 millimeters and a minimum weight of 2,425 pounds. Next year's speed will probably be less than this year's record, though certain sanguinary individuals hope to maintain the standard despite the limitations. Mechanical conditions, however, are fairly satisfactory, the limitation of bore developing engines of long stroke and slow rotation, with a consequent diminution of friction. The chief objection brought against it is the difficulty of applying it to other than four-cylinder engines. Somebody has asked what bore would be allowed for a two-cycle four-cylinder engine, and the conference itself left to a special committee the task of determining conditions for six- and eight-cylinder engines.

French authorities had not the courage or the inclination to defend their own limited-fuel formula, under which they were beaten in the Grand Prix, but are not tired of sounding its praises in the technical press. It produced an excellent type of engine; without any increase in size of motor it gave a big advance in speed, and by showing the economy of the

automobile it touched a matter in which the public generally is interested. But it was too susceptible to atmospheric influences—French cars tuned up for bad weather were defeated on a fine day; it was delicate in its application, necessitating experienced organizers and close surveillance throughout—and it had to go.

There is an enormous economy in being able to build three machines only in place of three or four distinct types, and enter them in half a dozen important races. But there is a still further advantage, which will be appreciated more by foreign builders than by the leading French firms: Any constructor may begin work now and produce a set of machines for a series of races to commence next April. He has at least eight months in which to design, construct and try out his cars, compared with an interval of five or six months on previous occasions. A June race announced in January allowed such firms as Fiat, Renault and Mercedes to compete in a prepared condition, but it placed at a decided disadvantage firms who had less experience in racing or who were separated by an ocean from the scene of the contest. Walter Christie was not the only American engineer who studied the conditions of the Grand Prix. Other firms—they were several—examined the rules, considered the date and distance, and decided it would be money thrown away.

As half a dozen American firms do some business in Europe—principally in England—and many more are represented across the Atlantic by the increasing crowds of annual tourists, it is not unreasonable to suppose that there will next year be a more adequate representation of cars from this country in the great speed tests of the old world. To send a team of three cars, well tried out, to Europe for three months, where they could compete in at least three races, would certainly be more profitable than to ship over one or two hastily prepared Gordon Bennett racers, as has been done more than once in the past. Supposing Europe's rules are adopted for the 1908 Vanderbilt race, a larger foreign representation may be expected, as practically every firm of importance will have a machine or set of machines available for the contest.

RACE METHODS TO CATCH SPEED VIOLATORS.

INDIANAPOLIS, IND., Aug. 12.—A crusade against alleged violators of the automobile speed law of the State has been started by the local police, and the method pursued is believed to be wholly original with the department. Chief Robert Metzger has instigated the method of running down fast drivers with the White steam touring car purchased by the department some time ago. As a result residents of the exclusive North Side districts are being treated to the most spectacular races at from twenty-five to forty miles an hour clip that the city has ever seen.

Naturally the system is a dangerous one, so dangerous that it has called down the condemnation of some of the best citizens of the city. The system is not employed in day time, as the police car is so well known. A speed indicator and three patrolmen in plain clothes, as well as one of the police chauffeurs, are employed in the work, and the testimony of the officer who watches the speed indicator, together with the record of the latter, is accepted as conclusive evidence in the local police court.

The automobile drivers are first timed, then commanded to stop. If they fail to do so, the driver of the police machine executes a series of maneuvers that forces the automobile of the victim against the curb and wedges him in, making escape impossible and a collision inevitable.

Various methods of catching speed violators have been tried by the police, none of which have given satisfaction until the one now in use. Chief Metzger insists that the law prohibiting a speed greater than fifteen miles an hour in residence districts will be strictly enforced. Violators of the law are fined \$1 and costs, amounting to \$11, and all except two have pleaded guilty.

AUTOS PERMITTED IN NATIONAL PARKS.

WASHINGTON, D. C., Aug. 12.—Several weeks ago a number of automobilists of Seattle, Wash., requested permission to take their cars into the Mount Rainier National Park, but the Interior Department denied the request, as there was a strict rule prohibiting automobiles in the various national parks. The unjustness of this rule was pointed out to Secretary of the Interior Garfield during his recent visit to the Northwest, and immediately upon his return to this city he directed that a new regulation be issued permitting automobiles to be taken into the Mount Rainier National Park.

At the Interior Department it was stated that the new ruling is of general importance, as it makes a change in the management of the national parks, in which automobiles have not heretofore been permitted to operate, because of the dangerous character of some of the roads and the timidity of horses not accustomed to the machines.

It was further stated that the new rule is in the nature of an experiment and will be effective but one year. If the experiment is a success, however, it is considered probable that the innovation will soon extend to other parks and thus open up many fine runs that have heretofore been denied automobilists. The speed limit has been set at six miles an hour, except in long, open stretches, which are numerous.

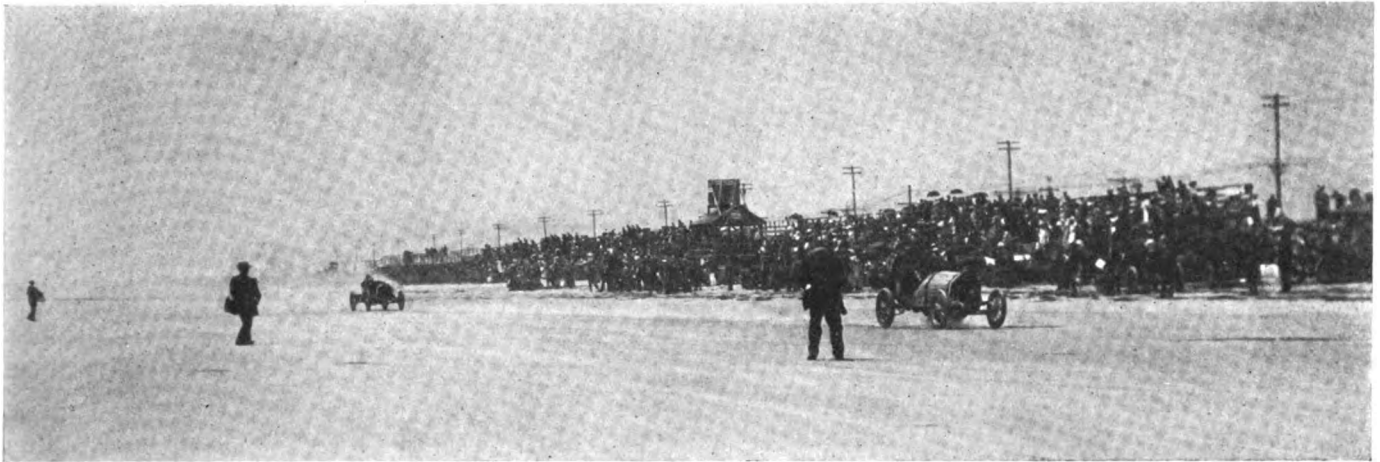
OILING ROAD AT \$100 PER MILE.

SEATTLE, WASH., Aug. 10.—Oil as an allayer of dust has been given its first, and very successful, trial in the State of Washington. One of the best stretches of road in the State is the macadamized section leading to the Meadows race track, where there is now a season of running races on. Many automobiles go out daily, not only privately owned cars, but such as are used for hire, and in fact the race meet is proving quite a mint to drivers of this class, as the street car service is wretched. Every machine would raise clouds of dust, and so County Engineer Valentine had the road sprinkled with common fuel oil, which contains about 40 per cent. of asphalt and makes an asphalt coating for the macadam. So successful has this proved that Mr. Valentine has decided to sprinkle the road twice a year, once late in the Fall, before the Winter rains begin, and early in the Spring, after they have ceased. He is of the opinion that this will suffice. This stretch of road also leads to Tacoma and is destined to become a part of the boulevard to skirt the shores of Puget Sound. Mr. Valentine is also planning to oil all macadam roads in King county. The expense is figured at \$100 a mile.

DASTARDLY WORK OF AN AUTO WRECKER.

WINCHESTER, VA., Aug. 10.—Last Tuesday night some wretch attempted to wreck the automobile of "Jack" Hardesty on the Berryville-Winchester turnpike, about one mile west of Berryville, by placing a log across the road. The machine contained Miss Camilla Rutherford and Miss May Bushnell, Mr. Hardesty driving. When the auto struck the log the speed had been slackened down to about ten miles per hour, but the force of the impact was sufficient to throw Miss Bushnell from the machine. She died four hours later in the hospital of Dr. Tucker at Berryville, to which place she was rapidly taken in Mr. Hardesty's partially wrecked machine.

The matter has stirred up considerable excitement in this section and several arrests have been made. At a preliminary hearing a rural resident by the name of Simmonds, arrested upon circumstantial evidence, failed to prove an alibi and has been held without bail awaiting the action of the Grand Jury. No blame attaches to Mr. Hardesty, as he is a careful driver and well thought of generally. Prejudice against automobiles rather than personal grudge prompted the dastardly deed. Automobilists generally are greatly incensed over the happening and will exert every effort to have the guilty parties heavily punished.



ROBERTS IN THE HARRY HOUP T THOMAS VANDERBILT CUP RACER THAT MADE THE FASTEST MILE AT ATLANTIC CITY MEET.

CLOSING DAY AT ATLANTIC CITY MEET.

ATLANTIC CITY, N. J., Aug. 7.—The wind-up of the racing program of the Automobile Carnival came to-day with two outstanding features: in a race between two Stearns machines and an Oldsmobile the Stearns finished dead heat, and in running against time Montague Roberts made the mile in :39 1-5. Duncan Curry, of the *New York American*, was a conscientious referee.

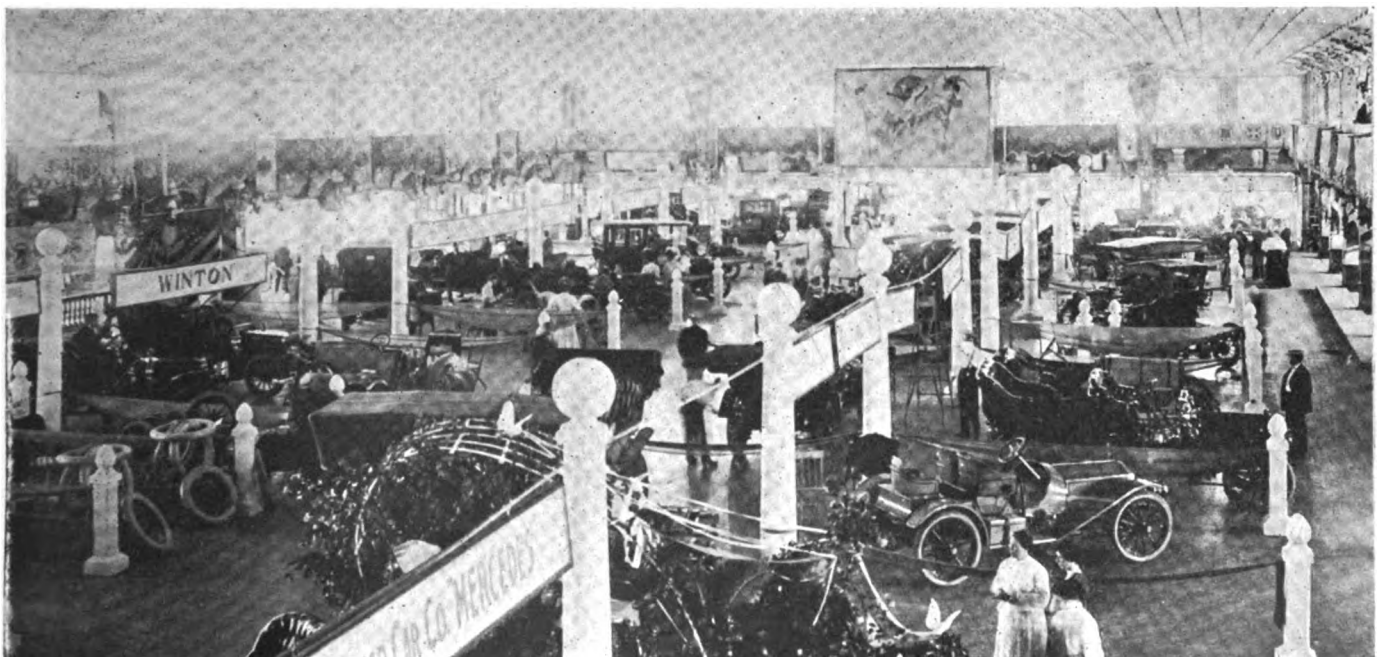
Guy Vaughan and G. W. Hoffmann handled the two Stearns and Tom Berger took charge of the 30-horsepower Oldsmobile, each machine carrying four passengers. With a flying start, all kept together for three-quarters of a mile, when the two Stearns gradually pulled away from the Oldsmobile and rushed over the line neck and neck, the Olds being about fifteen yards in the rear.

Owing to an annoying delay in getting the various heats run off, there was a meager attendance when Roberts rushed away on his flight against time. Taking the extreme outside course, where the beach was hardest, the six-cylinder Thomas made the time of 39 1-5 seconds in handy fashion. The performance is only 3 4-5 seconds slower than Walter Christie's mark, made when the beach was in ideal condition. W. H. Wray made a time trial of 59 4-5 seconds on a Simplex motorcycle.

During the afternoon an automobile parade was held on Pacific avenue; the number of participants, the crowd of spectators and the favorable weather all contributed to make it a success.

REPRESENTATIVE SHOWING ON THE PIER.

ATLANTIC CITY, N. J., Aug. 9.—Yesterday morning marked the opening of Atlantic City's first annual automobile show, and to-day, with more than 100 cars on view, most of them 1908 models not long from the factories, the show is in full blast, and a fitting feature of the week's carnival. The E. R. Thomas Motor Company's New York branch is one of the big exhibitors, though quite a number of the leading makes are well represented. For instance, the Stearns and the Oldsmobile are being shown by the Motor Shop of Philadelphia. The Acme is shown by its makers, the Acme Motor Car Company, Reading, Pa., while the Autocar Company, Ardmore, Pa., also exhibits its own product. West Stillman, of Philadelphia, is showing the Mercedes and the C. G. V. is also on view, while Gilbert S. Smith, of the Hamilton Auto Company, 206 North Broad street, Philadelphia, is really the cock of the walk, as he claims to be the only man here with a full line of 1908 models, which arrived here by express only yesterday. Another well-known Philadelphia house with a prominent exhibit is the Titman-Leeds Company, in charge of E. C. Leeds, who is showing the Studebaker, Pope-Hartford and Matheson. The Keystone Motor Car Company, of Philadelphia, shows the Packard and Buick, the exhibit being in charge of E. C. Johnson. Armand T. Nichols, whose car won several prizes in the parade for decorations, has it on exhibition.



INTERIOR OF YOUNG'S MILLION DOLLAR PIER AT ATLANTIC CITY, WHERE THE AUTOMOBILE SHOW WAS HELD.

LATE SUMMER HAPPENINGS IN CLUB LAND

MINNESOTA ASSOCIATION PLANS A BIG RUN.

ST. PAUL, MINN., Aug. 13.—The Minnesota State Automobile Association is to open the new tri-city road with what will be a small-sized A. A. A. tour, the latter part of August or early in September. Fifty cars are expected to participate and the run, which will be to Duluth, will be held under the same conditions as the national event. The tri-city road is the outcome of a plan of local autoists to connect Duluth with the Twin Cities that has been much talked of but only assumed definite shape this Summer. The autoists of Duluth raised a fund of \$3,000, which has been spent on the roads leading out of the Zenith City, while the commissioners of several other counties have co-operated with the State Association in repairing the roads. The latter are all to be posted and a Twin City dealer has offered the association 5,000 complete sign posts provided the association will place them. It is expected that a number of Duluth autoists will come here in order to participate in the run.

The St. Paul Automobile Club also has an event of its own on its hands—it is planning to hold a hill climb within the next few weeks. Rufus Edwards is chairman of the committee in charge and active preparations are under way. A number of successful hill climbs have been held across the river and local autoists are anxious to show what they can do in this line. It is probable that Ramsey Hill will be selected as the site of the climb, as it is the most desirable hill in the city, though at present it is badly encumbered with loose rock, which will have to be removed before it can be used, and the club is investigating the matter to see if this can be done properly in time for the climb.

ROCHESTER'S BELATED ORPHANS' DAY.

ROCHESTER, N. Y., Aug. 13.—Although it is somewhat later in the season as compared with other celebrations, Rochester's treat to the orphans lost none of its importance on that account. The members of the Rochester Automobile Club bent every effort on the successful outcome of their Orphans' Day celebration, and there was no doubt that they did succeed in the treat given 422 waifs from the local Industrial Home. Headed by a band, the parade got under way at 1:30 with no less than 140 cars in line, and more at the disposal of the club committee had the latter called for them—certainly an unusual situation where similar events are concerned, as there is usually a dearth of vehicles to transport the prospective passengers, despite the number that can be crowded into a car. The children were taken to Ontario Beach Park and treated to its numerous attractions, with plenty of pink lemonade on the side to make things run smoothly. The return trip was undertaken at 5:30 P.M., after a most enjoyable afternoon. The club was aided in its entertaining by Larry Saxton, the popcorn specialist, who donated all of his product the youngsters could consume, while an equally liberal supply of cake was contributed by J. A. Seel. J. Hungerford Smith was responsible for the pink lemonade, and the Rochester Candy Company gave each orphan a two-pound box of sweets.

AURORA CLUB FOR LAW ENFORCEMENT.

AURORA, ILL., Aug. 13.—In order to further the work of bringing offenders to bar, the Aurora Automobile Club has communicated with State's Attorney Reid and will render all possible assistance in bringing about a strict compliance with the new statute now in force in Illinois. Many of the members of the club have not gone to the trouble of taking out licenses under the new law and the secretary has offered to supply a list of the delinquents to the State, so that both in checking the reckless speeding evil and in bringing other offenders to bar the State's Attorney will have inside information.

SCHENECTADY CLUB BEGINS ACTIVE WORK.

SCHENECTADY, N. Y., Aug. 13.—The newly organized Automobile Club of Schenectady is already beginning to justify its existence by taking up the good roads cause in this part of the State. At a recent meeting held at the Mohawk Club it was voted to purchase 100 signs, half of which will be painted to show the distance to Schenectady from outlying districts, while the remainder will be used for general marking in the surrounding country. It was also voted to purchase twenty-five danger signs, which will be placed at a number of bad places along the roads in the vicinity, including spots on the Troy road and in the neighborhood of the Boston and Maine Railroad bridges, which are particularly nasty places for one not familiar with them.

The touring committee is considering plans and later in the Fall will arrange an automobile day for the inmates of both the Children's Home and the Day Nursery.

The Board of Governors of the club is as follows: C. H. Benedict, Gerardus Smith, J. W. Yelverton, A. F. Knight, George H. Hill, H. S. DeForest, W. Dewey Loucks, H. G. Chatain and N. I. Schermerhorn. Following are the committees: Membership, George H. Hill, Dr. H. A. Staley, Charles Blittersdorf, T. H. Soren, Edwin Clute; exhibition tours and contests, H. G. Chatain, J. W. Yelverton, Dr. W. P. Faust, B. A. Burtiss, J. W. Clute; laws and ordinances, W. Dewey Loucks, E. C. Angle, A. G. Davis, Hinsdill Parsons, W. W. Wemple; good roads, H. S. DeForest, Earl Furman, E. F. Peck, F. R. Champion, George Close; grievances, N. I. Schermerhorn, Frank McClelland, Gerardus Smith, August Kruesi, H. Scudder.

PRESIDENT DUTTENHOFFER GIVES ADVICE.

CINCINNATI, O., Aug. 13.—Just back from a five weeks' trip with his family, the entire course of which was not marked by a mishap, not even so much as a puncture, President Val Duttenhoffer, of the Cincinnati Automobile Club, states that it is his intention to recommend at the next meeting of the Board of Governors of the club that the new speed ordinance which it has recently had prepared for introduction before the council be dropped.

"Let the present ordinance stand," says Mr. Duttenhoffer, as the result of his observations in New England. "It will do as well as any, and there is no use of drawing any more stringent lines around ourselves than the present ordinance provides. Autoists are far more liberally treated in the East than they are here, as everywhere in New England we found a straight twenty-mile-an-hour limit. At points where there were special rates of speed, signs were posted telling how fast autos could proceed. That's the way it should be here in the West, but the West doesn't seem to be willing to pursue so liberal and advanced a policy."

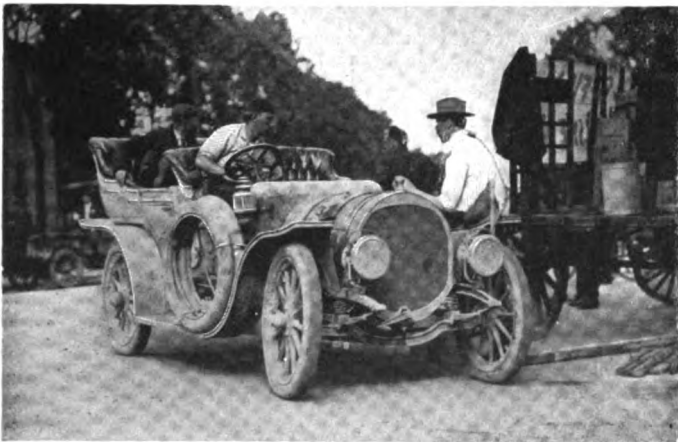
PROSPERITY OF LARGEST CLUB IN COUNTRY.

NEW YORK, Aug. 12.—An official announcement from the Automobile Club of America tells a story of promising prosperity, coupled with large gains in membership that are equaled by few similar organizations anywhere. The following comes from the club's publicity department:

The Automobile Club of America took possession of its new clubhouse and garage on West Fifty-fourth street, April 18 last. On the first day of August, three months after its occupancy, \$20,000 of the second mortgage bonds were redeemed and cancelled.

Much satisfaction is expressed among the members at this evidence of the club's stability and progressiveness, and the governors are now planning to have at an early date in the Fall a meeting of the club members for the purpose of burning the cancelled bonds. Further blocks of the bonds will be redeemed at short intervals.

The membership of the club is increasing very rapidly, and before the close of the year promises to reach the 2,000 mark.



PETERSON, THE PERSISTENT, AND HIS METEOR.

A PERSISTENT A. A. A. TOURIST.

As a try-out of a new car the 1,500 miles pounding of the A. A. A. tour was sufficient to satisfy the strenuous nature of most men and machines. A. L. Petersen, of the Cleveland Automobile Club, undertook this kind of trial trip for his Meteor machine, and although failing to finish among the perfect scorers, owing to a series of unfortunate road accidents, gave a display of skill and dogged perseverance of more than ordinary interest.

On the second day's run from Toledo to South Bend, over roads of such a difficult nature that fourteen cars incurred penalization, a broken bolt on the steering gear caused a delay which, on such muddy roads, it was impossible to regain later. Trouble followed on the following day, when, in order to clear a buggy obstructing the road, Petersen shot his car over a six-foot ditch and cleared a barbed wire fence. No serious injury was done either to car or men, but it was fully two hours before the Meteor could be got back to the greasy highway. Three uneventful days followed, with control reached on time, notwithstanding a leaky radiator as the result of the previous leap. Finally, on a quiet corner of the road in Ohio, with a supply of water handy and a cottage fifty yards away up the hill, it was decided to take down the radiator and make a thorough repair. It was not the easiest of tasks to solder a radiator on the road with the fire for heating the iron fifty yards away. When the job was finished it was found that the cranking handle, which had been bent through the fall of the car, broke open the radiator tubes whenever the motor was cranked.

At Pittsburg the cranking handle was dismantled, the radiator soldered, and the engine started by pushing the car. This seemed satisfactory and a clean run was hoped for. Coming out of town a trolley car driver stopped his vehicle and signalled the automobile to pass ahead. When they were opposite, the town vehicle driver turned on current, the result being a bent front axle and a delay of several hours. With no thought of abandoning, Petersen commenced repairs, and when the main body got up at Baltimore next morning he was there to greet them, and there was no further delay in the run to New York City.

A few days later, while Petersen was driving his car homeward and westward, passing through Schenectady, N. Y., it skidded on striking the sprinkled asphalt pavement, turned completely round and hit a trolley pole, smashing the rear axle and the rear wheel. Forty trolley cars were held up while the disabled Meteor was being removed. But Petersen made repairs and will persist again.

Among several storage battery patents recently granted to an American inventor, one is for a new method of preventing the negative plates from losing their capacity. The active spongy lead is impregnated with an inert material like carbon, and in this way the passageway for the diffusion of the electrolyte into the pores of the plate are maintained intact.

AUTO EXPORTS CONSTANTLY ADVANCING

At the present rate of increase it is a matter of but a comparatively short time before the value of the automobile parts being sent out of this country will exceed \$1,000,000 monthly. For an industry that has hardly been in a position to export its product for half a decade, this seems almost incredible, but a glance at the figures compiled by the Department of Commerce and Labor tell the story of the constant growth of the foreign trade in American automobiles better than a dissertation on the subject possibly could.

The fiscal year ends with June and the Government report just to hand shows that during the month of June, 1906, automobiles and parts to the value of \$539,268 were sent out of this country, as compared with \$732,054 for June, 1907, while the years ending with those months showed totals of \$3,497,016 and \$5,502,241 respectively. For the year ending June, 1905, the total was but \$2,481,243, from which it will be evident that the foreign trade has considerably more than doubled in the short space of two years. Doubtless the most significant fact to be gleaned from a review of these monthly reports is to be found in the item representing the takings of automobile-producing countries.

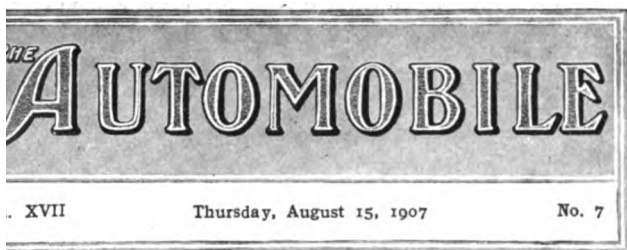
In short, it will be readily seen that the bulk of the foreign trade in American automobiles is to Great Britain and the Continent, the amounts shipped to the remainder of the globe being comparatively insignificant, with such exceptions as Canada and Mexico. June, 1907, marked the end of the first year in which detailed figures separating the value of complete cars and parts have been kept, with the result that it is seen that no less than 2,862 cars were sent abroad in the last twelvemonth.

The report in detail is as follows:

	JUNE		TWELVE MONTHS ENDING JUNE	
	1906	1907	1906	1907
<i>Automobiles and Parts of—</i>				
Automobiles, No.		205		2,862
Parts of	\$539,268	\$669,570 62,484	\$3,497,016	\$4,635,229
Exported to—				
United Kingdom	194,709	310,632	948,995	1,000,000
France	56,405	67,802	282,317	300,000
Germany	20,107	36,487	99,732	100,000
Italy	20,612	11,675	265,970	250,000
Other Europe	40,959	61,124	109,589	100,000
Brit. No. America	92,429	154,923	648,438	600,000
Mexico	80,934	49,980	422,626	400,000
West Indies and Bermuda	4,080	8,385	241,353	200,000
South America	18,809	19,641	96,174	100,000
Brit. East Indies	2,947	682	37,644	30,000
Brit. Australasia	5,353	4,974	100,944	100,000
Other Asia and Oceania	603	5,489	50,335	50,000
Africa	125	61	28,529	20,000
Other Countries	1,007	100	14,370	10,000
Total automobiles and parts of	\$539,268	\$732,054	\$3,497,016	\$5,502,241



ALFRED REEVES, GENERAL MANAGER A. M. C. M. A. Mr. Reeves is a great believer in the health-giving value of automobiles and daily he is to be seen with his family in the vicinity of his new home at N. Y. Master Robert Reeves, the younger son, has a strong desire to his father at the wheel of the Maxwell.



E CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor

KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager

R. SMITH FRANK B. BARNETT
RALPH, 1035 Old South Building, Boston, Mass.
GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Address - - - - - Autoland, New York
Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

1 States and Mexico - - - - - One Year, \$2.00
Countries in Postal Union, including Canada - - - - - One Year, 3.00
Subscribers—Do not send money by ordinary mail. Remit by Draft,
Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

AND:—Hiffe & Sons, Limited, 20, Tudor Street, London, E. C.
CE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
LANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Registered at New York, N. Y., as second class matter.

The Automobile is a consolidation of The Automobile (monthly) and the
Review (weekly), May, 1902; Dealer and Repairman (monthly), October,
and the Automobile Magazine (monthly), July, 1907.

Printed in 1905, - - - - -	730,000
" in 1906, - - - - -	791,000
" This Issue - - - - -	16,500
" Since January 1, - - - - -	537,650

Aluminum as a Material for Automobile Construction. To the designer of earlier days, who was confronted with the problem of carrying a cumbersome, low-powered motor and an equally heavy chassis, on pneumatic tires, aluminum came as a godsend. It meant the saving of many valuable pounds in both weight and transmission, and was universally availed of for this purpose, even though its employment did not always bring that satisfaction in service that was to be desired, as cast aluminum—iron in which it was most generally used—has the grave fault of weakness.

And it is this characteristic, as well as the desirability of its use as a material for automobile construction at all, that is now the bone of contention. There are too many sides to the question to permit of their discussion at length here, and the sole purpose is to throw a little light on a state of affairs that may seem inexplicable to the layman. When an engineer states that he has analyzed certain specimens of a material, such as aluminum, and has also subjected proofs to the usual tests with stated results, that do not throw any credit on the material in question, it is hardly logical to immediately jump to the conclusion that all material which passes under the same generic name is, to put it in the vernacular, rotten. Nor does it follow when a reputed authority takes up the cudgels in defense of aluminum and his opponent hood and says, "Here is a sample of what can be done and what is being done," that the first engineer was away off or all wrong. Doubtless the test pieces he examined were rotten, and the probability there are a great many crankcases and gear-

boxes to-day that are equally bad; but the mere fact of their existence is not conclusive evidence that all are bad, nor does the statement of an authority to the effect that cast aluminum can be made strong enough for the purpose make them good. It simply shows that there are a great many poor specimens extant, and probably many more are being turned out; in short, that there is a vast deal of room for improvement, and that some engineers should seek this in the employment of other materials offering equal advantages, is not in itself particularly strange.



Importance of Steering Gear Construction.

If daily newspaper reports correctly reflect the situation, defective steering gears must be held responsible for an appalling list of fatalities. One day's gleanings brings to light no less than four accidents in widely separated parts of the country. All four appeared in the same issue of a New York daily, and every one of them was attributed to a faulty steering gear—three directly and the fourth by inference. Two of the accidents were attended by fatalities and the others by severe injuries, and doubtless the average man can recall scores of similar reports during the past few years in which the accidents have, almost without exception, had gruesome terminations.

Before accepting such reports at their face value it must be remembered that the average daily newspaper reporter's first duty is to make a story, and that his narrative may be built upon an extremely meagre foundation of fact does not cause him any twinges of conscience. Ever since electric lighting has become general it has been a common practise to report mysterious fires as being due to defective insulation, frequently where there was no wiring at all in the place. In the same way, many an automobile accident is attributed to a faulty steering gear, and though a large proportion of such reports may be unwarranted, there is every reason to believe that the majority of them are founded on fact. The showing is one that should rouse both the manufacturer and the autoist to a keener sense of the responsibility placed upon this essential. The former to spare no expense or pains to see that it is made as nearly infallible as any device of human creation well can be, and the latter to see that care on his part contributes as much as possible to keeping it in that condition of continued efficiency that is vital to safety.



Society of Automobile Engineers Answers the Need.

If there were ever an instance in which that saying of the press agent about filling a long-felt want was justified, it is to be found in its application to the gap in the engineering side of the automobile industry that has been so well occupied by the organization of the Society of Automobile Engineers. Early in its history every industry feels the need of organization and co-operative effort, particularly as applied to the technical development of its product, and in no other has this been such an imperative need as in the making of automobiles, for very obvious reasons. It was recognized by the engineers themselves from the very beginning, but it was some time before any attempt at a remedy was made, and then it merely resulted in benefiting those connected with a part of the industry.

What has been needed all along was an organization open to the automobile engineer regardless of industrial affiliations, and this need has been well supplied by the organization of the Society of Automobile Engineers. The latter has been successful since its very inception and, though but in its second year at the present writing, is in an unusually flourishing condition. The fact that its membership is composed of engineers from every branch of the industry, and includes many of the most prominent from the different divisions into which the American industry is separated, speaks for itself. Despite its youthfulness, it has already done good work and merits the hearty support of the industry as a whole, for its possibilities of development are unbounded.

THAT NEW YORK CITY ORDINANCE.

In New York City, hereafter, it seems the maximum penalty incurred by a violation of the automobile speed laws cannot exceed a fine of \$10. The State law makes such a violation a misdemeanor, but it also grants a general power to the municipality of New York to pass its own ordinances on the subject, and this the Board of Aldermen has done, reducing the penalty from an allowable maximum of a \$250 fine, with imprisonment for repeated offenses, to \$10.

William Heiner was arrested on June 1 last for speeding and held for the Court of Special Sessions for trial under the provisions of the State law, known as the Motor Vehicle law. His attorneys, Flammer & Flammer, sued out a writ of habeas corpus, contending that the passage of the ordinance by the Board of Aldermen precluded the holding of a violator for trial at Special Sessions on the charge of having committed a misdemeanor, and this contention was upheld last week by Justice Truax of the Supreme Court. This means that the only punishment which can be inflicted is that provided by the city ordinance, which supersedes the State law in accordance with the provisions of the latter to that effect. Consequently Heiner could not be subjected to a fine of more than from \$1 to \$10.

Assistant District Attorney Taylor, for the prosecution, contended that the law of the State was paramount to any ordinance that could be enacted by the Board of Aldermen, and that that body could not pass an ordinance which would render nugatory the provisions of the general law. But in his opinion Justice Truax states that the defendant cannot be held for a misdemeanor under the State law or under the Penal Code, and is only liable to the infliction of the penalty prescribed by the city ordinance in question, as the latter was passed in conformity with power granted by the Legislature and contained in the State law.

Opinion of Counsel Niles of the A. C. A.

W. W. Niles, counsel to the Automobile Club of America, is quoted as follows in the *Herald*:

"I am inclined to think that this decision will be upheld if the case is taken to the Appellate Branch. The city ordinance was passed last November and covers all kinds of vehicles, thereby bringing it under the special provision in the State law that renders it valid.

"While there may be some differences of opinion among members of the Automobile Club, and while I do not wish to seem to express the opinion of men with whom I have not discussed the matter, it is my personal opinion that this decision is unfortunate. It leaves the maximum penalty a \$10 fine, and I seriously question whether this will be sufficient to deter reckless drivers, and especially hired chauffeurs. If my fears prove well grounded the result will be more reckless driving, deeper enmity on the part of non-users toward motorists as a class, and the enactment of such drastic laws at Albany that serious hardships will be imposed on all that use automobiles. I hope my fears may prove groundless.

"At each legislative session we have difficulty in preventing unfair legislation as it is, and if the resentment of the non-using class grows we probably shall be unable to keep unfair laws off the books.

"On the other hand, the new order will be a great advantage to well meaning automobilists, who have been imposed on by unfair arrests. The Automobile Club stands for a pretty stiff law. It has complained, not about the severity of the State law, but of the unfair and often unintelligent manner in which it sometimes has been administered."

Judge of General Sessions Court on Ordinance.

Judge Charles S. Whitman, of the General Sessions Court, said:

"I am afraid that Judge Truax's decision is sound law. I say 'afraid' because it will cause a condition which will be bad for the public that does not ride in motor cars and which at the same

time will react on the conservative and law-abiding motorists. A \$10 fine, the greatest penalty now imposable, is a joke to the man wealthy enough to own an automobile. If reckless and inconsiderate driving results, it will mean a change in the State law and the imposition of penalties heavier than were ever in force here. It must be remembered that the legislators from the country districts are not over fond of the automobilist, anyway.

"If there is any marked increase in reckless driving it will be found among the paid chauffeurs. In my four years' experience on a magistrate's bench I observed that in a majority of cases violations were committed when the owner was not in the car."

Comment of Chairman Terry, A. A. A. Legislative Board.

Chairman Charles Thaddeus Terry, chairman of the A. A. A. Legislative Board, comments as follows upon the matter:

"The decision of Justice Truax would not, under any circumstance, indicate any necessity for a more drastic state law. The fault, if fault there was, lies with the ordinance adopted by the Board of Aldermen and not with the State law. Under the State law, section 6, subdivision 1, the Board of Aldermen could have provided in its ordinance that the same penalties provided in the State law could be inflicted for a violation of the ordinance; and if the Board of Aldermen in enacting its ordinance had said nothing about penalties, then, under this section 6, subdivision 1, chapter 538, of the laws of 1904, the penalties provided by the State law would have applied automatically as provided in that section.

"Everyone, so far as we know, who has given any study to the question considers the present State Motor Vehicle law not only sufficiently drastic, but in many respects unreasonable and unnecessarily harsh. The fact that the Board of Aldermen, instead of re-enacting the penalties provided by the State Motor Vehicle law in its ordinance, cuts down those penalties from \$250 to \$10 and omitted entirely any provision of imprisonment, would reasonably indicate that the Board of Aldermen consider the penalties provided in the present State automobile law as altogether too harsh and severe; otherwise there would have been no reason why the Board of Aldermen should not, in the ordinance enacted by it, have provided for the penalties as they stand present in the State law, because under that State law the Board of Aldermen have sole power to re-enact those penalties."

Despite the decision of Judge Truax, Special Sessions Judge Flammer, in Brooklyn, Monday imposed fines from \$20 up to \$100 on speed violators. Judge Flammer announced that, unless the Appellate Division overrules him, he sees no reason why he should not continue imposing heavy fines. He points out in his decision that the laws of 1904, while taking away from cities the right to pass ordinances fixing the speed limit, say nothing about prosecutions for violating the State speed law. The statutes do not take away from the city the right to fix the amount of fines, nor do they divest the State of that right; so that, as it stands, there is nothing to hinder prosecutions both by the State and the city. Cooley's Constitutional Law is quoted to show that there is no sacrifice of constitutional right if both a municipality and State punish an offender for the same crime.

AUTO INSURANCE LIMITED TO CASUALTY CO'S

ALBANY, N. Y., August 12.—Under an amendment to the insurance law made this year, the Insurance Department has questioned the right of marine insurance companies to write automobile collision risks, and at the request of the companies affected the question was recently referred to Attorney-General Jackson for settlement, who has just decided in the negative. The latter's ruling, which was made public by Superintendent of Insurance Kelsey last week, is as follows:

My interpretation of the amendatory provisions of Chapter 2 of the laws of 1907, is not in accord with the contention of the counsel for the companies interested, and I quite agree with the position taken by your department, that it was not the intention of the Legislature to confer authority to issue policies against collision hazards in the use of automobiles, upon corporations authorized to transact business under the provisions of Articles III and IV of the insurance law.

KENTUCKY TO HAVE A. A. A. STATE BODY.

LEXINGTON, KY., Aug. 12.—The formation of the Blue Grass Motor Club, with a membership of fifty and indications of twice that number inside of thirty days, will now make it possible for Kentucky automobilists to perfect a State organization of the A. A. A. The Louisville Automobile Club became a member of the A. A. A. some time ago, and the Paducah Automobile Club is ready to join with the Louisville Club and the newly organized Blue Grass Club in the completion of the Kentucky State Automobile Association.

The Blue Grass Club contains members not only in Lexington, but in neighboring places, and besides electing F. R. Toewater as president, vice-presidents were designated as follows: G. A. Roy, Nicholasville; W. H. Walcott, Winchester; Hunter Brothers, Versailles; Dr. F. F. Bryan, Georgetown; Charles Cecil, Danville; John W. Williams, Mt. Sterling; George Clay, Paris, and W. E. Sims, Midway. Dr. George D. Kelly, of Lexington, was elected treasurer, and E. H. Alexander secretary. The first work to be undertaken by the club will be that of posting danger signals in the vicinity. The executive committee of the club consists of Dr. Julian McClymonds, Dr. H. H. Roberts, and J. W. McCormick. S. J. Roberts, editor of the *Lexington Leader*, and Desha Breckinridge, editor of the *Lexington Herald*, were elected honorary members, and it is expected the same course will be pursued with regard to the editors of other papers in Central Kentucky. The club will hold a smoker August 21.

GALVESTON'S SEAWALL NOW A SPEEDWAY.

GALVESTON, TEX., Aug. 10.—Under the Texas automobile law the various municipalities are empowered to make their own restrictions on automobile speeding, and Galveston has just taken advantage of this privilege. "We have succeeded in securing very satisfactory legislation from the city," says Moritz O. Kopperl, president of the Galveston Automobile Club. "The State law permits a uniform speed of eighteen miles, while the city ordinance has defined a certain territory in the business section wherein the speed is restricted to ten miles an hour. On the other hand, the city has exempted from all speed limits, as allowed under the State law for speedways, the boulevard on top of the seawall as far as laid, with the exception of about three blocks in front of the baths and Electric Park, which portion is usually very crowded, both with vehicles and foot traffic. The beach being a speedway, is also exempted under both the State and city laws. In the suburban districts of the city a speed of fifteen miles an hour is allowed." Galveston is the first city in the country to give the autoist any such leeway as this and the outcome of the experiment will be watched with interest by autoists, as it is feared advantage will be taken of the privilege.

WORCESTER DOESN'T LIKE RE-REGISTRATION.

WORCESTER, MASS., Aug. 12.—Secretary James Fortescue, of the Massachusetts Automobile Association, has notified the Worcester Automobile Club that it would be inconsistent with the position taken by the State Association before the Legislative Committee on Taxation for the association to attempt to test the constitutionality of the new State re-registration law. At a meeting of the Worcester club held last month it was voted to request the State Association to have the constitutionality of the law tested, and despite Secretary Fortescue's letter the club secretary has been directed to collect data covering the matter at issue, so as to be in a position to decide what to do in the future. Most of the members of the club have paid their re-registration fees under protest.

At the recent meeting of the club the by-laws were amended, doing away with the regular monthly meetings. The annual meeting in May is retained, and during the rest of the year the Board of Governors will handle the club business, except at special meetings called on occasions out of the ordinary routine.

FIFTY-THREE STARTERS FOR BRESCIA RACES.

MILAN, August 2.—Italy's last racing event of the season, to be contested on the Brescia circuit, September 1 and 2, has united a total of 53 entries. Thirty-nine of these are in the race to be run under German Emperor rules for the Florio Cup and 14 will compete in the speed test under the Grand Prix formula. Entrants are, for the Florio Cup, 3 Spa, 3 Itala, 3 Isotta-Fraschini, 3 Bianchi, 3 De Luca Daimler (Italian Daimler), 3 Rapid, 3 Benz, 3 Brixia Zust, 3 Sueddeutsche Fabrik, 3 Wolsit (Italian Wolseley), 2 Rochet Schneider, 3 Junior, 1 Eisenbach, 1 Aries, 2 Darracq. For the race under French rules the starters are 3 Bayard-Clement, 1 Diatto-Clement (Italian Bayard-Clement), 1 Darracq, 3 S. P. A., 3 Itala, 3 Dietrich. Fiat, winner of the two previous races under these rules, has decided not to compete on the Brescia circuit. Renault, who came second in the Grand Prix, will not start, neither will the Brasier team. It will be noticed that Italy has a preponderance of entrants.

The technical committee of the Automobile Club of France has offered a gold medal, to become the property of the constructor whose car, traveling at not less than sixty-two miles an hour, shall have the lowest fuel consumption in the Brescia race.

DE DION STILL ASKING FOR AUTODROME.

Marquis De Dion, vice-president of the Automobile Club of France, head of the De Dion-Bouton factory, near Paris, though still professedly in arms against automobile racing, appears to have taken the sting out of his blows. Speaking to a *Herald* representative, he declared that next year he hopes to organize another race for touring machines with a limited gasoline supply on the Lisieux circuit, cutting out the eliminating touring event on unprotected roads, on account of the unreasonableness of many drivers.

According to the Marquis, the autodrome is bound to come. By autodrome he does not mean tracks such as are found in America or at Brooklands, in England; but a course fifty kilometers in circumference, over the hills and valleys of Auvergne, where, on perfect road surfaces, the automobilist will find every class of country likely to be encountered by the average tourist in a run through Europe.

AUTOS SIXTH IN FRENCH NATIONAL EXPORTS.

PARIS, August 5.—Less than seven years ago the automobile industry of France occupied forty-fourth position in the list of exports. This year, according to official returns, it figures sixth on the list, with \$16,800,000 exports for automobiles and cycles during the first half of 1907, and \$2,600,000 for tires during the same period. French exports surpassing the automobile in importance are:

Silk tissues	\$36,600,000
Wool	32,800,000
Cotton tissues	30,800,000
Woolen tissues	23,800,000
Wines	21,400,000
Automobiles and tires	19,400,000

RENAULT TO TRY CHICAGO NEW YORK RECORD.

An attempt on the Chicago-New York automobile record is in contemplation by Paul Lacroix, selling agent of Renault Freres. With a 35-45-horsepower 1907 model Renault run-about, it is intended to leave Chicago some time next week and endeavor to clip a few hours off the existing record for runs between the two cities. Additional interest attaches to the event from the fact that this is the first occasion on which a French car has attempted a record over this route. This week Paul Lacroix covered the distance from Chicago to New York to familiarize himself with the roads and make arrangements. The trip was done on a 1905 car and, though there are many places where road conditions made speeding impossible, Mr. Lacroix is confident that he can do things to the record.

RICHMOND ENTHUSES OVER AUTO RACING.

RICHMOND, VA., August 12.—For the first time in its history this city has been treated to an automobile race meet, and to say that it took things by storm is to put it mildly. The meet was held under the auspices of the Richmond Automobile Club, and met with such success that it has been decided to hold another in September.

The only incident to mar the day's sport occurred in the free-for-all, when Howard E. Van Lear, driving a Ford, skidded on the back turn and went through the fence, receiving sundry bruises and cuts, but no serious injuries. Of the 1,600 or more spectators at the track, it was figured that two out of every three were physicians, so there was no lack of medical attendance. Van Lear was simply surrounded by a flock of doctors, but one wit observed that two of the M.D.'s made no attempt "to get in the game" and asked why. "Well," said one of them, "you see, the machine turned over twice and did not kill Van Lear, so we think it but fair to give him a chance."

The first event was a five-mile race for stripped-runabouts, and was taken handily by Ford No. 1 in 6:48, with Ford No. 7 second in 6:55. A Buick, Maxwell and Cadillac were the other entrants, and the first named, with Coddington up, was a good third.

This was followed by another five-mile event, in which there were only two entrants—a 30-horsepower Autocar, driven by L. H. Foster, and a White steamer. According to the scribe of one of the dailies here Foster had bad luck. "On account of the gasoline in the car being 86 test," said the reporter, "the machine got hot and the plug burned out on two occasions, making it impossible for the big red car to win." The White steamer completed the distance in 8 minutes.

There were only two entries in the third race also, cars listed at \$2,000 and under. A 12-horsepower Franklin and a 22-horsepower Buick faced the starter, and the former won in the second best time of the day, making the five miles in 8:01.

Following this came a doctor's race at two miles, which was taken by Dr. Stuart MacLean in his 12-horsepower Franklin, in the good time of 3:40, Dr. Moses Hoge being second in a 20-horsepower Maxwell, 12 seconds later.

The most exciting event of the day was the free-for-all, in which C. C. Coddington, driving a 22-horsepower Buick, walked away from his field, making the five miles in 7:12.

THE RETIREMENT(?) OF BARNEY OLDFIELD.

MINNEAPOLIS, MINN., Aug. 12.—Barney Oldfield, dare devil, etc., in an interview says that he is going to retire from racing and follow the more quiet pursuit of selling cars. "I'm going to quit," he said. "It's on the square with me, and I ain't making farewell towers either. Now, I'm a professional," confessed Oldfield, "and I'm out for coin. Maybe I shock some of these people who think that automobile racing ought to be just a gentleman's game when I get right down to hardpan as to money matters. I've seen the auto racing game from start to finish. I was first in this country and now I'm last. The game is dying out here. It costs the manufacturers too much to build expensive racing cars and to keep them on the road. The game is better than ever in Europe now, but I won't go over there. I'm getting pretty old and this season will be my last."

ANOTHER MEMBER FOR THE A. M. C. M. A.

At the last meeting of the American Motor Car Manufacturers' Association, the Dayton Motor Car Company, Dayton, O., makers of the Stoddard-Dayton cars, were elected to membership, and will exhibit at the association's show in the Grand Central Palace, beginning on October 24.

LOVING CUP PRESENTED TO M. J. BUDLONG

HARTFORD, CONN., Aug. 12.—On his retirement from the presidency of the Electric Vehicle Company—an office which he held for the past four years—M. J. Budlong was presented with a token of the esteem in which his associates in the big Columbia plant held him. This took the shape of a silver loving cup appropriately engraved, and toward the purchase of which practically every man in the shop contributed. The whole affair gathered in the electric assembly department on the occasion of the presentation, at which Mr. Budlong very feelingly thanked the donors, both for the cup and the appended list of subscribers, which he said he would treasure equally as most tangible evidence of friendships during his service with the Electric Vehicle Company. His remarks were greeted with hearty applause, and as each man passed out he received a personal farewell in the shape of a hearty hand-grip from the man who had guided his destinies for the past four years. Because of his frank, open manner, his willingness to help another up the ladder and his generally manly qualities, Mr. Budlong was much admired and respected by every one in the works, who felt he had lost a personal friend.

"DIXIE" TO BE FEATURE AT JAMESTOWN RACE

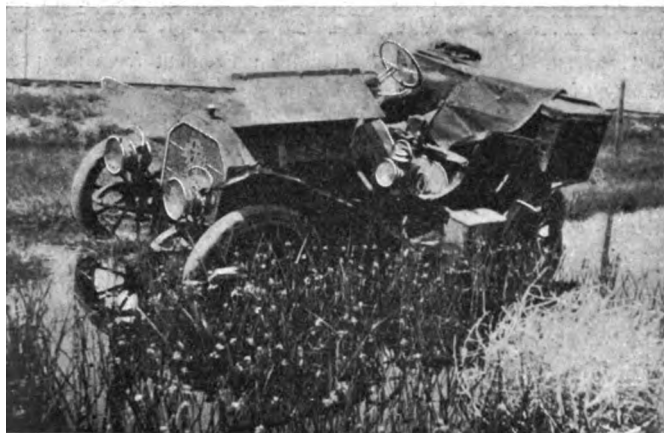
Fresh from her victory in the International British tropic race, Commodore Edward J. Schroeder's fast motor boat *Dixie* will be transferred from the steamer *Minnetonka*, arriving in New York, and sent to the Jamestown Exhibition to compete in the races held during the week of September 4. The programme of the Jamestown races is as follows: Sept. 4, reliability trials of six hours' duration; Sept. 5, long-distance races for boats of all classes; Sept. 6, mile and kilometer speed trials for boats of all classes; Sept. 9 and 10, series races, with time allowance as per rating for cabin cruising boats and open high-speed boats. On the closing night there will be an illuminated naval pageant. The cruises of the Motor Boat Club of America, leaving New York on August 20, and the American Power Boat Association, leaving on August 22, both having Jamestown as their objective point, are expected to unite fifty boats.

FIRE DESTROYS LARGE NUMBER OF CARS.

Twenty-five cars, including one owned by New York's controller, Herman A. Metz, and said to be valued, in the aggregate, at from \$75,000 to \$100,000, went up in flames with the destruction of the factory and repair shop of Mack Brothers, Atlantic avenue, near Third, Brooklyn, one night last week. The fire started in a storage shed in the rear of the factory and a failure to send in an alarm promptly permitted it to gain considerable headway before the firemen arrived. Attempts were made to save the cars, but only two were gotten out. August Mack, a member of the firm, expressed it as his opinion that the fire was of incendiary origin, as threats had been made to burn the place owing to the noise at night, the factory having worked night and day for the past two months.

IMPORT FIGURES SHOW SUBSTANTIAL GAIN

Custom house returns for the month of July past show a considerable gain in the number and value of foreign cars brought into the country as compared with the same month in 1906. July, 1907, 115 cars or chassis of an aggregate value of \$423,339.88 were imported, as compared with 106 cars of a total appraised value of \$379,881.25 in the same month a year ago. For the period of six months between January and July, 1907, the figures show a falling off as compared with same months in 1906, the figures being 705 cars, valued at \$2,401,310.76, and 822 cars, valued at \$2,742,536.37 respectively. For 1905 the figures were 543 cars, valued at \$1,992,843.79.



WORK AND MAXON'S OLDSMOBILE IN A DITCH.

ON THE OLDS TRIP TO THE PACIFIC COAST.

Two hundred miles with but three cylinders working formed the chief part of the chapter preliminary to the entrance of Fred V. Work and C. J. Maxon into Denver. They are en route to the Coast, and found the going pretty hard in Nebraska and Eastern Colorado, where the accompanying photo was taken. One of the units of the coil broke down, and, not having another to replace it, they were compelled to limp over miles and miles of low ground, crossing many fords, and in some instances having to get over irrigating ditches in which the water was three feet deep. Worse even than the water were the stretches of sand, which were so soft in places as to be hub deep. They spent a week in Denver before continuing.

ANOTHER LIFE-GIVING SOLUTION FOR TIRES.

GRAND RAPIDS, MICH., Aug. 5.—During the course of the history of the bicycle, and since the latter, of the automobile, there have been an endless number of compounds discovered for prolonging the life of the pneumatic tire and rendering it puncture-proof, some of them being in successful use to-day. But all of these mixtures have been intended for internal application. Now Norman Fellow, of the Michigan Lightograph Company, of Grand Rapids, has been granted patents and trademarks on a substance he terms "Rubberlife." It is said to have been given a two years' test on the rubber sheet used in lithographing, the treated sheets lasting twice as long. The compound is composed of several ingredients and is about the consistency of thick milk. Its application to the outside of a tire is said to fill the pores of the rubber, making it hard though resilient and serving to prevent the entrance of sand and water.



THOMAS FORTY IN FULL CRY ON GUADALAJARA CIRCUIT.

Interest in automobiling grows apace in Mexico and the success of the first road race held in the Spanish-speaking republic was such that others will be arranged for before long. The Thomas made a record-breaking lap, but met with an accident and was disabled.

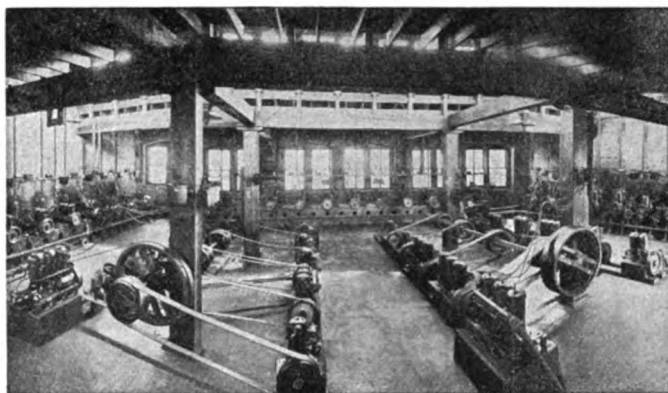
WINTON 1908 ANNOUNCEMENT SOON DUE.

CLEVELAND, O., Aug. 12.—"In about two weeks," says Chas. B. Shanks, general sales manager of the Winton Company, "we shall announce our line for 1908, and our story will be well worth reading. Mr. Winton has been at work for nearly four years on a single model intended to establish a new standard for motor car design and construction, and it is due to the fact that he has been thus concentrating his thought and effort that the Winton Company has kept out of races and contests requiring specially constructed cars.

"A few automobilists of wide reputation have seen and tried out this newest Winton creation and, if we may judge from their decision, our 1908 car is destined to be the 'exclusively best' of the year."

TESTING ENGINES ON A LARGE SCALE.

When a plant has a capacity of thirty-six marine motors a day it is quite evident that considerable in the way of facilities are required for testing them before shipment. The accompanying photograph is a panoramic view of the testing room of the Ferro Machine & Foundry Company, Cleveland, O., which forms a building by itself. The view shows no less than fifty motors



TESTING ROOM OF THE FERRO MACHINE & FOUNDRY COMPANY.

being tested out simultaneously, the motors in the center being run from the power generated by two three-cylinder, 25-horsepower Ferro engines shown in the foreground. The lines of engines around the wall are being tested out under their own power. In addition to building complete engines, the company is one of the largest founders of automobile cylinder castings in the country.

FARM UTILITY OF AN AIR-COOLED CAR.

E. A. Blackshere, who owns a large stock farm near Baltimore, Md., contributes a novel bit of evidence of the utility of automobiles in general and on the "cooling" question in particular. Mr. Blackshere used his car (a Marmon air-cooled runabout) following the workmen in his field during the harvest in July. The motor was run ten hours a day, with one hour's stop for dinner, for five and a half days. The field had grades of 30 per cent. and soft soil, so that the car was never off the low gear for five hours of continuous running each half day. The engine showed no signs of overheating. The thermometer stood about 90 degrees. On leaving the field after five hours' running on the low gear, the car took an 18 per cent. grade on ordinary farm road, twice per day, on the high gear.

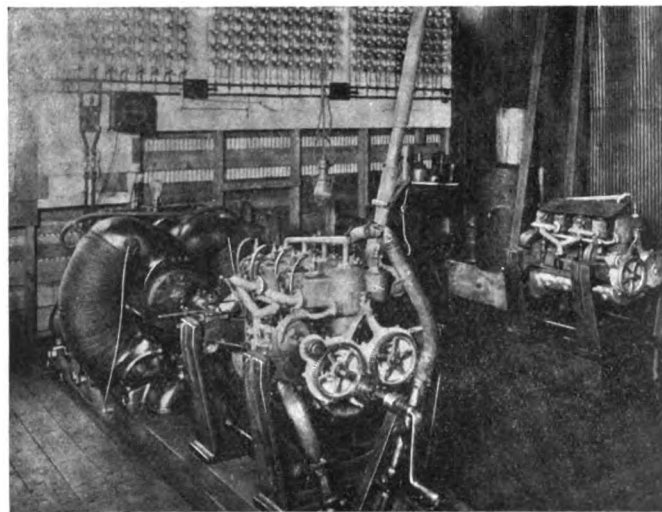
Galveston to Have New Garage.—Thomas B. Scott and Gustave B. Koehler have organized the Galveston Motor Car Company, which has acquired the Seixas building, and will thoroughly remodel it as an up-to-date garage.

HOW PREMIER MOTORS ARE TESTED.

Probably by far the most interesting department of any automobile factory to the layman is what is known as the testing room. Of course, he is interested in being shown the many and varied processes through which the many different kinds of material and the numerous different parts that go to make up a motor have to go through before they reach the end of their goal in the assembling department, and are for the first time brought together in the shape of the complete unit. He is interested, no doubt, but his interest is of a more or less academic nature because to a great extent all machinery looks more or less alike to the unfamiliar eye. It can discern the difference between a lathe and a drill press because one happens to operate horizontally and the other vertically, but apart from such pronounced distinctions as are apparent between two such pieces of machinery as those mentioned, all means little more or less than a slightly different arrangement of gear wheels, cams and levers, the purposes of which are mysterious, to say the least. Truth to tell, he never realized that any of the parts of a motor had to go through such a seemingly endless round of processes and operations before being complete and undertaking its first journey out of the hands of the machinists to the inspection department, and then, if passed, to the assembly department, via the stock room, but most automobile factories work on such a schedule and such a pressure that there is hardly any necessity for this intermediary.

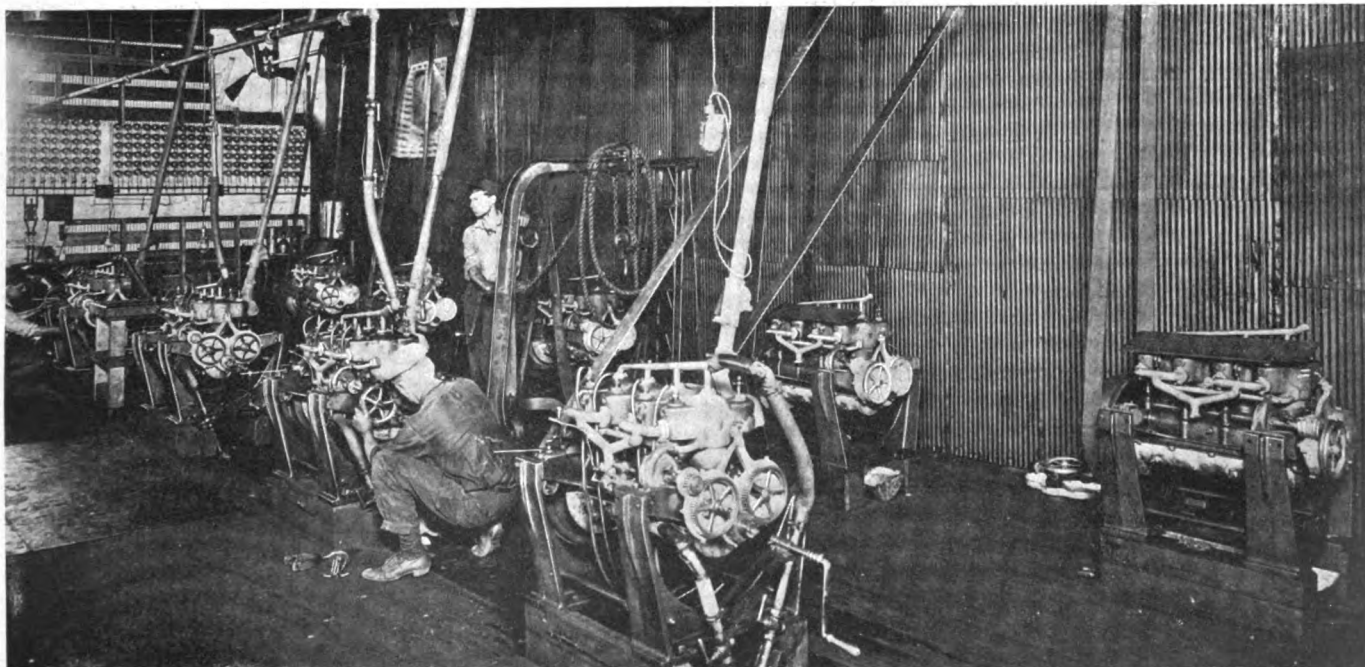
So it is that not until he reaches the testing department does the layman find himself on familiar ground again. Here are the complete motors, anywhere from two or three to a dozen or more, all working away at a great rate, so that it is little wonder that he finds it far and away the most interesting part of the plant. The photographs show what is probably a typical department of this kind—that of the Premier Motor Car Company at Indianapolis, Ind.

This is the last step in the motor's progress through the factory; here the complete motor comes from the assembling department. Prior to actually being tested, it must be run in or "lapped" and this forms no part of the operation of testing, sometimes being carried out in the manufacturing department and at others in the testing room. It consists of turning the motor over slowly by belt in a flood of oil so that the moving parts will accommodate themselves to one another. This finished, the motor then goes to the test block, where it is connected up and run under its own power for the first time. This



CLOSE VIEW OF GENERATOR AND LAMP RHEOSTAT.

is the preliminary test, and throughout its duration the timing of the valves and timer and the efficiency of all its connector are thoroughly inspected. It is then transferred to another block on which it is direct-connected to a dynamo, so that its power output may be measured, a close view of this operation being shown in the smaller picture. The current from the generator is led through various banks of lamps, so that the load may be increased or diminished at will and the output of the motor under both varying and constant load conditions determined. During this test, the working of all its accessories are carefully inspected and adjustments of valves, timer and carbureter made to bring it to the highest pitch of efficiency. Before this it was but an assemblage of parts; now it is a smooth running unit, each part of which works in consonance with the rest. It is now an individual and has assumed a character. The next step is to incorporate it in a chassis and here again it undergoes a thorough inspection and trying out in connection with the other parts of the car. During the course of all its tests it is in the hands of the most experienced and thoroughly capable mechanic connected with the plant and nothing is left undone to make it a perfect and smooth working piece of machinery.



WHERE THE PREMIER MOTORS RECEIVE THEIR FINAL TESTING OUT BEFORE MOUNTING ON CHASSIS.

EDITOR SOLVES SITUATION.

H. L. Humphreys is the automobile editor of the New York *Evening Post*, one of the most conservative papers of the country. The gossipy material such as finds its way into print in some of the daily papers, in reference to the notables of the automobile trade, is not considered available in the columns of the sedate *Post*. Mr. Humphreys has met the emergency by bringing out an occasional publication called "The Missing Spark," and in its columns he does the jollying act lavishly and thoroughly, and, of course, supplies extra copies to his advertisers and others whom he wants to have ad-

vertise. By this method Humphreys hopes to hold his own against Wetmore of the *Mail*, Morgan of the *Globe* and Curry of the *American*, all three of whom get their "stuff" into print exactly as they write it.



LOGAN MODEL S TRUCK TESTING OUT WITH 7,169 POUND LOAD.

This truck is the newest Logan model for the 1908 market. It will have a rated capacity of three tons, but is tested out with about a twenty-one per cent. heavier load. The makers, the Logan Construction Company, Chillicothe, O., state that it will be a revelation to users of commercial cars.

ANOTHER NEW BATTERY DISCOVERED.

MILWAUKEE, WIS., Aug. 12.—Frank C. Curtis, of Milwaukee, is the inventor of the latest new type of storage battery that is going to revolutionize things generally and incidentally put the Standard Oil Company out of business, according to the newspaper reports of his discovery. The latter consists of new alloys for the electrodes, as well as a new solution for the electrolyte. In line with the usual newspaper accounts that have characterized similar discoveries in the past few years, it is said to be possible to carry sufficient chemicals under the seat of a car to run it thousands of miles. Fred D. Underwood, president of the Erie Railroad Company; F. C. Rice, superintendent of the Pullman Palace Car Company; A. W. Trenholm, manager of the Omaha road, and other similarly prominent men, are said to be interested in the invention.

HOW A MAN VISITS "HOME" NOWADAYS.

WILMINGTON, DEL., Aug. 12.—L. H. Green, a prominent resident of New York, came to Delaware a few days ago in his automobile to visit the scenes of his boyhood, near Talleyville. He was accompanied by Mrs. Green and also John P. Green, of Philadelphia. They spent the day touring the section and calling upon Mr. Green's boyhood friends, some of whom he had not seen for many years.



BOB ALEXANDER TESTING OUT POPE-HARTFORD AT HIGH SPEED.

GEARLESS GREYHOUND MAKES ITS DEBUT.

Though few of the models for 1908 which have already made their appearance are more striking than the aptly-named Gearless Greyhound, made by the Gearless Transmission Company, Rochester, N. Y., probably the first item in the specifications of the new roadster to call for remark, is the fact that there are practically two independent sources of fuel supply, the so-called reserve tank of seventeen gallons, holding as much as is ordinarily carried on many cars as the main supply. Another striking feature is to be found in the advantage that has been taken of the long wheelbase and single seat of the car to provide a double hood with the motor under one and the gear set under the second, so that either of these essentials is very accessible. The power plant consists of a 75-horsepower, six-cylinder, two-cycle engine, fitted with two independent systems of ignition, one of which consists of a Bosch high-tension magneto. The equipment includes a full set of lamps, as shown, as well as a detachable trunk under the rumble seat.

AL. POOLE WASN'T ABOARD THE SIMPLEX.

Al. Poole, well known as a companion to Joe Tracy in Vanderbilt Cup races, did not have a chance to drive the 35-horsepower Simplex in the recent Fort George hill climb. It seems that Watson and Stark, two testers from the factory, were the ones on the car in the accident which preceded the climb. Poole had not taken his place at the wheel, and the reports involving him in the mishap were erroneous. Possessing the excellent reputation of a skillful though fearless driver, Poole does not like to be held responsible for the careless driving of others, and therefore protests at being held in any way responsible.



FUEL CONSUMPTION IN THE A. A. TOUR.

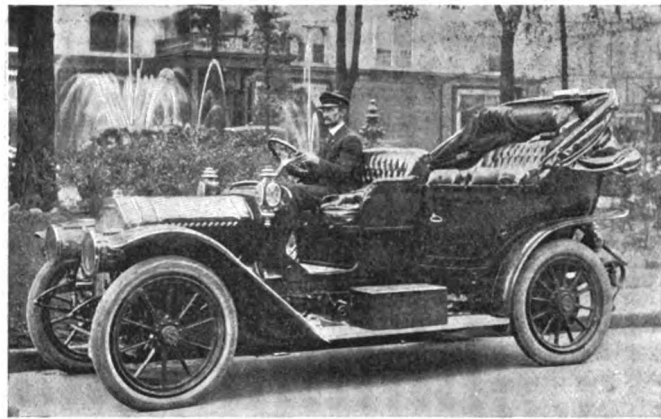
In the hurry and bustle attendant on making controls, not to mention the endless details which the drivers had to attend to, it is hardly strange that few of them ever thought of keeping any individual statistics of the performance of his car. This was not the case with Charles Burman, who drove the number 49 Peerless throughout the tour, and the figures he collected are of considerable interest, particularly those relating to the fuel consumption of the car, which totaled 120 gallons for 1,583.4 miles, or an average of 13.19 miles to the gallon—an unusually favorable showing in view of the nature of the going. The mileage stated seems to have been the actual total distance of the tour, as Mr. Burman's machine made no detours at any time, going directly from one control to the next. The time consumed by the car was 83 hours 55 minutes, although the schedule for the twelve days' running allowed 97 hours. Out of this total running time there was lost for minor adjustments 54 minutes, and for various other reasons, such as tire repairs, fuel supply, putting on chains and enforced stops in order not to pass the pacemaker, 1:43, giving a net running time of 81 hours, 18 minutes. Four passengers were carried through the tour, and, figuring the cost of the fuel at 20 cents per gallon, the expense per mile per passenger for the entire trip was \$0.00379.

SUPPLY DEALERS TO OBSERVE SUNDAY CLOSING.

As the result of a complaint brought by the Sabbath committee of the Bible House, C. W. LeClear, manager of the Da-An-Nite Supply Company on upper Broadway, was summoned to appear before Magistrate Corrigan in the West Side Court on Thursday morning last to answer to a charge of having sold automobile supplies on Sunday in violation of the closing law. He was found guilty and the magistrate, in suspending sentence, took occasion to warn New York's supply houses against opening on Sunday. Later a formal warning to the same effect was sent out by the Police Department to all the supply dealers along the "row," stating that the law would be enforced. This does not affect obtaining supplies of oil and gasoline by cars regularly stored in garages.

LOGANSPORT TO HAVE ANOTHER GARAGE.

LOGANSPORT, IND., July 29.—Harry Case has sold out his interest in the Fifth street garage to Arthur and Herbert Dunn, who have leased the ground floor of the adjoining building and will double the facilities of the place, besides purchasing additional cars, to be employed in an auto livery service. Mr. Case will continue as the representative of several well-known American cars in this city and adjacent territory.



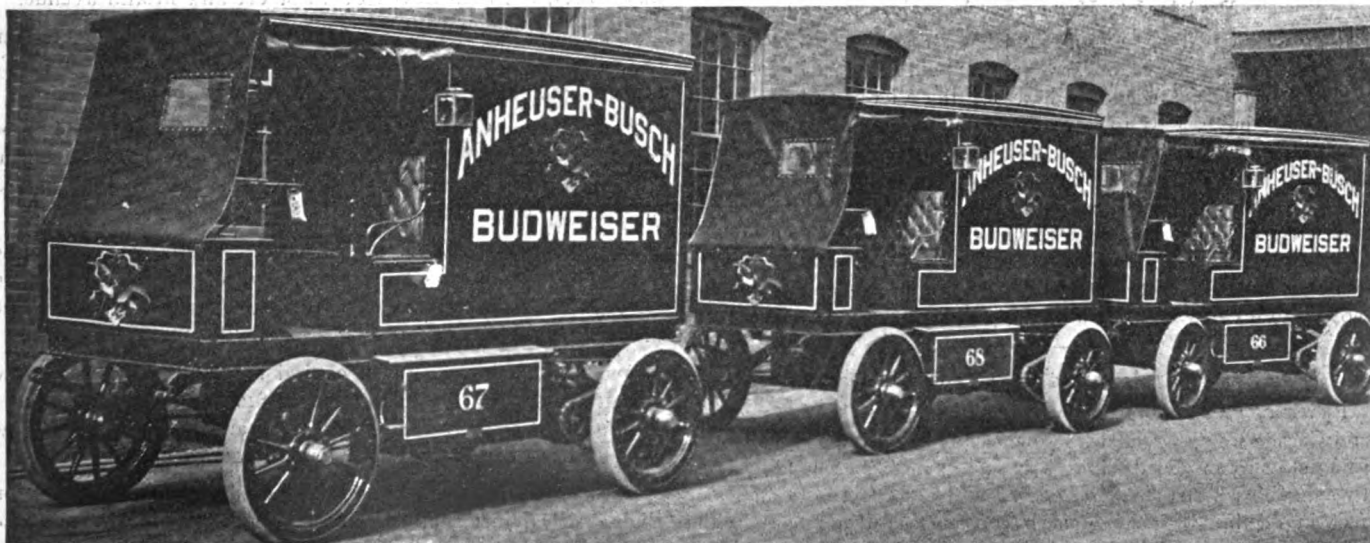
VICE-PRESIDENT FAIRBANKS' NEW DE LUXE CAR.

Warren Fairbanks, his son, who is seated in the tonneau, with Mrs. Fairbank recently drove the car from Chicago to Boston, to attend the reunion of the Fairbanks family, which was held near the latter city.

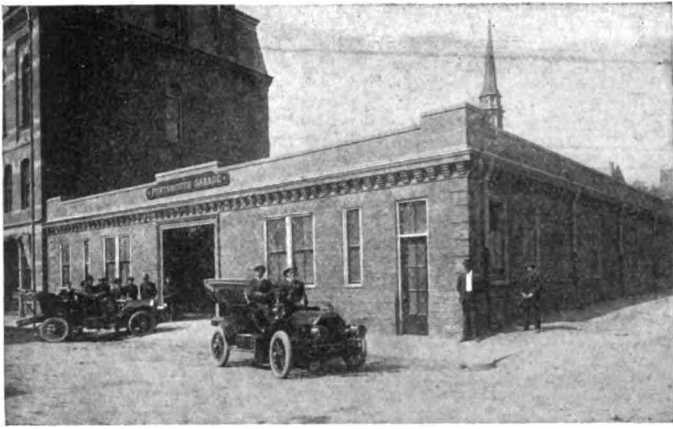
LARGE ORDER FOR POPE-WAVERLEY ELECTRICS

No better instance of the manner in which the electric vehicle is gaining ground in the commercial field could possibly be cited than the recent order placed with the Waverley department of the Pope Motor Car Company, Indianapolis, Ind. The Anheuser-Busch Brewing Association, of St. Louis, has long been noted for its modern methods in every department, and its managers were induced to investigate the advantages of electric delivery with the result that an order was immediately placed for fifteen Pope-Waverley electric trucks. Probably the highest compliment that could be paid them was that contained in the few words expressed by Augustus Busch, the vice-president of the association, when he saw the vehicles. "Those are trucks," he said

In fact, they were considered so attractive and such an effective piece of advertising that only thirteen were placed in service in St. Louis while the remaining two were sent to Jamestown as part of the firm's exhibit there. While the vehicles are really light trucks, they are fitted with a special type of enclosed delivery body having rear doors. The motive power consists of 42 cells of 15 plates each, delivering current to two 80-volt motors hung from the chassis and driving to a countershaft through a double reduction; from the countershaft a chain drive is taken to the rear wheels. This power plant has proved itself capable of the most exacting demands of a quick delivery service in and around St. Louis. The wheels are 36 inches in diameter and are fitted with solid tires, 4 inches front and 5 inches rear.



THREE OF THE FIFTEEN POPE-WAVERLEY TRUCKS RECENTLY SUPPLIED THE ANHEUSER-BUSCH BREWING ASSOCIATION, OF ST. LOUIS.



SPACIOUS NEW GARAGE AT PORTSMOUTH, N. H.

THE EVER-INCREASING GARAGE LIST.

Modern Automobile Garage Secured by Portsmouth.

PORTSMOUTH, N. H., Aug. 12.—A spacious fireproof automobile garage, with a frontage on Fleet street of 90 feet and a depth on Porter street of 112 feet, was recently opened here. The building, which is one story high and 17 feet in height, is entirely of steel, brick, concrete and glass. The last named enters largely into its composition, for, besides being extensively used in windows and doors, there are about 50 square feet in two skylights in the roof. The gasoline supply is conveyed into the building through pipes leading from two cylindrical tanks, each of 300 gallons capacity, which, to guard against accidental explosion, have been placed underground outside the wall in the rear. The garage is lighted by electricity.

Street Car Barn to Give Way for Garage.

WHEELING, W. VA., Aug. 12.—R. J. McCullogh, who has long been identified with the automobile business here, is now having built a modern garage on the corner of Sixteenth and Eoff streets—the site of the old street car barn that has so long been an eyesore to the population of Wheeling. Jason C. Stamp is said to be associated with Mr. McCullogh in the enterprise, which, when finished, will be one of the finest establishments of the kind in the State. The building is centrally located and will have a frontage of 100 feet on Sixteenth street and 70 feet on Eoff, providing accommodation for fifty large cars, in addition to a completely equipped repair shop, which will be kept open night and day.

Rockford to Have a Modern Garage.

ROCKFORD, ILL., Aug. 12.—Ground has already been broken for the construction of a modern garage building for Robert A. Smythe, who has the agency here for the Pierce and Maxwell cars. The building is to have a frontage of 70 feet on Eighteenth street and a depth of 35 feet, the façade being of pressed brick with vitrified brick trimming. It will be two stories high and the main floor will provide accommodation for about 25 cars, beside which complete repair facilities will be installed. Mr. Smythe has been handling cars here for the past six years and is at present located at 225 Eighteenth street, but expects to move into his new building about September 1.

Up-to-date Auto Station Opens in Reading.

READING, PA., Aug. 12.—The garage of the Berks Automobile and Garage Company, which is one of the best equipped plants of its kind in Pennsylvania, is now in full swing. The building is a two-story brick structure, measuring 40 by 131 feet with an L 60 feet in depth. It is of modern construction throughout, with cement floors, electric light and electric elevators, and is provided with every facility both for the handling of cars and the con-

venience of the customers of the establishment. For the benefit of the latter a large waiting and show room, finished in Mission, has been fitted up on the first floor, as well as baths for both men and women. The garage proper has accommodation for fifty large cars, in addition to which a most complete machine and repair shop has been installed. The firm handles the Jackson, Maxwell and Stoddard-Dayton cars in this territory, and also does a renting business.

Columbus Garage Quietly Changes Hands.

COLUMBUS, O., Aug. 12.—S. Evans Hodge and C. R. Clough have organized the Southern Garage Company to take over the plant and business of the Imperial Garage Company, at 35 West Mound street, which recently made an assignment to C. H. Davis. The latter has been lifted, and the company will refit the establishment, improving its facilities, besides adding a complete line of automobile supplies and accessories.

Ashland Garages Now Combined in One.

ASHLAND, O., Aug. 12.—E. C. Overs, who conducted a garage on Second street for some time past, has sold out his establishment to Burt Richards, who has the agency for the Jackson and Ford cars here. With this increase in his facilities Mr. Richards has as complete an automobile station as is to be found in any of the smaller towns of the State.

NOTES OF THE GARAGES.

Bangor, Me.—Treat & Nash have recently installed at their garage, on Palm street, a charging plant for storage batteries, as well as a tire vulcanizer.

San Antonio, Tex.—The American Automobile Company will open a new and up-to-date garage on Losoya street towards the end of May.

Washington, D. C.—The Washington Garage Company has been incorporated with a capital stock of \$150,000, comprising 1,500 shares of the par-value of \$100 each.

Gettysburg, Pa.—George F. Eberhart, proprietor of the Gettysburg Motor Car Company, is making extensive improvements in his garage on South Washington street.

Coldwater, Mich.—W. S. Farrand is building a garage 50 by 70 feet. Construction is concrete throughout, with iron trusses and no center posts. There will be a first-class repair shop.

Columbus, O.—Plans have been completed for the erection of a modern garage by O. G. Roberts & Company on East Gay street, between Seventeenth street and Miami avenue.

Massillon, O.—An automobile garage is being erected in Oak street, just to the rear of the Segner block, by E. C. Segner, who hopes to have the place ready shortly.

Youngstown, O.—A first-class automobile garage and club-room will soon be opened by John Euwer and Powers Smith, who are taking over the agencies and business of E. Hippard in North Phelps street.

Fargo, N. D.—John Hass will erect a one-story automobile garage on Second avenue North, with foundations strong enough for a three-story structure to be put up later. The premises will be occupied by Hector Barnes.

Owensboro, Ky.—With a capital stock of \$10,000, divided into 100 shares of the face value of \$100 each, the Owensboro Automobile Company has been formed and has secured a large garage at the corner of Fourth and Frederica streets.

Milwaukee, Wis.—Now established in its new garage on Eighth street, just south of Grand avenue, the McDuffee Automobile Company is preparing to hold a reception to its new home. The garage, one of the finest in the city, holds seventy-five cars.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

Kenosha, Wis., is soon to have another automobile factory, the Orr Motor Car Company, which was recently organized with \$25,000 capital, having decided to establish its plant there.

The Connecticut Telephone and Electric Company state that at the Atlantic City meet, August 5-7, cars equipped with Connecticut coils secured the greatest number of events, having won fifteen firsts, nine seconds and six third places.

Additions to the plant of the Royal Motor Car Company, Cleveland, O., which are being rushed to completion by the contractors at the new site on East Seventy-second street, near the L. S. & M. S. Ry., are expected to be ready for occupation by September 1.

The Holsman Automobile Company, of Chicago, has moved its offices from the sixth floor of the Monadnock block to the fourth floor of that building, where the entire end of the building has been secured, giving the company more than double its former floor space.

The Logan Construction Company of Chillicothe, O., maker of the Logan "Blue Streak" semi-racer runabout, is elated over the selection of the board of public safety of Akron, which has ordered for the use of Chief T. Mertz, of the fire department, one of the Logan runabouts. A half dozen concerns sought to have their cars selected.

Interest attaches to the report of the incorporation of the New York & Philadelphia Automobile Company, recently organized under the laws of the State of New York, with a capital of \$25,000. The purpose is to deal in automobiles, and the incorporators are J. W. Spalding and William T. Brown, of 126 Nassau street, New York City, and James M. Carrington, of Long Island City, N. Y.

California is to have another automobile factory, which will be located at San Diego. Full particulars regarding the new establishment are lacking, but it is understood that local capitalists are backing it for the purpose of developing a new invention in the automobile line. It is said that \$15,000 worth of machinery has already been ordered, and when running the plant will employ between 100 and 200 men.

That the expense of automobile travel is very much overrated is amply shown by the experience of D. E. Levy, a New York broker, who recently drove his Matheson from New York to Chicago and return with a party of five. The chief items of the account are: fuel, \$51.39; oil, \$12.40; storage, \$13; washing, \$12; polishing, \$4.25, and kerosene, .75, making a total of \$93.79. This figures out at the rate of three cents a mile for the entire party, or five mills per mile per passenger.

The authorized capital stock of the Hartford Auto Parts Company, a Connecticut corporation, has just been increased from \$10,000 to \$35,000. The company was organized early in 1906, at Hartford, to manufacture a line of automobile parts, but its facilities thus far have only permitted the manufacture of a special type of universal joint, known as the "Hartford," which is dis-

tinguished by the use of hardened ball and socket bearings and a new form of all-metal casing. The increase in capital is to provide additional facilities in the machinery and special tool equipment of the factory at Hartford, Conn.

It is announced that the show committee of the Importers' Automobile Salon has settled upon the style of decorations and general plans for the arrangement of the importers' show, which is to be held in Madison Square Garden, New York City, beginning December 28. Clinton R. Mabley, the general manager of the Salon, states, however, that no public announcement of the plans will be made until the return of several members of the Salon, who are now in Europe.

A handsome lithograph banner is being sent out by the Continental Caoutchouc Company, 43 Warren street, New York, J. M. Gilbert, general manager. It represents a landscape scene, with a lake and mountains in the distance. In the center of the picture is shown a touring car, and alongside the roadway is a signboard advertising Continental tires. The banner is prepared in such an artistic way that at a short distance it resembles an oil painting. It is intended for automobile clubs, garages, and automobile show rooms.

New York autoists who enjoy an occasional burst of speed in the open country should be careful not to indulge in this pleasure on the Sawmill River road around the towns of Ardsley, Elmsford and Briarcliff. It was at Briarcliff that John D. Rockefeller was arrested and fined \$30, and prominent autoists have suffered considerable annoyance and delay along this particular stretch. Beyond Briarcliff, all traps cease, and the traffic on the highway is so slight that a fair speed may be maintained.

Owing to the enormous growth of the W. D. Newerf Rubber Company, which was recently opened in San Francisco to handle Goodyear tires exclusively, it has been found necessary to incorporate with a capital of \$100,000, fully paid up. The business of the company has more than doubled in the past year and, with new stores in San Francisco and Fresno, and agents in Portland, Ore., Seattle, Wash., San Diego, Riverside and many other California and coast towns, this will doubtless be surpassed during the coming year. The San Francisco headquarters are at 506 Golden Gate avenue, and though but recently opened, it has done a remarkable business in Goodyear tires.

The trite old saying, "Man, know thyself," should, as far as some autoists are concerned, be transposed to "Man, know thy car," says a well-known Columbia dealer. "It is really surprising how many owners know but little of their machines and when beset with troubles are utterly helpless. When a man comes into our establishment and buys a car we do everything possible to school him thoroughly, so that when thrown upon his own resources he will get along smoothly, and have found that the plan works well. Recently a customer of ours purchased his first car and, after a course of thorough instruction, from us, went

his way. Subsequently we heard from him in another part of the contry, and he stated that he experienced no trouble whatever in operating the car himself, owing to his early teaching."

NEW AGENCIES ESTABLISHED.

Olier & Worthington is the title of a firm just organized in Los Angeles, Cal., to handle various lines of automobile specialties and supplies on the Pacific coast. They will act as manufacturers' agents. Both members of the new firm are well known in the auto accessory trade.

The Colt Runabout Company of Pennsylvania has just been formed by William M. Edison and Hays M. Fernald to handle the 40-horsepower, six-cylinder Colt runabout in that State. An agency will be opened at the Bellevue-Stratford garage in Philadelphia, and in the near future an office will be established in Pittsburg. Mr. Edison is a son of Thomas A. Edison, the inventor.

The Calhoun-Bancroft Company, Seattle, Wash., has just been organized to handle, as direct representatives of the makers, a line of automobile accessories, and particularly ignition apparatus, on the North Pacific Coast, their territory including Washington, Oregon and British Columbia. Mr. Calhoun is an expert electrician and battery man and Mr. Bancroft has had considerable experience in the general supply line, having formerly been with the Motor Car Supply Company and the Franco-American Auto Supply Company, both of Chicago.

PERSONAL TRADE MENTION.

George Arbuckle, western supervisor for the Winton Company, has returned to Cleveland, after a three months' trip to Pacific Coast points.

Thomas Moore, for several years publicity manager for Wyckoff, Church & Partridge, New York City, has resigned his position with that house, with a view of connecting himself with a factory.

Peter S. Steenstrup, of the Hyatt Roller Bearing Company, Harrison, N. J., will sail August 28 for a European trip in the interests of the Hyatt bearings. He will visit Great Britain and the Continent.

F. A. Babcock, Jr., sales manager of the Babcock Electric Carriage Company, of Buffalo, started late in July on a trip to visit the agencies in the West. He will go as far as San Francisco and then up to Seattle. From the Middle West he writes that the outlook for increased business, not only in the electric line, but in the others, is very promising.

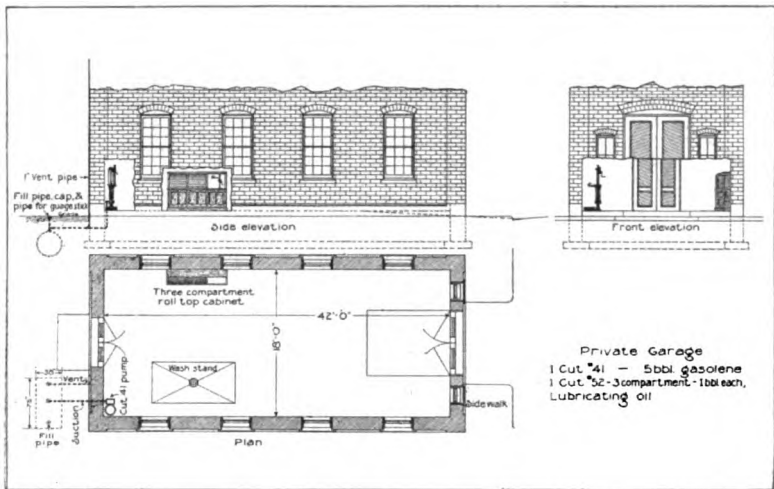
"NED" BROADWELL, FISK SALES MANAGER.

E. H. Broadwell, head of the Detroit branch of the Fisk Rubber Company for a considerable period, is to make his future residence at Chicopee Falls, Mass., where he will be the general sales manager of the Fisk Company. Widely known and with years of experience, Mr. Broadwell is particularly well fitted for his new place.

INFORMATION FOR AUTO USERS.

Up-to-Date Gasoline Storage.—Owing to the frequency with which S. F. Bowser & Company, Fort Wayne, Ind., have been called upon by architects, builders and owners to furnish plans for the installation of gasoline and lubricating oil storage equipment, they have decided to publish the data gathered in

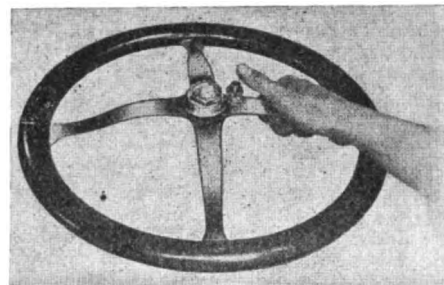
chine may be connected up and the switch set to open as soon as it is fully charged. The Ward Leonard Electric Company makes these rheostats in various styles, adapted for mounting on the back of a switchboard, on a wall or on the floor, their list including four different sizes.



SPECIMEN PLAN OF BOWSER MODERN GASOLINE AND OIL STORAGE.

16 $\frac{3}{4}$ inches wide and 17 inches high, including flywheel, it shows 10-12 horsepower on actual brake tests. It is made of the same materials and with the same attention to detail that has always characterized the four-cylinder motors turned out in numbers by this company. In testing, it has been run under full load for a period of six hours without showing any signs of overheating. The crankshaft is a drop-forging of liberal dimensions, made from high-grade steel and finished by grinding, which is also true of the piston and piston rings. The connecting rods are of special carbon steel. The wrist pins are ground and run in plastic bushings of superior quality. The inlet valves are of the automatic type, and the exhaust valves are mechanically operated. Timing gears are of hard bronze and steel, accurately cut from the solid and run in oil. In short, the design and construction of the new De Tamble buggy motor is such as to fit it for constant hard service in the hands of inexperienced operators. The motor complete, including flywheel, tips the scales at 185 pounds, and its compact design may be judged from the accompanying illustration.

The Petite Safety Switch.—Every autoist knows the inconvenience of having to lean over to reach a switch on the coil box, or some other equally inaccessible position, in order to stop the car or to cut out the engine on a long coast, or any one of the



HOW THE PETITE IS OPERATED.

complying with these numerous requests in book form. This has recently been done, the work being entitled "Plan Drawings of Model Oil Storage Systems," and, as its name indicates, it is chiefly devoted to illustrating actual installations that have been carried out, all necessary dimensions being given.

Every phase of the subject is treated, both from the point of view of the private owner as well as for the benefit of public garages of every size, tank capacities and dimensions, sizes of oil houses, pipe layouts and all other necessary data for the equipment of garages, factories and stores with gasoline and oil-handling devices being provided.

The plan shown herewith is a reduction of one of many drawn for a private garage, and shows the position of the buried tank, size of hole to be dug and space occupied by pumps for both oils. Other plans illustrate the arrangements of a number of both private and public garages. Copies of the book will be sent gratis on application to the publishers.

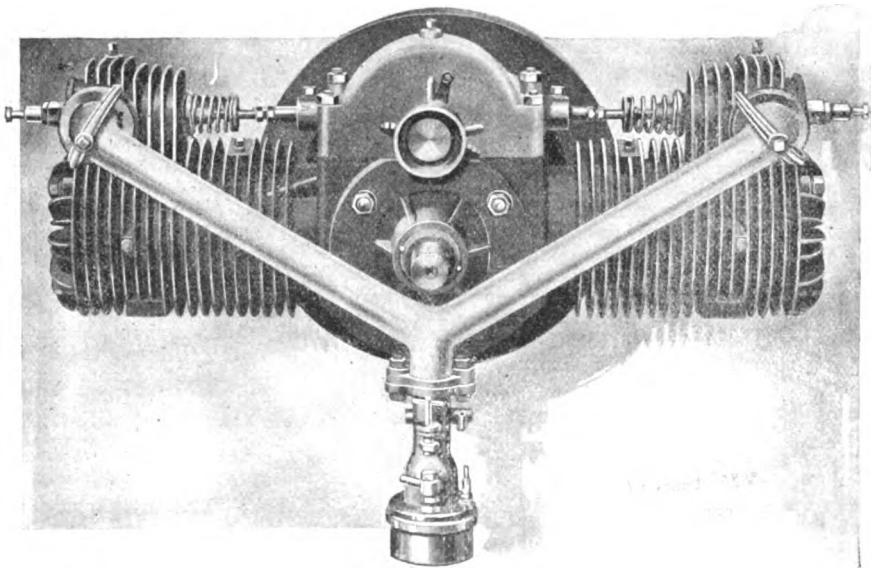
The following table gives the capacities and resistance of the four sizes listed:

No. of Cells	Charging Current	Resistance
Low-est.	High-est.	Maxi-mum.
1	44	20
1	44	40
1	44	60
1	44	80

De Tamble Buggy Motor.—In response to the widespread demand for the buggy type of automobile, the Speed Changing Pulley Company, Indianapolis, Ind., is just placing on the market a light, powerful and smooth-running air-cooled motor specially designed for this service, as well as for light delivery wagons. Although its dimensions are only 30 inches long by

numerous occasions on which it is not alone convenient but helpful to both driver and motor to be able to cut out the latter. Racing drivers have long recog-

Battery-Charging Rheostats.—In the average garage there is always apt to be considerable difference in the number of cells in the batteries of the cars to be charged, and the problem of handling the current so as to give each the proper amount of current through the charge has been an annoying one to the garage manager. To meet this condition the Ward Leonard Electric Company, Bronxville, N. Y., has developed a line of rheostats suitable for charging batteries having any number of cells, from 1 to 44, at any amperage between maximum and minimum charging rates of from 2 to 80 amperes. Another great advantage of these rheostats is the addition of a combination overload and underload circuit breaker, which will not only protect the machine during the charge but automatically open the circuit upon its completion, so that a ma-



THE NEW DE TAMBLE AIR-COOLED MOTOR FOR BUGGY USE.

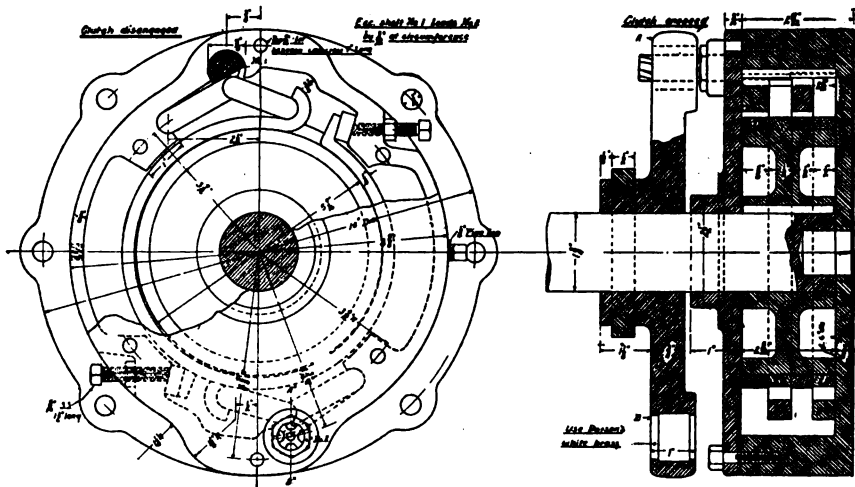
nized this, and the majority of cars in the long road races have been equipped with small switches mounted on the steering wheel. Under the name of the Petite switch, the American Motor Works, of Grand Rapids, Mich, are placing a device for this purpose on the market. As its name indicates, it is extremely small and unobtrusive and it may readily be applied to any car without trouble, but one screw being necessary to fasten it, and, as the makers also state, it is always "right under your thumb," instantly ready for an emergency stop. The skillful driver not only saves gasoline, but he also saves his batteries, and this is his most valuable aid in accomplishing both, there being a great many times when it is safer to have the car turning the engine over than the reverse. But more than either of these, it saves tires, because it means a great deal whether the rubber is merely rolling over an obstruction or dropping into a hole or whether it is being forcibly dragged or pushed through these tire-destroyers.

Bullard Speedometers.—For the 1908 season J. H. Bullard, Springfield, Mass., will market two types of the well-known speedometers that bear his name. Both are now ready for delivery, and the chief feature of one will be its equipment with a maximum hand, so arranged that by pressing a button, not shown in the illustration, it will remain stationary at the maximum speed, and by releasing the button it will instantly return to the speed at which the car is then traveling. The advantages of this construction are that it does not bring any drag on the regular recording hand nor impair its accuracy to the slightest degree, and it is as free and as sensitive to the speed changes as though this extra hand were not a part of the instrument, nor does jolting or jarring affect it in any way. At the same time it does not complicate the instru-



THE NEW BULLARD FOR 1908.

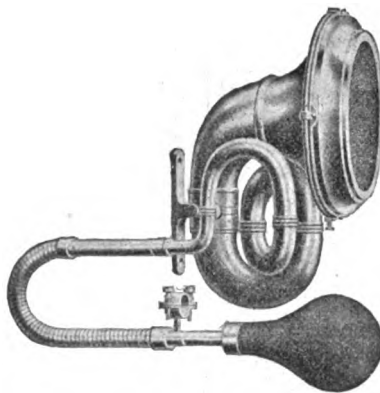
ment in any manner, and, except when the button is called into play, it operates exactly in the usual manner, as if this additional hand were not present. By this construction there is no second hand to watch and no possibility of forgetting to release it at the proper moment, as a glance is sufficient to show whether it is free or locked. The other type is the usual style, without the addition of the maximum hand, and both are made with



ELEVATION AND CROSS-SECTIONAL VIEW OF THE WARNER FRICTION CLUTCH.

the same painstaking attention to detail and accuracy that has always characterized the Bullard. In operation, the shaft only turns one and a half times faster than a 30-inch wheel, thus making all the parts very slow-moving. The shaft is attached to a patented universal bracket, and can be applied to any car so that all short bends are avoided, thus insuring long life to all the parts and connections.

New Type of Auto Horn.—Among the catalogues just to hand is one of the Automobile Supply Manufacturing Company, Driggs avenue, Brooklyn, N. Y. It is devoted to the



OVAL BELL HORN WITH CLOSE COIL.

line of automobile horns turned out by this firm, and shows a wide range of styles and types, including ten newcomers and one wholly new design, which is the work of Louis Rubes, the president of the company. The accompanying illustration shows a sample of the oval-bell type horn, with "close-twisted" coil, which gives a rich, penetrating note that carries to a considerable distance. The extent of the demand for the line of horns turned out by this firm may be gauged from the fact that overtime work is being carried on at both of its plants at Driggs avenue and Emerson place, Brooklyn.

New Warner Friction Clutch.—Sudden gripping, binding tight or becoming so loose as not to transmit more than a fraction of the power of the motor, are some of the ills that the ordinary type of friction clutch is heir to. In contrast with this, the Warner

Clutch Company, 1461 Michigan Avenue, Chicago, Ill., has been marketing a type of clutch which not only eliminates these ills, but also provides insurance against damaging either the car or the tires by means of its ability to let go when the occasion demands, as well as to engage easily and hold fast regardless of how much power the motor is developing. It consists of a series of crucible steel springs or bands in frictional contact with the polished surface of a cast-iron drum, the whole being enclosed in a dustproof case and running in an oil bath. The steel bands are designed to transmit the power of the most powerful automobile engine made, while the drum is glass hard, so that the wear is practically a negligible factor. Provision is made for adjustment in the shape of compensating screws, one or two turns of which are sufficient to take up any play after a season's use. The steel bands are good for two or three years' steady service and can be replaced at trifling cost, thus making the clutch as good as new. As the makers state, "When properly adjusted the Warner clutch, when it is 'all in,' will slip just below the breaking strain of the weakest point in the system of which it is a part, and its frictional resistance should be set slightly below that of the driving tires on a dry road or street pavement."

NEW BOOKLETS RECEIVED.

"Lytle's Great Run" is an illustrated folder dealing with Herbert Lytle's last and most notable performance on a track with a Pope-Toledo car. It can be obtained from the Pope Motor Car Company, at Toledo, or from their agents.

Safety when automobiling, due to the absence of skidding and tire weakness, forms the theme of "Safe and Sane Automobiling," a booklet published by the Leather Tire Goods Company, Newton, Upper Falls, Mass. The Woodworth tread is the safety factor offered by the authors of the book, the claims of which are strongly presented in the 16 illustrated pages.

With the object of making known the attractions of the lake country of central New York, a well-prepared guide-book for the automobilist has been published by the Glen Springs Garage, Watkins Glen, N. Y. The country from Binghamton to Buffalo is dealt with and a large number of excursions from Watkins Glen to points of interest are mapped out. The book contains road maps, road directions and views of the country traversed.

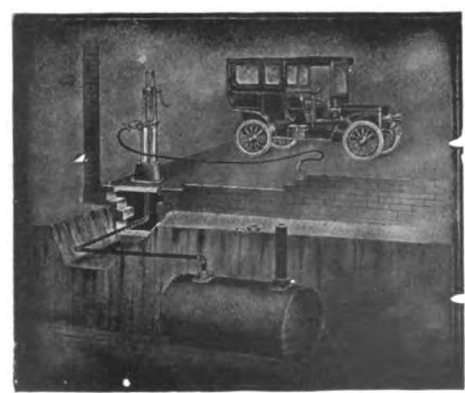
INDEX TO ADVERTISERS

Abendroth & Root Mfg. Co. Cover
Acetylene Gas Illuminating Co. 44
Acme Motor Car Co. 103
Adams Co. 43
Add-Wear Tire Sleeve Co. 40
Ajax-Grieb Rubber Co. 75
Allyne Brass Foundry Co. 61
Aluminum Solder & Refining Co. 62
American Ball Bearing Co. 66
American Brass & Aluminum Works 47
American Die Casting Co. 48
Amer. Locomotive Auto. Co. 105
American Motor Parts Co. 47
American Motor Truck Co. 95
Anderson Forge & Machine Co. 47
Apperson Bros. Automobile Co. 31
Appliance Mfg. Co. 68
Arc Toledo Spark Plug Co. 40
Ashtabula Carriage Bow Co. 44
Ashton Valve Co. 42
Atlas Mfg. Co. 40
Atlas Motor Car Co. 36
Auburn Automobile Co. 43
Austin Automobile Co. 91
Auto and Power Appliance Co. 40
Auto Improvement Co. 92
Auto Pump Co. 48
Autocar Co. 95
Autocar Equipment Co. 90
Automobile Supply Co. 47
Automobile Supply Mfg. Co. 74
Autoshine Co. 41
Avery Portable Lighting Co. 55
Badger Brass Mfg. Co. 56
Baird-Banks Mfg. Co. 57
Baldwin Chain Mfg. Co. 47
Barnett Drop Forging Co. 54
Barrett Mfg. Co. 115
Bay State Auto Co. 43
Beaver Mfg. Co. 57
Beeler & Robb. 54
Bellfuss Motor Co. 36
Bemus, T. Alton. 40
Berkshire Motor Car Co. 43
Bethlehem Steel Co. 55
Billings & Spencer. 39
Blasler Mfg. Co., M. E. 44
Blomstrom Mfg. Co. 87
Blomstrom Motor Co., C. H. 43
Blue Book 82-83
Boker & Co., H. 46
Bosch, Robert. 71
Boston Auto Gage Co. 48
Bowser & Co., S. F. 67
Boyle & Co., John. 93
Bridgeport Vehicle Co. 44
Briscoe Mfg. Co. 47
Brownell-Trebert Co. 51
Buckeye Jack Mfg. Co. 58
Buckeye Mfg. Co. 89
Buffalo Carburetor Co. 86
Bullard Automatic Wrench Co. 65
Bullard, J. H. 42
Buob & Scheu. 44
Byrne-Kingston Co. 63
Cadillac Motor Car Co. 99
Carr, F. S. 44
Central Body Co. 44
Chadwick Engineering Works. 84
Champion Co., A. 52
Chandlee & Chandlee. 52
Charter & Co. 42
Clair, J. C. 46
Clark, E. S. 40
Cleveland-Canton Spring Co. 57
Coates Clipper Mfg. Co. 74
Colgan Co., J. W. 44
Coit Runabout Co. 70

Columbia Lubricants Co. 55
Connecticut Gauge Co. 65
Conn. Tel. & Elec. Co. 38
Conover Motor Car Co. 65
Continental Auto. Mfg. Co. 37
Continental Caoutchouc Co. 41
Continental Motor Mfg. Co. 49
Cook's Sons, Adam. 62
Corbin Motor Vehicle Corp. Cover
Correspondence School Motor Car Practice 42
Cornish-Friedburg Motor Car. 38
Cotta, Chas. 46
Covert Mfg. Co. 41
Cowles & Co., C. 42
Crawford Automobile Co. 43
Crescent Parts Co. 48
Cullman Wheel Co. 41
Daimler Mfg. Co. 43
Darracq Motor Car Co. 43
Dayton Electrical Mfg. Co. 42
Dayton Motor Car Co. 106
Det. & Buffalo Steamboat Co. 53
Diamond Chain & Mfg. Co. 47
Diamond Rubber Co. 70
Dietz Co., R. E. 72
Dixon Crucible Co., Joseph. 46
Dorris Motor Car Co. 39
Dover Co., Geo. W. 39
Dow Portable Electric Co. 56
Duff Mfg. Co. 47
Eclipse Machine Co. 47
Eco Mfg. Co. 66
Edmunds & Jones Mfg. Co. 41
Eldredge Electric Mfg. Co. 54
Electric Vehicle Co. 95
Elmore Mfg. Co. 107
Empire Automobile Tire Co. 58
Ericka Soap Co. 40
Excelstor Supply Co. 51
Firestone Tire & Rub'r Co. Cover
Fisk Rubber Co. 79
Ford Motor Co. 100
Forest City Motor Car Co. 89
Franco American Auto Supply Co. 42
Franklin Mfg. Co. 43
Fry, T. C. & W. L. 46
G & J Tire Co. 76
Gabriel Horn Mfg. Co. 88
Gearless Transmission Co. 107
Gemmer Mfg. Co. 100
General Accumulator & Battery Co. 60
General Electric Co. 69
Gilbert & Bros., Jas. L. 41
Gleszler Bros. 61
Gilbert Mfg. Co. 74
Goodrich Co., B. F. 80
Goodyear Tire & Rubber Co. 41
Grout Bros. Auto Co. 43
Gumelastic Tire Co. 56
Ham Mfg. Co. 50
Harburg Tire Co. 50
Hardy Co., The R. E. 41
Harrington Lubricant Co. 40
Hartford Auto Parts Co. 64
Hartford Rubber Wks. Co. 75
Hartford Suspension Co. 83
Hatcher Auto Parts Co. 56
Havoline Oil Co. 61
Haynes Automobile Co. 43
Healy Leather Tire Co. 41
Heath Dry Gas Co. 41
Heltzer Carburetor Co. 47
Heinze Electric Co. 58
Hercules Auto Specialty Co. 63
Hercules Electric Mfg. Co. 40
Herschell-Spillman Co. 41
Herz & Co. 52
Hess-Bright Co. 47
Hicks Speed Indicator Co. 47
Hine-Watt Mfg. Co. 57
Hoffecker Co. 50
Hoffman, Geo. W. 40

Holley Bros. Co. 104
Holsman Automobile Co. 37
Hopewell Bros. 44
Hotchkin Mfg. Co. 48
Hotel Garde 54
Howey Motor Car Co. 40
Hub Lubricator Co. 68
Huntington Automobile Co. 57
Hyatt Roller-Bearing Co. 66
Hydraulic Pressed Steel Co. 47
Idium Metal Co. 54
Jackson Automobile Co. 43
Jamesville Mfg. Co. 55
Jeffery & Co., Thos. B. 111
Jenkins Specialty Co. 59
Jersey Brake Co. 48
Johnson Sporting Goods Co., I. 44
K. W. Ignition Co. 92
Kansas City Motor Car Co. 43
Kellom & Co., Chas. F. 52
Kilgore Mfg. Co. 91
Kimball Tire Case Co. 46
Kinsey Mfg. Co. 47
Kinsler-Bennett Co. 58
Kirkham Motor Mfg. Co. 41
Kongislow, Otto 48
Lavalette & Co. 59
Lavigne Mfg. Co. 42
Lear Automobile Co., Oscar. 43
Leather Tire Goods Co. 40
Lemouline-Carrlage Mfg. Co. 44
Lipman Mfg. Co. 45
Lobe Pump Co. 42
Locke & Co. 58
Locomobile Co. of America. 114
Logan Construction Co. 39
London Auto Supply Co. 41
Long & Mann Co. 42
Long Mfg. Co. 53
Loring, E. J. 48
Lozier Motor Co. 101
McClellan, Chas. P. 44
McCord & Co. 49
Malone, F. E. 54
Manhattan Electrical Sup. Co. 40
Manhattan Lamp Works. 43
Manhattan Storage Co. 50
Maple City Mfg. Co. 46
Martini Import Co. 54
Mason Motor Car Co. 88
Matheson Motor Car Co. 103
Maxwell-Briscoe Motor Co. 117
Mayo Radiator Co. 47
Merritt & Co. 40
Mezger, C. A. 68
Michigan Crucible Steel Casting Co. 43
Michigan Top Co. 42
Midgley Mfg. Co. 44
Miller Bros. 54
Miller, Chas. E. 64
Mitchell Motor Car Co. 43
Modern Tool Co. 95
Moline Automobile Co. 43
Morgan Motor Car Co. Cover
Morgan & Wright. 67
Mosler & Co., A. R. 41
Moss Photo Engraving Co. 61
Motor Car Co. 86
Motor Car Equipment Co. 49
Motz Clincher Tire & Rubber Co. 40
Muller, Albert 46
Muttvy Co., L. J. 44
Myers Auto Top Co. 44
National Brake & Clutch Co. 74
National Carbon Co. 65
National Construction Co. 88
National Motor Vehicle Co. 94
National Oil Pump & Tank Co. 36
Neustadt Auto & Supply Co. 60
New England Motor Co. 61
New York Gear Works. 48
Niagara Falls Brass Works. 68
Nordyke & Marmon Co. 43
Northern Motor Car Co. 102

Nuttall Co., R. D. 47
Nutting Machine Co. 58
O. K. Connector Co. 40
Ofeldt & Sons. 41
Old Colony Light Co. 46
Olds Motor Works. 43
Oliver Instrument Co. 56
Ovington Motor Co. 40
Owen & Co., R. M. 90
Pacific Tucking & Mfg. Co. 49
Packard Electric Co. 40
Packard Motor Car Co. 110
Packard Motor Car Co. of N. Y. 102
Page-Storm Drop Forge Co. 39
Parish & Bingham Co. 47
Parker, Stearns & Co. 56
Pedersen Mfg. Co. 42
Peerless Motor Car Co. Cover
Penna. Auto Motor Co. 86
Perfection Spring Co. 41
Peugeot Freres. 76
Pfanstiehl Elec. Laboratory. 61
Phila. Steel & Wire Co. 47
Pierome Hide Co. 41
Pierce Engine Co. 31
Pierelli & Co. 76
Pioneer Brass Works. 47
Pittsfield Spark Coil Co. 53
Pope Motor Car Co. 91
Post & Lester Co. 44-49-57
Powell Muffler & Timer Co. 41
Precision Appliance Co. 62
Prest-O-Lite Co. 93
Progressive Mfg. Co. 62
Prosser & Sons, Thos. 52
Quad Mfg. Co. 42
Quinby Co., J. M. 44
Quincy, Manchester, Sargeant Co. 42
Raimes & Co. 42
Rainier Co., The. 46
Rajah Auto Supply Co. 46
Randall-Faichney Co. 66
Reeves Pulley Co. 42
Remington Tool & Machine Co. 48
Remy Electric Co. 41
Renault Freres. 101
Rice Vulcanizing Co., L. E. 55
Richardson Engr. Co. 46
Robert Instrument Co. 40
Roberts Motor Co. 41
Robinson & Sons Co., Wm. C. 55
Ross Gear and Tool Co. 47
Royal Battery Co. 77-61
Royal Equipment Co. 42
Royal Motor Car Co. 89
Rushmore Dynamo Works. 78
Sager Co., J. H. 42
St. Louis Car Company. 99
St. Louis Motor Car Co. 90
Salisbury Wheel Co. 41
Samson Leather Tire Co. 49
Sanford Mfg. Co., F. C. 41
Schraeder Sons, A. 59
Shaler & Co., C. A. 52
Shawver Co. 51
Shoemaker Automobile Co. 60
Smith Auto Co. 106
Smith Co., A. O. 63
Smith Mfg. Co., R. H. 46
Speed Changing Pulley Co. 72
Spicer Universal Joint Mfg. Co. 41
Splittdorf, C. F. 60
Sprague Umbrella Co. 56
Springfield Metal Body Co. Cover
Stackpole Battery Co. 64
Standard Co. 59
Standard Connecting Rod Co. 52
Standard Roller Bearing Co. 41
Stearns Co., F. B. 43
Stevens-Durvee Co. 105
Stewart & Clark Mfg. Co. 108-49
Stret Machine Co. 48
Success Auto Buggy Co. 43
Supplementary Spiral Spring. 51



The Safest Way to Store Gasoline

is the NATIONAL way, is the only economical, safe and convenient way, because there is no danger, no evaporation or waste, the gasoline is in the tank or in the car.

The NATIONAL is the only pump that discharges gasoline at every movement of the crank, it saves one half the labor and one half the time to pump gasoline, there is no evaporation or leakage, the tank is buried underground, the pump may be put in the building in a convenient place. It is the safest way because it meets all of the requirements of The National Board of Fire Underwriters.

The NATIONAL is also adapted to private motorist, also for lubricating oil storage. Ask for catalogue, it will explain all about the National System.

The National Oil Pump and Tank Co., Dayton, O.

THE AUTOMOBILE



LISIEUX, FRANCE, Aug. 9.—Eugene Renaux, driving a Peugeot, has captured the Press Cup—Coupe de la Presse in the language of the country—on the Lisieux circuit at an average of 53.7 miles an hour, defeating twenty-five cars from the best European factories. A Westinghouse, driven by Vimont, came second, at 53.03 miles an hour; Zélélé, the Abyssinian driver of a De Dion Bouton, obtained third place with an average of 51.5 miles, and his companion, Vrignon, with the same make of machine, got fourth place at an average of 50.7 miles an hour. Eighteen out of the twenty-six starters finished the 243.8 miles, the last to arrive averaging 40 miles an hour.

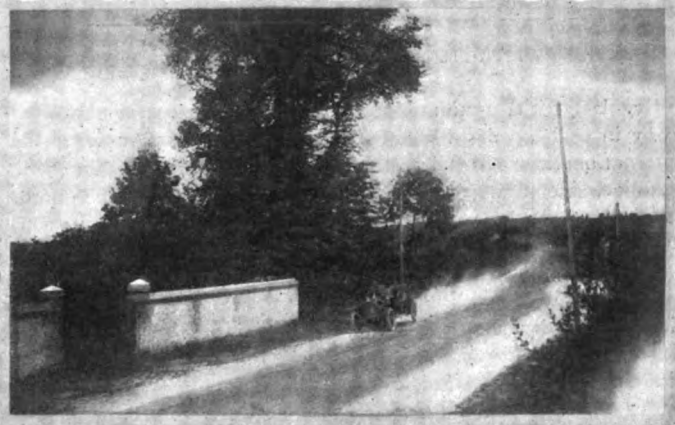
Compared with the Grand Prix there is nothing startling in the speeds realized on the fast Lisieux circuit, 53.7 miles an hour seeming slow going after the 70.6 of Nazarro. But the Press Cup, though awarded on speed attained, is not a pure speed event. Marquis de Dion, who has small belief in the industrial value of racing, proposed an endurance test for touring cars, and after much insistence obtained the support of the Automobile Club of France for its organization.

Touring machines weighing not less than 3,637 pounds, with four passengers of 154 pounds each on board, but without baggage, tires, or any spare parts, and conforming to certain chassis dimensions, had to accomplish a four-day tour of 960 miles at an average of 21 to 24 miles an hour. Those coming through the touring event on schedule would be allowed, without any change in their gear, to start in the speed test—the Press Cup—on a guarded circuit, with a fuel allowance of 4.1 gallons of gasoline per 62.1 miles.

On the second day of the tour a deplorable accident costing seven lives caused the Minister of the Interior to order the tour stopped. The sad event proved that, in France, touring competitions on unprotected roads are more dangerous than high-speed contests on military guarded circuits. Those having qualified on the first two touring stages were ordered, after the accident, to proceed to Trouville and hold themselves in readiness for the speed test.

They were twenty-six in number, all French, that gathered at 9:45 A.M. for the five rounds over the 48.7-mile circuit. Although the fuel allowance of 16.3 gallons for the total distance, the minimum weight and the obligation of carrying four passengers, brought the competitors to a common basis, there was a large amount of diversity in the machines.

C. G. V. entered a handsome limousine with inside steering, and took four ladies as passengers; during the tour the car was able to hold its own, but it was obviously impossible to compete on equal terms with the others when speed alone decided. The



THE STORM WHICH FOLLOWED THE RACE'S CONCLUSION.

others, all side-entrance touring cars, adhered more or less closely to standard models. Mud guards generally were reduced to their lowest dimensions and in a few cases replaced by horizontal canvas guards, running boards were in some cases of wood, and a few of the chassis were drilled. Such changes were allowed, provided the weight did not fall below the minimum. Particular attention was paid to the gearing, any increase on the gear examined when the cars left Paris causing disqualification. Gasoline tanks for the occasion had to be carried behind either the front or the rear seats, where, being always visible, the chance of fraud was considerably diminished.

Cup Commission Did Not Favor a Daybreak Start.

It was not the crowd one usually meets at an automobile race—or, rather, it was the same crowd under a different complexion. No necessity to sit up all night to be sure of a place at the starting line at dawn, for the race began at 9:45, after the ladies had donned their most elegant costumes and everybody had eaten a hearty breakfast. It was really a sensible move, for the machines which were to race were touring models, and those who watched them in their magnificent struggle were the people most likely to become their possessors. The promoters of the Press Cup have first had the sagacity to realize that an audience at an automobile race has as much right to good treatment as any other class of probable clients.

Molon's Gladiator had the honor of starting the match, his departure coinciding with the flight of a large red balloon. Two minutes later the imposing Barriaux, with a Motobloc, the tires of which were filled with Elastes, departed, the first driver for many a year to use other than pneumatic tires in a race. De La Touloubre, under which name Captain Genty, head of the army automobile corps, vainly hides his identity, received a special ovation, for his departure had been doubtful. After the accident on the tour, gendarmes held him up for several hours and prevented him reaching control on time; but when the committee had considered his case, it was decided to allow him to start in the race.



SOREL'S DIETRICH, DEFEATED FOR LACK OF GASOLINE.



ARIES DRILLED THE FRAME AND FITTED A WIND DEFLECTOR.

Regularly, at two-minute intervals, the four-passenger cars went away in as imposing a manner as any collection of racers in an international pure speed test. Each car, after being filled with gasoline, was dragged to the line by a horse, and the motor cranked at the last possible moment, gasoline being a precious fluid with such an extremely limited allowance.

All in white, with the arms of the firm painted on the side panels, the De Dion Bouton team attracted particular attention. Zèlèlé especially being pointed out. Zèlèlé is one of the sights of Paris. On working days he drives the Marquis de Dion's limousine around the city. Zèlèlé's companion on the front seat is a handsome Pomeranian, white from the tip of its nose to the wag of its tail; Zèlèlé's color being, as everybody knows, as coppery as Abyssinia can produce, the combination was declared *tout à fait chic*, and Pomeranians on the front seat are now the fashion.

Sorel's Lorraine-Dietrich was looked upon as one of the most probable winners. Sorel, an Anglo-Indian, is one of the most capable drivers Europe possesses, and his machine, a standard model, has been more carefully prepared for the race than the majority. The two Westinghouses, built at Havre, but with just a tinge of American blood in them, made excellent starts. Mercedes was the only out-and-out foreigner, the others from abroad having fallen during the preliminary tour.

Sorel, driving a Dietrich, was the fastest on the initial round, followed at an interval of two minutes by Renaux on a Peugeot, and one minute later by Vrignon on a De Dion Bouton. Another Peugeot was fourth and two De Dion Bouton's fifth and sixth. At the end of the third round Sorel was still leading, with Peugeot a good second and the complete De Dion team hanging very close. Excluding accidents the De Dietrich machine seems a certain winner, for it was decidedly the fastest of the lot and was admirably handled. There was a doubt, however, as to the ability of the big four-cylinder motor with 5.1 by 6.2 bore and stroke to

remain within its fuel allowance. The Peugeot dimensions were 5.1 by 4.7 bore and stroke and the De Dion engines were 4.3 by 5.9 bore and stroke.

How Some Were Eliminated by Accidents.

On the fourth round Perret's Peugeot took a dip in the road at too high a speed and broke a front spring hanger; the Mercedes driven by Gasteaux, with Madame Gasteaux as one of the passengers, broke a ball bearing and had to retire; a Cottin-Desgouttes broke an axle and the M. G. R. and the Vinot-Deguingand had to lay up on the roadside. Sorel and Renaux, handling Dietrich and Peugeot respectively, continued to lead and appeared likely to obtain first and second positions. Debray's closed C. G. V., with its full load of passengers, continued in the rear with an even speed of thirty-seven miles an hour.

About 2:30 o'clock Vimont on a Westinghouse crossed the finishing line. He had started eighth and consequently should be in a good position. One of the Gladiators came in close behind, with Zèlèlé, the Marquis de Dion's private chauffeur, who had driven too cautiously on a guarded road, hard on his heels. But Sorel's Dietrich was the machine looked for by every spectator, its previous lead having marked it out as a certain winner. From the telephone station the sorrowful message came that the powerful Dietrich was laid up on the roadside with every drop of gasoline drained out of its tank. Renaux, whose Peugeot had not stopped once for tires—he used Continentals—or any other cause, went over the line in 4:32:56, winner of the Coupe de la Presse. Less than four minutes behind, Vimont's Westinghouse took second place and De Dion Bouton captured third and fourth. The third De Dion, while in a good position, ran out of gasoline and had to be pushed over the line. Cottin & Desgouttes, finishing fifth and ninth, obtained the gold medal for the lowest fuel consumption. One of the most pleasing features of the race was



C. G. V. INSIDE STEERING LIMOUSINE, WHICH TOURED AND RACED.



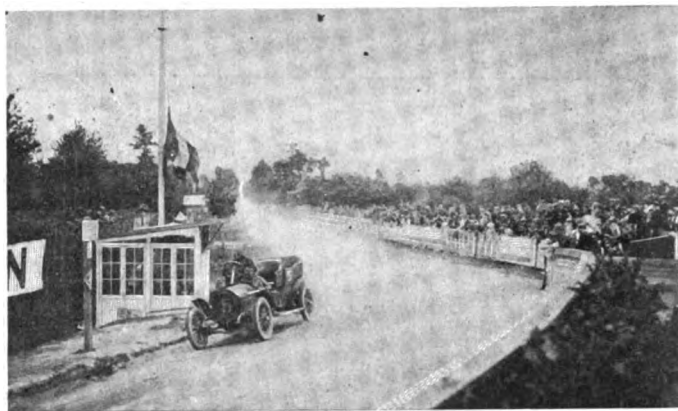
MARQUIS DE DION'S OWN CAR AND COLORED CHAUFFEUR.

the excellent work done by tires; in addition to the winner, several machines covered the 244 miles without changing a single shoe. Dismountable rims, Vinet and Michelin, were used on every machine, and Bosch magnetos were found on twelve of the eighteen finishers.

An Excellent Race, but Might Have Been Better.

Critics are not altogether satisfied with the speed realized by the machines with their allowance of one gallon of gasoline for approximately 15.3 miles. Compared with the Berliet record from Biarritz to Paris, and the performance of Rolls in the Tourist Trophy, there has not been much progress. Probably owing to the late appearance of the regulations, constructors had not thoroughly worked out the problem of obtaining the highest speed with the least amount of gasoline under touring conditions. All the machines were in good racing trim and handled by experienced drivers, but did not seem to have received the attention they ought to have had on fuel supply. Horsepower varied from 28 to 45; or, to get a more accurate estimate, for horsepower is often a matter of geography, bore and stroke was 4.3 by 5.1 on the smallest cars and 5.2 by 6.2 on the most powerful engines.

The regulations made it impossible for freak machines or specially constructed racers to compete. Although wire wheels sometimes took the place of wooden ones, and tricks were played with mud guards, the machines had to keep closely to touring conditions. Most important of all, they had to be geared for the



VICTORIOUS PEUGEOT CROSSING THE LINE.

contest on the Dieppe circuit. Over 2,000 troops guarded the course, barriers were erected each side of the road for the entire distance, and bridges put up wherever the population was of such importance as to need it. Though rather narrower than the majority of French roads, the Lisieux circuit has uniformly good surfaces, and was so carefully oiled and prepared that it formed an ideal track. It was at the grand stands that the work of the organizers was seen to the best advantage. Instead of placing



A SCENE AT THE STARTING LINE. ELEGANTLY DECORATED GRANDSTAND AT BEND OF ROAD ON LEFT; TIMER'S BOX ON RIGHT.

race in the manner which they competed in the touring event over mountain districts. For the first time in a touring race dismountable rims were used exclusively and gave no trouble. Continentals equipped the winner, the third, fourth, eighth, tenth, twelfth and fourteenth machines. Michelin's place was on the second and fifth cars to reach the grandstand.

THE FINISH AND THE SPEED.

Car and Driver	Time	Speed per hour
1. Peugeot, Renaux	4:32:56	53.7
2. Westinghouse, Vimont	4:36:05	53.03
3. De Dion Bouton, Zèlèlé	4:44:46	51.3
4. De Dion Bouton, Vrignon	4:48:40	50.6
5. Cottin & Desgouttes, Cottin	4:53:13	49.9
6. Westinghouse, Burkhard	4:53:53	49.5
7. Gladiator, Molon	4:57:12	49.4
8. Eugène Brillé, Hérissé	4:59:28	48.9
9. Cottin & Desgouttes, Latune	5:04:06	48.1
10. Gobron, Dureste	5:06:07	47.8
11. Gladiator, Vonlatum	5:06:07	47.8
12. Ariès, Vallée	5:17:00	46.1
13. De Dion Bouton, De Marçay	5:23:24	45.2
14. Motobloc, Barraux	5:27:27	44.7
15. Peugeot, Perret	5:52:05	41.5

Also finished: Rebour, Riviere; C. G. V., Debray; and Gillet-Forest, Nemo.

Organization the Most Perfect Europe Has Ever Seen.

Nothing but praise is heard for the manner in which the race over the Lisieux circuit was conducted. The Grand Prix, marvelously organized, captivated strangers by the manner in which the race was planned and attention paid to details. But the event just over was, in the opinion of all, far in excess of the

stands on a straight stretch of road, they were erected on a slight bend, thus giving spectators an opportunity of seeing the work of the drivers under the most interesting conditions. To enhance their speed, the road was banked at this point; thus the cars were visible several miles down the road, could be seen taking an elongated S turn, watched closely on the grand stand turn and seen as they disappeared a couple of miles in the distance, there being no dust to obscure the view.

A complete town of wooden "villas," as they were immediately

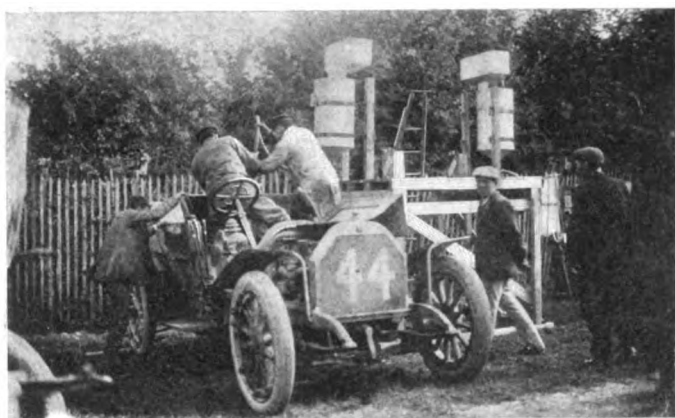


ZÈLÈLÉ ON DE DION BOUTON FINISHING THIRD.



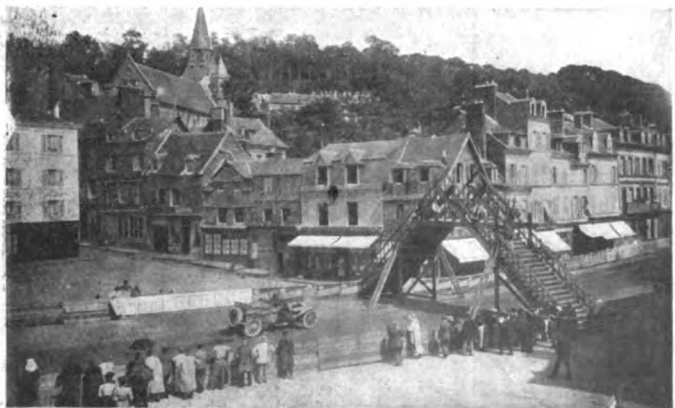
THE MODERN AUTO IN OLD-WORLD NORMAN TOWN.

dubbed, was erected to the rear of the grand stands. The Sporting Commission had a "château," the A. C. F. committee possessed its "castle," the telegraph and the general secretary were each accommodated with a handsomely decorated "villa," and the timer was given an elegant glass-and-wood house on the starting line which would not have dishonored the grounds of a millionaire. Instead of a shed from which no view of the course could be obtained, the press had for its special use a well-con-



FILLING WITH GASOLINE FROM SPECIAL MEASURING TANK.

structed tower, fifty feet from the ground, where it was possible to see everything and send messages without making 100-yard sprints. Finally, the restaurant was a place to eat in, and a place where people really did eat with pleasure. Gustave Rives, the master hand of the Paris automobile salon, had charge of the decorations around the stands. As an example of the manner in which he performed his task, it is only necessary to mention one detail. On the barricades were, as usual, advertisements for so



STOUT BARRIERS AND BRIDGES MADE THE RACE SAFE FOR ALL.

and so's tires and oils; these had to be of an approved color to harmonize, and when there were no more advertisements the bareness of the boards was hidden by an artistic wall paper, giving a panel effect. Cushioned seats, draped walls, artistically painted stands, were all in evidence; but, most important of all, the stands and other buildings had been designed first for use, then decorated. On some previous occasions the stands were made to fit the decorations.

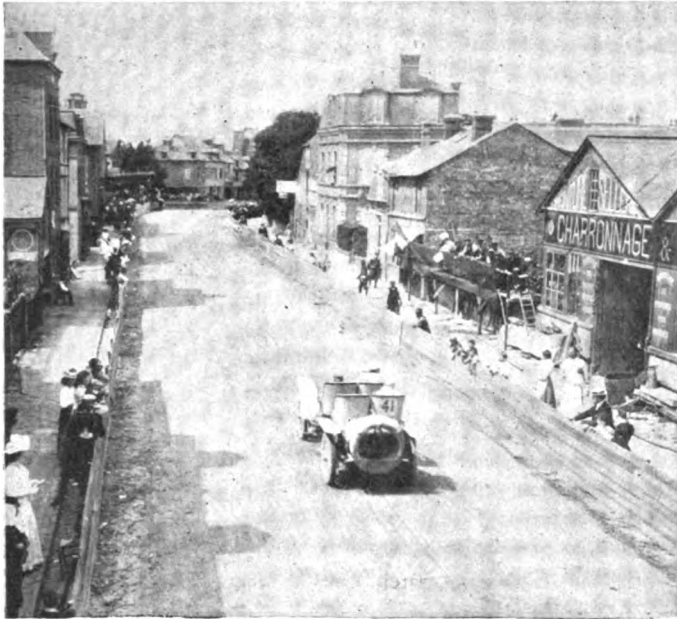
Progress had been made also in handling the score. From the timers' box, placed on the finishing line, it was but a step to a large, clearly visible score board, on which elapsed times only were posted—not clock times, as formerly. Filling the cars with gasoline was but a repetition of the Grand Prix. Two measuring tanks built to make allowance for changes in temperature were mounted on a platform, filled with the requisite amount of fuel, and their contents emptied into the tank of each competitor, the whole operation occupying less time than the filling of the average gasoline tank in a garage. When filled the inlet cap was sealed down and the various seals imposed at Paris finally verified.

How the Tour Met with Disaster.

Starting from Paris, after being weighed in and having their tanks and gear cases sealed at the military station on the Quai d'Orsay, the forty-four competitors in the Criterium de France and Coupe de Presse made the 270-mile run to Clermont-Ferrand, in Auvergne, at an average of 24.8 miles an hour. Although traffic and pavé around Paris made speed impossible for the first few miles—the start was given in the city itself—and a respectable share of hills were met during the latter half of the journey, every machine reached control on time. Many of them, indeed, arrived from one to two hours ahead of schedule. No half-way control had been arranged, but so fast was the rate of travel that it was considered necessary to hold up the competitors at Nevers. One well known make of machine covered the entire distance at 50 miles an hour, while half a dozen others exceeded an average of 45 miles an hour.

From Quatre-Routes, a corner of the Gordon Bennett Auvergne circuit, the second day's tour was to Bordeaux, 224 miles away, on a schedule calling for 21.7 miles an hour. Being through a mountainous country, greater caution was needed and a lower average speed was asked for. This, however, did not prevent the competitors from speeding, and most of them set up an average which would have carried them into the wine city far ahead of schedule. About twenty miles from Bordeaux the rear of No. 31 Martini suddenly collapsed while traveling at a moderate speed on a straight, level road. M. Meurisse, THE AUTOMOBILE photographer in France, who occupied a seat in the tonneau, was thrown into a field and slightly bruised. His companion, M. Luquin, a photographer from *La Vie au Grand Air*, was thrown in another direction, struck a telegraph post, and was killed on the spot.

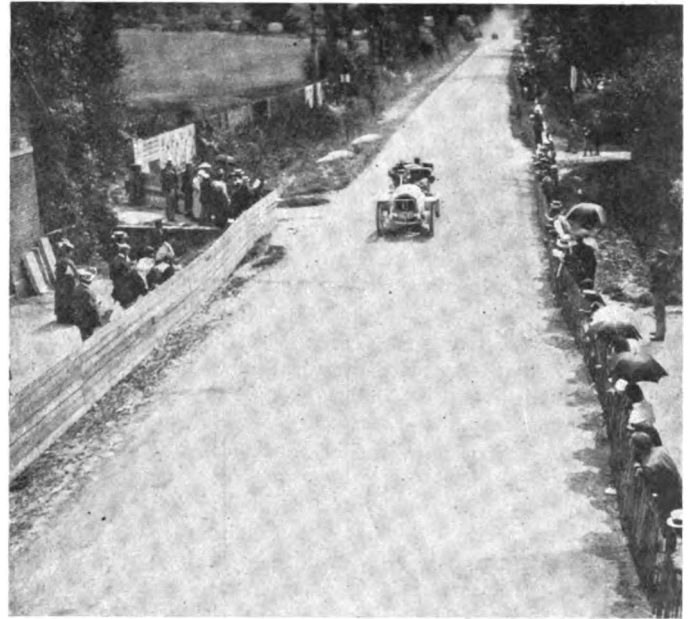
On the news reaching Bordeaux, M. Roullier set out on a Peugeot car with a number of newspaper men to obtain details of the accident. Traveling at nearly forty miles an hour, Roullier passed a horse-drawn vehicle in a cloud of dust raised by some of the competitors, and was about to pull into the right hand side of the road when he entered into collision with No. 35 Martin & Lethimonnier, driven by Henry Paul Martin, at a speed of over forty miles an hour. According to spectators, no blame could be attached to the competing car, which, although traveling fast, was as far to the right hand side of the road as possible. Those killed were Martin, the driver of the competing car, reported to be connected with the Sultan Motor Company, of Springfield, U. S. A., Faveau, who was by his side, and Villemain, sitting with his feet on the running board. Villemain was well known as a racing driver, first with Darracq, later with Bayard-Clement. For a long time he formed one of the team of which the late Albert Clement was the chief. In the non-competing car Roullier, the driver and two newspaper men met their death. On receiving instructions from the Government, the Automobile



NO STRAYING DOGS OR BOYS IN THIS VILLAGE.

Club of France ordered the tour to be stopped, and directed the cars which had accomplished the first two stages successfully to proceed to Trouville in readiness for the race on the guarded circuit.

This accident has caused a revulsion of feeling against touring competitions on unprotected roads, for, although precautions are taken to prevent speeding, it is impossible to keep inconsiderate drivers under control on such occasions. It has been shown, on the other hand, that speed contests on guarded roads are thoroughly safe, no serious accident having occurred during any of the races in France this year. The public is now more favorably inclined towards the Marquis de Dion's scheme for the construction of a natural autodrome in some mountainous part of Auvergne, where any speed or touring test could be held with little danger to competitors or spectators. His suggestions to that effect did not meet with a very enthusiastic reception from either the automobile club or the race-going public at the outset for many reasons, but the accident has been the means of causing an entirely different view of his proposals in those quarters.



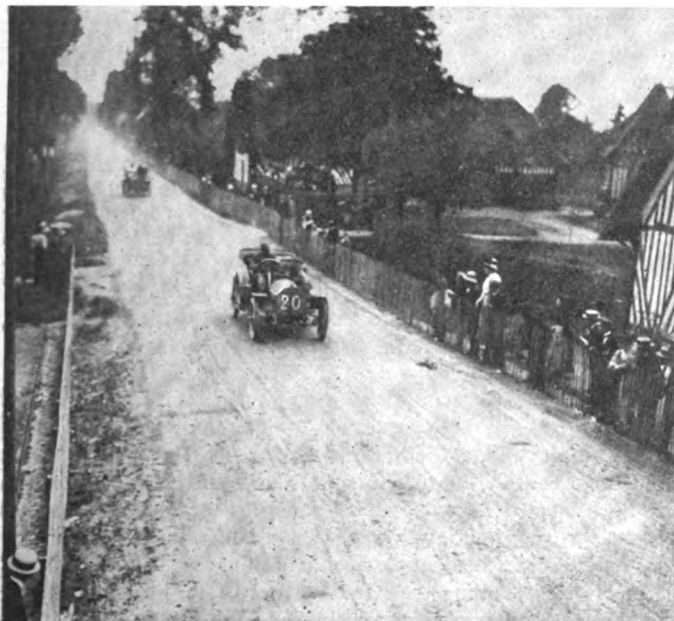
ZÈLÈLÉ, THIRD, IN HIS FIRST SPEED EVENT.

ANOTHER LONG ISLAND MOTORWAY.

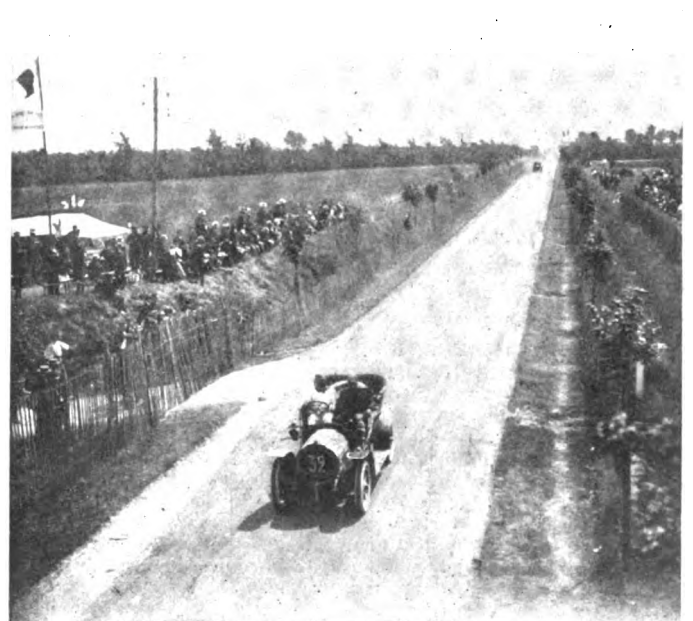
From Highland Park, a suburb of Brooklyn, to Massapequa, L. I., runs a water conduit on land owned by the City of New York. At the last meeting of the Board of Aldermen, before its summer adjournment, a resolution was passed, favoring the building of an automobile speedway on the top of this water conduit, and the matter was referred to a committee of three, consisting of Controller Metz, Water Commissioner O'Brien and Nelson P. Lewis, an engineer of the Board of Estimate.

It is understood that the plan has been investigated and found entirely feasible, and Commissioner O'Brien and Engineer Lewis will so report to Controller Metz on his return from Europe.

The conduit parallels the Long Island Railroad and the well known Merrimac road, passing through various Long Island towns where speed ordinances have been strictly in force. It is asserted that by another summer the motorway will be an actuality. Alex. Schwalbach, of the Long Island Automobile Club, has been an energetic factor in the preliminary work on the proposed motorway, and is enthusiastically working for it.



THROUGH BARRICADED PONT L'EVEQUE, OF CHEESE FAME.



FINE SWEEP OF ROAD NEAR FINISHING LINE.

IMPORTERS' SALON SUGGESTS RULES FOR CONTESTS

THROUGH its Trades and Contests Committees, appointed in June last, the Importers' Automobile Salon has forwarded its report to the Association of Licensed Automobile Manufacturers, the American Motor Car Manufacturers' Association and the Automobile Club of America. While the report also goes to the Salon itself, it is taken for granted that since its committee contains the leading importers, it will be acceptable to the entire membership.

In submitting the report the Trades and Contests Committee states "that it desires to place the sport on a higher plane to the benefit of the interested public, and to the individual importer and dealer in automobiles, whose sole intention in entering their cars is to have them judged entirely upon their merits."

The committee assumes that the majority of past tours, runs, races and contests have not been based on the proper grounds or foundation to bring out the best results, stating:

"The reason of this is clearly that no organized automobile body whose experience is complete mechanically and otherwise has offered to assist or aid by suggestion or advice, or to stand sponsors for, the mechanical correctness and merit of the event in which members' cars compete. The entire responsibility of the officiating association or clubs being to-day limited to the mere question of whether the date conflicted with that of any other meet already sanctioned."

The committee believes that its recommendations will be "quickly recognized by other organizations and clubs as an opportunity for the co-operation of all interested parties to effect the elimination of the admittedly undesirable and eventually costly element in competition and to inaugurate a new basis of operating and conducting contests. In these contests, selecting the most approved methods and mechanically conceded formulas for awarding prizes, that every prize awarded may actually mean some particularly desirable feature proved by the winner, which the public, the manufacturer, clubs and associations can readily recognize. In fact, work out a real standard for determining perfection."

Horsepower Suggested as Basis of Classification.

Probably the most noticeable fact about the recommendations urging a uniform basis of classification for cars in tours, races and hill climbs is to be found in a return to old and well-known standards of engine rating, the classic horsepower formula used in rating steam engines for almost a century past having been adopted with the necessary modification to make it apply to the gasoline engine. This is the addition of " x^2 " in the denominator, in order to compensate for the fact that the four-cycle engine does not generate an impulse per turn, per cylinder.

It will also be noticed that, pending the taking of general action by a national or international committee as suggested, it is recommended that cars be classified solely according to their horsepower, seven classes being provided, ranging from "under 10 horsepower" to "60 horsepower and over," and being based upon a table of horsepower prepared by Worby Beaumont, published in the *Automobile Club Journal*, London, and *THE AUTOMOBILE*, August 2, 1906.

THE RECOMMENDATIONS OF THE COMMITTEE.

First—Your committee formally recommends the discouragement of events exclusively for either foreign cars or for American cars as not tending to bring out the comparative merits of the two, nor fair to either one or to the public, and recommends that such events be not supported by entries of any imported cars.

Second—That the judges, committees, or other officials directly in charge of all contests, and especially such committees as formulate the basis upon which such events shall be run, be selected from automobile or mechanical engineers whose standing is recognized by the industry and community, and whose knowledge and interest in the welfare and progress of the industry will be paramount. That such judges, committees or bodies in charge should include representatives of recognized repute from each and all of the prominent associations known to have the interest of the indus-

try at heart. These, in the mind of your committee, would be representatives of the Association of Licensed Automobile Manufacturers, the American Motor Car Manufacturers' Association, the Automobile Club of America and the Importers' Automobile Salon.

Third—That each of these associations appoint from their membership a Trades and Contests Committee, similar to our own; that a representative of each of these committees, conveying the opinions and ideas of their representative committees, jointly revise the merit of determining basis or standards which are in use to-day, and which are recognized as sometimes partial, discriminating and unreliable.

Fourth—Until such a desirable state of affairs can be brought about your committee recommends as the most fair, the most complete scientific and generally recognized foundation of all merit, the true horsepower classification, and that, pending further national or international action in the matter, the generally conceded fair average horsepower formula adopted by the Royal Automobile Club of Great Britain and Ireland for determining horsepower for contest purposes be accepted by the importers in classifying for the purpose of same, and further until the aforementioned and hoped for nationally and internationally "accepted basis" becomes a fact, the following classification be urged by importers for use in such contests and by such associations as will use them:

- Class A, beginning with 60 h.p. and over.
- Class B, beginning with 50 h.p. to, but not including 60 h.p.
- Class C, beginning with 40 h.p. to, but not including 50 h.p.
- Class D, beginning with 30 h.p. to, but not including 40 h.p.
- Class E, beginning with 20 h.p. to, but not including 30 h.p.
- Class F, beginning with 10 h.p. to, but not including 20 h.p.
- Class G, under 10 h.p.

[Based upon a table of horsepower, prepared by Mr. Worby Beaumont, published in the "Automobile Club Journal," London, and "The Automobile," New York, August 2, 1906.]

Committee Asks That Criticisms Be Made.

Accompanying the report is the following letter wherein the Trades and Contests Committee asks to have its plans criticised: Dear Sirs:—

The Importers' Automobile Salon, representing practically all of the importers doing business in this country at present, believes that the time has come when steps should be taken by those directly interested, manufacturers, clubs and associations, to preserve the high standing of the automobile industry in the eyes of the public, especially with reference to the sporting, touring and contesting branches of such industry.

Therefore, the Trades and Contests Committee of the Salon takes the liberty of handing you herewith a brief outline or suggestion showing one way in which at least a start may be made to that end, and which it is hoped will result in at least starting forth a co-operative movement between all interested organizations to advance the sport of automobilism along mechanically correct lines, which will prove as beneficial to the industry, as it surely will be satisfactory to the automobile-loving public.

The Committee would like very much to have this plan criticised or a new one advocated that will bring about the desired results, and is in hopes that similar committees will be able to devise means of arriving at some satisfactory basis for the betterment of the cause.

Very truly yours,
TRADES AND CONTESTS COMMITTEE,
Percy Owen, Paul La Croix,
Gaston Rheims, Geo. MacWilliams,
C. R. Mabley, Secretary.

Considerable surprise has been expressed at the leaving out of the American Automobile Association, the present governing body, from the list of organizations supplied with the recommendations of the Importers' Committee. In view of the fact that the Racing Board of the A. A. A. has conducted the Vanderbilt Cup race for the past three years in a most thorough and satisfactory manner, and according to international conditions, and the Touring Board this year endeavored by every means in its power to consult the manufacturers and utilized a consensus of their opinion in formulating the rules for the annual Glidden tour, the ignoring of the governing body is considered by many as not only discourteous but detrimental to the results aimed at by the Importers. "Pulling the chestnuts out of the fire for other people," is the way one man, well known in the trade and sport, explained the puzzling situation.

INTERPRETATION OF THE 1907 CONNECTICUT LAW

By E. F. HALLEN, COUNSEL FOR THE AUTOMOBILE CLUB OF BRIDGEPORT.

THE new automobile law recently passed by the general assembly and signed by the governor differs radically from the automobile law hitherto in force in this State. For this reason it is deemed wise and expedient to explain to the members of the Automobile Club of Bridgeport and to other interested persons the principal provisions of the new law, and to point out wherein it differs essentially from the law previously in force.

At the beginning of the legislative session considerable antagonism was manifested against further favorable automobile legislation, but a vigorous educational campaign, waged during the entire session, has been splendidly effective in bringing the legislature to a realizing sense of the need and importance of the automobile as a great factor in our growth and progress.

Under the new law additional burdens are placed on automobilists, notably in the increased cost of registration of machines, in the obligation to obtain an operator's license—this is a new feature—and in the cost of such license. These burdens are offset by the practical removal of the speed limit, and by the application of all registration and license fees, fines and penalties by the State for the maintenance and repair of improved roads.

Speed Limit Removed.

Perhaps the most important feature of the new law is that the present arbitrary speed limit of twelve miles an hour within any city or borough and twenty miles an hour outside the limits of any city or borough has been removed. The rich and easy graft of many of the constables and of some other town officials should be a thing of the past. The new law provides that "no person shall operate a motor vehicle on the public highways of this State recklessly or at a rate of speed greater than is reasonable and proper, having regard to the width, traffic and use of the highway, or so as to endanger property or the life or limb of any person." This holds the driver in every instance to a strict measure of responsibility, and leaves decision as to the propriety of the operator's action entirely to the court with right of appeal in all cases.

It is provided, however, in the new law that a rate of speed of over twenty-five miles an hour for the distance of one-eighth of a mile shall be prima facie evidence of reckless driving, which means that when apprehended for operating at a rate of speed in excess of twenty-five miles an hour the burden is on the operator and not on the prosecutor to prove to the court or other tribunal that, considering all the circumstances of the case, he was not operating the car at a rate of speed greater than was reasonable and proper. If, on the other hand, one is apprehended when operating a car at a rate of speed less than twenty-five miles an hour, the burden is on the prosecutor instead of on the operator to prove that, considering all the circumstances of the case, the car was operated at a rate of speed greater than was reasonable and proper.

The "Reasonable and Proper" Feature.

It is important, and should be borne in mind, whatever the rate of speed, whether two miles an hour or fifty miles an hour, if the driver is operating the car at a rate of speed that is reasonable and proper, considering all the circumstances in the case, that there is no violation of law; that no penalty of any kind should attach, and that there is a right to appeal in all cases.

It is earnestly hoped that all automobilists will assist in upholding the spirit of the new law, and that all unwarranted arrests made to satisfy the greed of some town officials, in a few isolated localities, will be met by prompt appeal to a higher tribunal, even if it means some personal inconvenience to the automobilist.

On the other hand, all cases of reckless driving should be frowned upon by your organization. The penalties under the new

law are very severe, and your club should lend its valuable aid to seeing that all reckless offenders get their desserts.

The operator who is a reckless dare-devil should receive no sympathy, since it is he who often brings a large and worthy class into undeserved disrepute. He can be squelched quickly and effectively under the stringent provisions of the new law.

Operator's License.

A radical departure in the new law, and one which is intended to enforce careful driving, is the operator's or chauffeur's license. This license can be issued to no person under eighteen years of age, and must be obtained yearly from the Secretary of State at a cost of \$2 per year. Unlicensed persons may operate a car only when accompanied by a licensed driver, and then such driver will also be liable for any improper operation of the car.

The Secretary of State or deputy secretary may, after due hearing and subject to appeal, revoke any operator's license for any cause which he deems sufficient, and he must revoke it upon a third conviction within the same calendar year for any violation of the act. No revoked license can be renewed within three months, and then only in the discretion of the Secretary of State.

Non-Residents.

A non-resident, if he has complied with the automobile laws in his own State, may operate his car in this State for a period of not over ten successive days at any one time without registering his car or taking out a license. A marker of his home State must be shown, but no machine can carry over two markers in front or two markers in rear at any one time.

Registration.

The new law provides for the registration of automobiles on a very different scale. Under the old law the registration fee was \$1, and the same fee was charged for renewal. The new law makes the registration fee \$3 for registration of cars of less than 20 horsepower; \$5 for cars of 20 horsepower and less than 30 horsepower, and \$10 for cars of 30 horsepower and higher. The registration fee for a dealer covering all his cars is \$10, and the registration fee for a manufacturer is \$100. All renewals must be annual.

Markers and Lights.

The Secretary of State will continue to issue markers for machines registered with him, and the provision is continued in the new law that the letters or figures shall not be less than four inches high and each stroke thereof not less than one-half inch wide. Markers must continue to be carried both front and rear, and in addition the rear lamp showing a red light from the rear and white light at the side must be so arranged as to illuminate the rear number. In the night season one or more white lights shall be displayed on the forward part of the machine.

Every owner who has complied with the old law and who shall register under the new law prior to September 1, 1907, may retain the same registration number and may use his old plates or markers having such registration number thereon.

The new law goes into effect August 26, 1907.

I am informed by the Secretary of State that he will send out in the very near future blanks and circular letters to every automobile owner registered under the old law, giving necessary information for registering machines and obtaining operator's license. He will also enclose in pamphlet form a copy of the new automobile law.

It is very important that these blanks should be properly filled out and promptly forwarded to the Secretary of State. If filed with the Secretary of State before September 1, 1907, the owner

can positively retain his old number and use his old markers. If filed later than September 1, 1907, it is a matter of choice with the Secretary of State, and if someone else secures his registration number there is no redress.

Principal Requirements Under Law.

The certificate of registration which will be furnished by the Secretary of State must be at all times carried upon the automobile, and shall be subject to examination upon demand by any proper officer.

Every automobile while being used or operated shall have displayed in a conspicuous manner, entirely unobscured and securely fastened, a plate or marker on both front or rear. The rear marker must be fastened so as not to swing.

The Secretary of State must furnish all plates or markers at cost price.

An operator's license must be obtained from the Secretary of State. This license will cost \$2 and will continue in force for one year from date of issue unless sooner suspended or revoked for cause.

The operator's license must at all times be carried by the licensee when he is operating an automobile and shall be subject to examination on demand by any proper officer.

The operator must stop his automobile immediately and must also stop his motor or engine immediately if horse or other draft animal shall appear to be frightened or any person in charge shall signal to stop. If traveling in opposite direction, automobile must remain stationary so long as may be reasonable to allow such horse or draft animal to pass; or if traveling in the same direction, the operator shall use reasonable caution in thereafter passing such horse or other draft animal.

No person shall operate an automobile when intoxicated or in a race or on a bet or wager.

Every automobile shall be provided with adequate brakes and with a suitable bell, horn or other signaling device.

During period one hour after sunset to one hour before sunrise must display one or more white lights on forward part of automobile, so placed as to be seen from the front at a distance of two hundred feet.

The rear light must illuminate the rear marker.

If arrested, may tender automobile as bail, and if of sufficient value must be accepted.

Fees under the new law are as follows:

Registering car less than 20 horsepower, \$3.

Registering car 20 horsepower, less than 30 horsepower, \$5.

Registering car 30 horsepower and higher, \$10.

Each dealer's certificate of registration, \$10.

Each manufacturer's certificate of registration, \$100.

For each operator's license, \$2.

The new law will soon go into effect, *viz.*, August 26, 1907, and it is important to comply with its provisions.

Some town officials, smarting under the loss of revenue occasioned by the passage of this law, may be on the alert to apprehend well meaning automobilists before they are acquainted with the provisions of the new law and before they are aware that the new law has gone into effect.

TEXAS AUTO LAW SOMEWHAT FAULTY.

FORT WORTH, TEX., Aug. 17.—Omission of the word "sundown" in the new State automobile law has caused considerable confusion in regard to lights on cars, as, according to the wording of the law, cars have to carry lights all day as well as night. The new State law requires, according to the wording of the certified copies, that lights on the front and rear of the car shall be lighted from "one hour after until one hour before sunrise," thus leaving only two hours in the day when it shall be legal for machines to go without lights.

Had the word "sundown" been placed in the law as evidently intended, it would have been in uniformity with laws in other

States and read "from one hour after sundown until one hour before sunrise."

Another fault which has been found with the law is that the license number which is required does not show whether it is a State license or what it is. In a number of cities a city number is also required, no specification being made except that the number shall be on both front and rear of the machine and be six inches in height. The State specifications are the same, so that it is impossible to tell which is the city and which the State number. A Fort Worth automobilist created considerable surprise when he started out with the machine numbered "5376." It developed later that he had put his city number "76" next to the State number "53," and as both were made of the same material it looked as though there were 5,376 autos in Fort Worth.

The new law makes 18 miles an hour the maximum speed limit in the country and leaves the city to make their own limit. So far there have been no arrests reported either for exceeding the speed limit or for running without a license number.

TIMELY EDITORIAL BY THE BROOKLYN EAGLE.

"For the automobilist who runs amuck anywhere and everywhere no extenuating word can be said—the sooner he is included among the vanishing types the better. However, this statement can be applied to others. The vanishing type should include the village authorities who are crusaders for revenue rather than regulation. They see things through a glass darkly. They see an immediate contribution in the shape of a fine, but they lose sight of the larger returns accruing when the automobilist is driven off by a species of petty blackmail. Quite a crop of little industries diversifies the path of the car, and it supplements resources accordingly. Also, the resources diminish accordingly when the village autocrat has less regard for the speed limit than he has for a chance to victimize invaders. Then there are justices, so called, who make annoyance and inconvenience preliminary to a maximum fine, deferring action that could be taken at once, and compelling attendance, which is more of a response to caprice than to any of the real necessities of the case. This sort of thing may not be as reprehensible as the chauffeur who runs amuck, but it is altogether indefensible and gratuitous. Wherever it is done—or attempted—the right man is not in the right place. One nuisance is a poor substitute for another, to say nothing of other considerations. Automobilists usually have money and few of them try to drive sharp bargains. It is poor policy to repel them by petty plundering and otherwise."

TESTIMONIAL DINNER TO TOM MOORE.

Though he signs himself T. Francis Moore, everybody calls him "Tom" Moore, and his resignation as publicity manager from the staff of Wyckoff, Church & Partridge, the well-known New York City agents of the Stearns, was recognized by a farewell dinner at the Cafe des Beaux Arts, Sixth avenue and Fortieth street, Tuesday evening last. Two scores of well-known figures in the automobile world, including A. W. Church and E. S. Partridge, did honor to the guest of the evening, who received a gold watch and fob as a combination testimonial from the company and his friends present. Of course, there were speeches and also all sorts of things said about the guest of the evening, who has plans of a national character for the near future.

Those present included Duncan Curry, J. H. Gerrie, E. E. Schwarzkopf, L. D. Rockwell, H. T. Clinton, R. G. Kelsey, J. E. Demar, A. N. Jervis, F. E. Spooner, L. R. Smith, W. I. Fickling, W. W. Burke, Harry Burchell, W. H. Horner, James J. Joyce, R. B. Johnston, R. H. Johnston, Fred J. Wagner, Charles J. Dieges, R. W. Howell, N. Lazarnick and Peter Fogarty.

Nothing has proved more deceptive, where registration figures are concerned, than the working of the New Jersey law, and the same thing is naturally true of the laws of a similar tenor enforced in Pennsylvania. New Jersey probably has 10,000 resident autoists, but the registration figures credit it with 30,000.

KNOCKING IN MOTORS: ITS CAUSE AND EFFECT

FROM THE RAMBLER MAGAZINE.

FEW are the drivers of an automobile who have not at some time had experience with what is commonly termed knocking or pounding in the motor. While this is a common occurrence, comparatively few are aware what actually takes place, its cause or probable effect.

When an engine runs irregularly from over-load it is said to labor, and when this condition increases a sharp, metallic sound is heard, like pounding on metal. This is termed the knock. The lesser the number of cylinders, the more liable is this knocking to occur and the more readily will it be felt in the running of the car.

As is well known, the torque or twisting strain on the crankshaft of an internal-combustion motor varies with the several cycles of action.

In the single-cylinder engine we may take first the suction stroke, during which, if the motor is properly constructed in valve dimensions, etc., there should be no load or resistance to the momentum stored in the flywheel. On the succeeding compression stroke there is a rapidly increasing resistance as the compression rises within the cylinder; hence, as the crank passes the center at the end of the suction stroke, the flywheel speed will be reduced to its lowest point.

Immediately following ignition occurs, and when the power stroke begins there is a tendency toward a rapid increase in speed in the flywheel. At the end of the power stroke the exhaust valves are opened, and here again, if the valves are of proper dimension and the muffler does not exert back-pressure, there should be practically no resistance to the momentum of the flywheel.

It will thus be readily seen that the purpose of the flywheel is to regulate speed in rotation of the crankshaft, and to smooth out and overcome the tendency toward varying speeds, and the effective action of the flywheel will be entirely dependent upon its weight and dimensions.

Taking a flywheel of proper design for the engine on which it is used, the variation in speed of rotation should be reduced to a point practically indiscernible. However, under certain adverse conditions the flywheel fails to be adequate and the variation in speed will be readily noticeable.

Premature Ignition a First Cause of Trouble.

One of the first causes for this extreme variation is premature ignition. When this occurs, either through overheating of the engine or too great an advance in the spark, the early ignition causes a quick rise in pressure before the crank passes the center, and the tendency is, therefore, to drive the crank and flywheel backwardly. In fact, as the motor is slowed down by overload, it will very often occur that the flywheel will stop its forward action entirely and run backwardly. This often occurs when a motor is stopped, after continuous running and in heated condition, by cutting off the spark but not entirely closing the throttle. Under this condition the motor's speed slackens until finally the momentum of the flywheel becomes so slight that when ignition occurs prematurely, through heat of the cylinder or a red-hot carbon deposit, the pressure thus prematurely exerted overcomes this momentum and the flywheel will run backwards, sometimes several revolutions.

The most prevalent cause of knocking is improper use of the spark.

Inexperienced operators, and many whose experience is sufficient that it should teach them better, leave the spark advanced when running their car under adverse conditions, such as climbing steep grades or negotiating heavy roads.

The idea in advancing the time of ignition is to so effect firing of the compressed charge that it will be entirely ignited, and the pressure thus rises to its highest point at the instant the crank

crosses the center line. This requires a measurable length of time, which is not dependent on the speed of the motor. Therefore, if the motor be traveling at, say, one thousand revolutions per minute, and the spark is advanced sufficiently far that ignition becomes complete on crossing the center, it will readily be seen that if the spark occurs at the same point in relation to the crank travel with the motor running at, say, five hundred revolutions per minute, the pressure will rise to its maximum point before the crank crosses the center, and will thus be exerted in a backward direction. Consequently, when, through excessive load, the motor speed is reduced without the spark being at the same time proportionately retarded, this condition of preignition is bound to occur. The result is not only the consequent reduction of power, but exerts strains on the motor and the entire mechanism many times in excess of the normal stress of regular service.

Excessive Strain an Effect of Premature Ignition.

The knock before mentioned does not occur until the laboring becomes excessive, and its cause may be readily explained by taking the example of suspending a piece of metal of considerable weight in the air. Thus suspended, strike this a quick blow with a heavy hammer. The metal will swing away from the impact with little or no visible effect. Then take the same piece of metal, securing it against movement, and strike the same blow. The effect will be immediately noticeable, and may result, and probably will, if not the first time, upon repetition of these blows, in bending or breakage.

When the motor is running at reasonable speed and ignition occurs at the proper time, the effect of the sudden rise in pressure on the piston-head is practically the same as that of the blow of the hammer on the suspended weight, and the flywheel traveling with considerable momentum, the pressure is allowed to exert itself gradually on the outwardly moving piston and the wear and strain on the motor is comparatively slight.

Now if, on the other hand, the explosion occurs with the crank practically stationary on the dead center or, as is still worse, with the piston traveling upwardly on the compression stroke, the effect is the same as when the hammer blow was delivered to the immovable mass of metal. The resultant condition is somewhat like the statement of the Yankee who, when asked the old-time question of "What would occur should an irresistible force strike an absolutely immovable mass," scratched his head for a moment and remarked that he did not have time to figure it out, but he reckoned there would be splinters somewhere. If splinters do not occur immediately in the form of a broken crankshaft or bent or broken connecting rod, the damage is bound to exist, though possibly not immediately visible.

Fatigue of Metals Under Violent Stresses.

There is a prevailing expression that metals become fatigued, and it is under such sudden, violent stresses as this that metal-fatigue is caused, and, like the tired man, the fatigue eventually reaches the point of breakdown.

Another disastrous effect lies in the great increase of temperature under these conditions. Temperature of a burning gasoline vapor, at the pressure usually existing in well-constructed motors, runs to 3,000 degrees Fahrenheit and upward. The melting point of the metals of which the cylinders and pistons are constructed is below this point, and if this temperature is maintained for any length of time warping of the metal parts exposed is bound to occur. Metal exposed to heat may warp temporarily, and if cooled gradually may return to its original condition; but if, while thus heated, pressure is exerted upon it the molecules of the metal are liable to set in this warped condition and the deflection becomes permanent. This results in loss of compression

and probably in ruining the cylinders or pistons. A common occurrence when the motor is run for any length of time in this condition is the cracking or blowing in of the face of the piston. However, the most immediate destruction occurs in the bearings both of the main shaft and connecting rods, as when the blow of the explosion occurs the tendency is to drive the piston outwardly, and the above-mentioned bearings act as an anvil and receive nearly all the force of this blow. The connecting-rod bearings naturally receive the greater portion of it, as the weight of piston and connecting rods is comparatively light, while the crankshaft is of sufficient weight that it resists the blow with comparatively little movement, and the connecting-rod bearings are caught between the two opposing forces.

How the Other Working Parts of the Car Are Affected.

Going beyond the motor; as long as the car and motor are running smoothly the stress upon the gears, shafts, chains and differential is very nearly constant, and energy is being furnished by the motor, at a practically uniform rate, just sufficient to overcome the natural load—that is, the frictional resistance in the mechanism and the inertia of the car.

When, however, the engine begins to labor and approaches the stalling point the strains acting upon all parts of the car are intermittent and the loads thrown upon the parts vary greatly, from severe driving strains at the height of the power stroke to slight driving force, or perhaps zero or nearly negative loads, at the end of the compression strokes. While, of course, the parts of the car thus affected are, beyond the motor, not subjected to heat, such strains are still of the fatiguing nature and in course of time result in crystallization or breakdown.

As the primary cause of all this is overload, the first relief therefrom lies naturally in the reduction of the gear.

There is a common tendency among motorists to avoid shifting gears from a higher to a lower setting, and they will, therefore, compel their engine to labor and overheat on grades where they should have long before dropped back to a lower gear.

It is by no means uncommon to see motorists coaxing their car over a grade on the high gear, when, by reducing to the intermediate or even in case of a two-speed transmission to the low, the motor could, by this lightened load, speed up and take the car at a much higher speed than under the labored conditions incident to the high gear. Thus, to gratify a misguided desire to "take the hill on the high," the driver subjects his car not only to excessive but wrecking strains, and at a loss rather than a gain of speed, and often discomfort to his passengers owing to the jerky motion of the car. The careful and experienced operator will take every reasonable precaution to avoid overloading of his motor, and will be amply repaid for his precaution in the long life and smooth running of his car and all its appurtenances.

WHAT THE AUTOMOBILE MEANS TO FRANCE.

It is not to be denied, says *L'Economiste europeen*, that automobiling, which at its debut was purely a Parisian sport, is now becoming the national means of transport. The proof is furnished by the statistics of the direct fiscal contributions of the 26,262 automobiles in use in France in 1906, of which the city of Paris only accounted for 5,058, while French cities of less than 5,000 inhabitants possessed a total of 9,710 machines, that is, 91 per cent. more than Paris. Nor must it be lost to sight, what they bring into the treasury in the form of both direct and indirect taxes. Where the first-named are concerned, the progression since 1899 is as follows: 1899, 90,830 francs; 1900, 156,497 francs; 1901, 381,105 francs; 1902, 635,772 francs; 1903, 934,604 francs; 1904, 1,311,187 francs; 1905, 1,763,792 francs; 1906, 2,263,651 francs. These figures do not include those municipal taxes, such as those of Paris, for example, that are equivalent to the impost levied by the State itself. So far as taxes that automobiling pays indirectly are concerned, such as in duties on gasoline, lubricating oils, grease and the like, it is not too much to say that these are valued at fully five times as much as the direct contributions.

THE AUTOMOBILE CALENDAR. AMERICAN.

Shows and Meetings.

- Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
- Oct. 31-Nov. 7....—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
- Nov. 29-Dec. 6.—Chicago, Casino Garden, Second Annual Auto Parts Show. A. M. Andrews, Secretary, 184 La Salle Street.
- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 14-21.....—St. Louis, Mo., New Coliseum, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
- Dec. 28-Jan. 4....—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.
- April 6-11.....—Buffalo, Convention Hall, Motor Boat and Sportsman's Show. D. H. Lewis, manager.

Races, Hill-Climbs, Etc.

- Sept. 2.....—Wildwood, N. J., Straightaway Race Meet, Motor Club of Wildwood.
- Sept. 2.....—Chicago, Harlem Track, Race Meet under the auspices of the Chicago Automobile Club.
- Sept. 2.....—Bridgeport, Conn., Labor Day Hill Climb, Sport Hill, Bridgeport Automobile Club.
- Sept. 5.....—Chicago, Cedar Lake Economy Run, Chicago Motor Club and Chicago Automobile Trade Ass'n.
- Sept. 7.....—Hartford, Conn., Hill Climb, under the auspices of the Automobile Club of Hartford.
- Sept. 7.....—Philadelphia, Point Breeze Track, Quaker City Motor Club.
- Sept. 7.....—Minneapolis, Minn., State Fair Race Meet of the Minnesota State Automobile Association.
- Sept. 9-10.....—Pittsburg, Pa., Brunot's Island Track, Race Meet, Automobile Club of Pittsburg.
- Sept. 14.....—Jamestown (Va.) Exposition, Aeroplane Contest for "Scientific American" Prize.
- Sept. 14.....—Albany, N. Y., 95-mile Road Race, under the auspices of the Albany Automobile Club.
- Sept. 20.....—Milwaukee, Wis., State Fair Grounds Track, Race Meet, Milwaukee Automobile Club and Milwaukee Dealers' Association.
- Oct. 21.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

Motor Boat Races.

- Aug. 22.....—New York to Jamestown (Va.), Annual Cruise, American Power Boat Association.
- Sept. 2-6.....—Jamestown (Va.) Exposition Motor Boat Races.

FOREIGN.

Shows.

- Aug. 1-Sept. 30.—Holland, Amsterdam, International Exhibition of Motors and Machines, Palace of Industry.
- Sept. 28-Oct. 7.—Denmark, Copenhagen International Automobile Show.
- Nov. 11-23.....—London, Olympia Motor Show.
- Nov. 12-Dec. 1.—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
- Jan. 18-Feb. 2.—Turin, Italy, Fifth International Automobile Exposition. Palace of Fine Arts, Valentino Park, Automobile Club of Turin.

Races, Hill-Climbs, Etc.

- Aug. 23.....—Belgium, Ostend Motor Boat Meeting.
- Aug. 11-29.....—France, Coupe de Auvergne.
- Sept. 1-2.....—Italy, Brescia Circuit, Florio Cup. A. C. of Italy.
- Sept. 15.....—Austria, Semmering Hill Climb, Austrian Automobile Club.
- Sept. 15.....—France, Chateau-Thierry Hill Climb.
- Oct. 1-15.....—Paris, Electric Vehicle Competition, Automobile Club of France.
- Oct. 20.....—France, Gallon Hill Climb.
- Nov. 1-15.....—France, Volturette Contest near Paris.
- May 16, 1908....—Sicily, Targa Florio, Automobile Club of Italy.
- July 14, 1908....—Paris to London, Aerial Race.

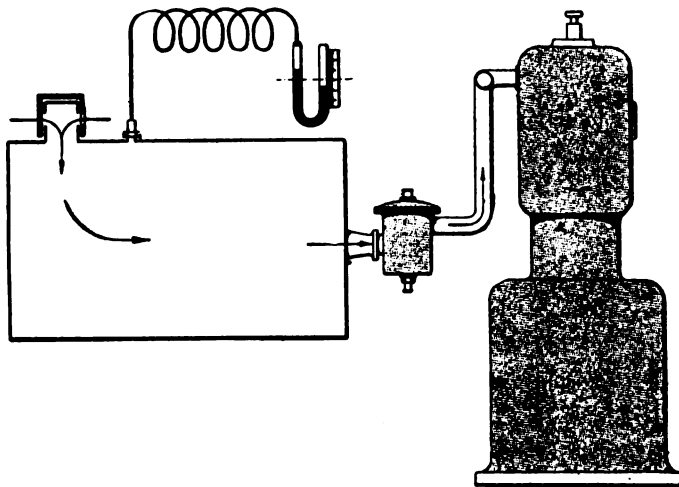
INFLUENCE OF ALTITUDE ON MOTOR POWER*

It is a matter of common knowledge that as the atmospheric pressure decreases, and in consequence the mass of the volumetric unit of air diminishes, the power of an internal combustion motor for a given piston speed also falls off. It is interesting to observe in what ratio this takes place with increasing altitudes. The problem is particularly interesting to those who are devoting attention to the subject of aviation, whether as advocates of the dirigible balloon, or the aeroplane, even though the latter rarely get above the level of the earth.

Several authors have estimated that the power of a motor should be proportional to the mass of the mixture aspired in a certain unit of time, assuming a constant angular velocity, and to render it proportional to the density of the air, it may be joined with the altitude in the following equation:

$$\frac{D}{D_0} = \frac{1}{e^{DA}}$$

In which D corresponds to the altitude A; D₀ is a degree of density corresponding to the altitude 0, and e the base of the



APPARATUS AS ARRANGED FOR CARRYING OUT EXPERIMENTS.

Naperien logarithim. The result is then:

$$\frac{P}{P_0} = \frac{1}{e^{DA}}$$

or:

$$\log \frac{P}{P_0} = -\log e^{DA} = 0.0005435A$$

which demonstrates that the altitude increasing in an arithmetical progression, the power will decrease in a geometrical progression, so that at 1,000 meters the result would be $\frac{P}{P_0} = 0.88$.

Unfortunately, this theory is inexact, because it does not take into account the diminution in compression which will cause a rapid falling off in the output of the motor. On the other hand, the depression produces an enrichment of the mixture, which is not a negligible factor, as at 1,000 meters ($p = 670$ mm. approximately), and there will be necessary an additional volume of air of about 0.08. This enrichment of the mixture partially compensates for the loss in compression.

The variations in the amount of power produced have been ascertained experimentally by reproducing artificially different variations in pressure to correspond to various altitudes, and the following results have been obtained with a four-cylinder, four-cycle motor, the bore and stroke of which measure 100 by

120 mm., respectively, with a pressure of 760 mm. and an output of 33 horsepower at 1,350 r. p. m.

Altitude in Meters.	Pressure.	$\frac{P}{P_0}$	Effective Horsepower.
—	—	—	—
0	760	1,00	33
1,000	670	0,84	28
2,000	590	0,72	24
3,000	522	0,60	20
4,000	462	0,50	16,5
		$\frac{P}{P_0}$	P

The apparatus employed in the conduct of the experiments was very simple and its arrangement is illustrated by the accompanying line sketch. The motor was direct-connected to an electric brake, and the charge was modified in order to always a constant angular velocity of 1,350 r. p. m. The automatic carbureter was adjusted so as to permit the motor to develop its full rated output of 33 horsepower at the above speed, at atmospheric pressure, and was not touched throughout the course of the experiments. Its air supply was taken through a tank of relatively large dimensions (120 liters) and provided with a cock to permit the operator to vary the pressure in its interior at will, the latter being recorded on a mercurial manometer mounted on the end of a spiral tube communicating with the tank.

As a beginning the air cock is opened, and after regulating the rheostat their pressure and the power may be read directly and easily converted into terms of altitude and effective output. We have neglected the error of excess back pressure due to the fact that the exhaust is at atmospheric pressure regardless of the variations at the intake side of the motor, as that pressure is, to put it in another way, of a secondary order, and experience shows that it is counteracted by that of the muffler. Naturally it is not possible with the aid of such crude apparatus to also study the effect of the low temperature reigning at such high altitudes on the homogeneity of the mixture. But in practice this great cold would simply necessitate a correspondingly great preheating of the carbureter. In short, the drop in the power follows rapidly that of the density of the mixture, as our reasoning has indicated *à priori*. On the other hand, the speed of a dirigible balloon should not be diminished overmuch on that account, as the resistance of the air diminishes with its density. In any case at the altitude assumed, i. e., 1,000 meters, the actual output of the motor is very slightly less than that calculated at a normal atmospheric density, and the speed of a balloon should not be appreciably affected.

While the question of decreasing power with increasing altitude naturally comes to the front most prominently in connection with the problem of aviation, particularly as concerned with the dirigible balloon at the moment, owing to the heights the latter may easily reach, it must be borne in mind that there are also numerous places on *terra firma* where automobiles are used that may present very similar conditions. For instance, much of the western part of the United States represents an altitude of several thousand feet above sea-level, and the same is true of almost the entire habitable portion of the great plateau of Mexico, which is of an average height of considerably more than 1,000 meters above the sea. Then there the heights of India and other eastern countries where the automobile is very rapidly being introduced, so that it may readily be appreciated that the question of a loss of power as the air becomes rarer is one of considerable importance to autoists in such situations. Now that the subject has been taken up as a proper matter for scientific research, doubtless further investigations will be made, with interesting results.

*Translation from *La Technique Automobile*, Paris, by Charles B. Hayward.

LETTERS INTERESTING AND INSTRUCTIVE

CAUSE OF A MYSTERIOUS LOSS OF POWER.

Editor THE AUTOMOBILE:

[863.]—We are puzzled over the running of a little Oldsmobile curve-dash runabout of the 1906 type, which we have used about 5,000 miles. The machine was never damaged, and has given satisfaction until about three weeks ago, when it lost speed, and whereas it formerly ran about 25 miles an hour on the level, it now does not get above 15, and the throttle seems to have no effect after it is depressed past one-third of its travel.

The machine has had plenty of the best oil, the coil adjusted to every position, also the carbureter. Batteries have been renewed time and again and tested, both as a whole and separately. The machine also has recently been rewired, new secondary cable being used, fearing that this might have something to do with it. The valves have been newly ground into a nice gray bearing, and the piston rings do not leak compression. The engine is not tight in any of its parts, and turns over easily by hand, except with compression on, when it cannot be turned over without danger of breaking the starting chain, showing that the compression is normal. All kinds of spark plugs have been tried, but with no effect.

The inlet valve closes about five inches on the rim of the flywheel too late, according to the instructions of the manufacturer, but opens about right. The exhaust valve both opens and closes on time. The axles are in perfect alignment and well oiled, and the differential is in good condition and well oiled. Please give us something new to try, as this has puzzled us more than anything we have tackled in our five years' experience on all kinds of cars.

Winchester, Va.

J. FRANK EDDY & BROTHER.

Your troubles with the little Oldsmobile strike a responsive chord, as the writer put in the better part of a summer trying to solve a similar case last year. As you say the compression is normal, it is evident that the apparent late closing of the inlet valve has no bad effect, and you will find that the makers are very frank in their instruction book, stating that no pretensions are made to accuracy in the valve adjustment and that a few inches one way or the other was of no particular moment. Moreover, the distance of five inches on the flywheel periphery when translated into movement at the valve is practically a negligible factor in this case. The difference may probably be traced to the cam which has worn one-sided, thus giving the proper opening, but late closing. However, it is evident that the valve must be closing at about the right time, as otherwise the compression would be very poor, its failure to close allowing the escape of a considerable portion of the mixture. Judging both from the experience above referred to and that of others which has been of almost an identical nature, we feel pretty certain that you will be able to trace the trouble to the carbureter, but whether you will be able to remedy it without replacing the carbureter altogether is another matter. The difficulty appears to lie in the working of the auxiliary air inlet, and its failure to open as the speed of the motor increases accounts for that most exasperating of annoyances, the failure of the engine to pick up as the throttle is opened. Note the position of the auxiliary valve and its spring, the tension of which is controlled by a vertical screw protruding through the cover of the mixing chamber. Then take them down and see if dirt or other foreign matter has entered to prevent the movement of the diaphragm, or if the spring has become dead, allowing the valve to stick in one position. The effect is to cause the mixture to become entirely too rich when the throttle is opened, so that after a certain point the latter either has no effect or actually causes the engine to slow down. Several experts "sat" on the case we refer to on numerous occasions and each time it would look as if the trouble had been cured, but it never stayed cured for more than a day or so at a time. In all probability the replacement of the inlet cam on your machine and attention to the carbureter as above outlined will be found sufficient to cure it. At least it will give you what you ask for, *i. e.*, a new line upon which to branch out and which should probably result in your effecting a complete cure of the ailment without any further extended sessions of tinkering such as you refer to.

TWO-CYCLE MOTOR DIMENSIONS WANTED.

Editor THE AUTOMOBILE:

[864.]—Being a constant reader of "The Automobile," and valuing the Letters Interesting and Instructive as I do, I would like to ask a few questions on my own account.

In a two-cycle engine of the three-port type, the cylinder dimensions being 5 by 5 inches, what should the dimensions of the ports be; what should the compression space be, and what length of connecting rod and piston should be used?

C. A. BROWN.

Reading, Mich.

Make the compression space thirty per cent. of the stroke, which in this case would be 1 1-2 inches. If a higher compression be desired, this may be shaded somewhat, though it is unusual to make it less than twenty-five per cent. Have the exhaust port open one inch from the end of the stroke or lower dead center of the crank and the inlet port 11-16 from the end of the stroke. This gives a drop of 5-16 inch between the two and it is none too much; in fact, it might be increased slightly to advantage, as it is pretty near the minimum. The ports themselves should not be less than 3 3-4 and 3 1-4 inches long, respectively, though it is not unusual to find engines of this type in which the ports are made to extend almost around the circumference of the cylinder. The bottom of the ports should coincide with the top of the piston when the latter is at the lower end of its stroke. The piston can be made six inches long, though it is permissible to make it as long as possible consistent with the remainder of the design, *i. e.*, that of interference with the connecting rod, as a long piston gives a better bearing in the cylinder. In automobile motor design the length of the connecting rod is usually based on that of the stroke and varies with different makers, though 1.8 to 2 is a usual proportion. This would give nine inches in the former and ten inches in the latter case.

SOME COMMON REASONS FOR DEAD BATTERIES.

Editor THE AUTOMOBILE:

[865.]—Won't you kindly tell us something about volt and ammeters, particularly to pocket kind usually used by autoists, with the most implicit faith as to their accuracy and reliability, in telling how much available capacity remains in an ordinary dry cell?

First, as to voltmeters. I have a distinct impression that as measures of voltage (pressure) they can be absolutely accurate, and that when contact is made with a dry cell, owing to the resistance in the meter, no appreciable damage is done to the dry cell, even if contact is held for an abnormally long time. Am I correct in this impression?

Second, as to amperemeters. Isn't the prevailing idea that such meters accurately measure the amount of available current still procurable from any dry cell very far from the truth? Isn't it a fact that the amperemeter simply measures the amount of flow as being such as would give, say, fifteen amperes for one hour or one ampere for fifteen hours without in any way indicating how long such flow will continue?

Isn't it also true that the ammeter short-circuits the battery with so slight a resistance that it damages the battery very rapidly if kept in contact?

If this latter is true, isn't it good practice to buy fresh dry cells of a good make and put them in service without testing them with the ammeter and, as soon as they begin to show weakness, throw them away and replace with new, and never to use an ammeter excepting if caught on the road with a lot of old cells to differentiate between those that will still give off some current and those that are totally dead?

Should some manufacturer of dry cells put one on the market with the terminals sealed, so that it could not be wired up or tested without breaking the seals, he would find me a customer, as I certainly would not buy a bottle of whisky that did not have a cork in it, and when buying dry cells what I fear most is not that they will be old, but they will have been damaged by repeated tests by ammeters in the hands of people who believe that the most valuable thing in a cell is its ability to show large amperage on a pocket meter, or that the cells may have been damaged by being carelessly short-circuited.

For instance, about a month ago I saw quite a large stock of dry

cells stored on a shelf waiting to be sold, and on top of them a lot of wire electric light cages. One can imagine the possible condition of such cells.

And again, last week I saw a machinist take off his jumper, which was very damp, if not actually wet with perspiration, and throw it on top of a lot of dry cells. His day's work was done, but the jumper and dry cells probably worked all night.

Such information as you give us in reply to the above will, I believe, be valuable to others as well as to
New York City.

"GASOLENE SAL."

1. Your impression with regard to the voltmeter is correct. The coil in such an instrument is wound to a comparatively high resistance, and the potential of the dry cell being very low, it is unable to force more than an infinitesimal amount of current through the meter and thus connection with the latter will seldom do any harm, even though continued for some time. It is on this account that the makers recommend that nothing but a voltmeter be used in testing storage cells.

2. The popular impression that an ammeter records the amount of current still available in a dry cell at the time of testing is altogether erroneous. As you state, the reading is merely that of the momentary flow of current and is no indication whatever of how long the cell will continue to produce that amount of current. The use of the ammeter is very detrimental to the dry cell and dangerous with an accumulator, as the coil of the instrument has a very low resistance owing to the fact that it is necessary that the entire current output to be measured should pass through it. Hence, it is equivalent to short-circuiting the cells by dropping a screwdriver across the terminals or in some similar fashion, seldom intended, to hold the ammeter on them. As is to be implied from your further statement, it is very probable that the average user damages the cells far more in testing them than does the service to which they are subjected, and this is particularly true of the salesmen in the supply store. It is good practice never to use an ammeter unless there is some doubt as to whether the cells are really dead or not, and there is no other means, such as a voltmeter, to test them with. Of course, a voltage reading is not as accurate an indication of the state of a dry cell as a current test, but it suffices to show whether the cell is active or not. The instances of the treatment you speak of are nothing out of the ordinary and doubtless serve to account for more or less of the dissatisfaction arising from the use of dry cells, while your suggestion as to sealing the terminals at the factory and selling the cells in that condition is a valuable one that might be adopted with profit to themselves and the users by the makers.

LIGHT ON THE CHARACTERISTICS OF ACETONE.

Editor THE AUTOMOBILE:

[863.]—I have been curious to find out ever since the adoption of the small portable, acetylene gas tanks for auto lighting just how the latter were made to hold sufficient gas within such a very small compass, as I notice they seem to have enough to burn quite a long time. Recently I was informed that the acetylene gas is combined with acetone in the tank, the latter material acting as a solvent, and permitting the tank to hold many times the quantity of gas it would have the capacity for without this addition. It certainly appears to be a very anomalous state of affairs to be able to put five or six times as much of a substance in a given space by the addition of another substance which also occupies space itself. Ordinarily, if it is desired to fill a cylinder with a capacity of two cubic feet, for instance, with oxygen or any other gas, the only way to make it hold more than two cubic feet is to compress it. But if a given quantity of some other gas be put into the same tank it will no longer be possible to put as much oxygen in it as formerly.

Then, what is acetone? This is the question I have asked on several occasions since learning of its use in these small tanks, but have never been able to learn anything satisfactory or definite concerning it. I ask the question merely out of a desire to have the knowledge, but have no doubt there are many others in my situation who would be interested to learn something about it.

Denver, Col.

CURIOUS.

Acetone, also known as pyroacetic spirit, is produced by the dry distillation of acetate of lime—a product made from lime

acted upon by pyroligneous acid. Its symbol is $(CH_3)_2CO$, and it is composed of three parts carbon, six of hydrogen and one of oxygen. It is also obtained by the destructive distillation of citric acid, starch, sugar, or gum, with quicklime. It is a volatile liquid with a specific gravity of 0.8 boils at 133 F, and has the peculiar property of acting as an absorbent of acetylene gas under pressure to the extent of several times its own volume.

WHAT EFFECT HAS ALTITUDE ON HORSEPOWER?

Editor THE AUTOMOBILE:

[867.]—This city and its environs, as well as the greater part of what is known as the great plateau of Mexico, are situated at an altitude ranging from 8,000 to 10,000 feet above the sea level. Recently I have had a discussion with a friend here regarding the effect this would have on the internal combustion motor used in gasoline automobiles, as the latter are dependent for their functioning upon the atmospheric pressure. Theoretically, such an engine built at sea level and adjusted to run under the atmospheric conditions prevailing at such a level should require a great deal more air in order to develop the same amount of power when brought to this altitude owing to the greater rarity of the atmosphere. This is my contention. I do not know of any automobiles that are manufactured in places having a high altitude and do not see how the makers could adjust their engines to run under such conditions with knowing the nature of the latter. My friend is of the opinion that all this theory business is what you Americans call "rot"—scientific rot, he calls it—and says that no difference is necessary here for running an automobile engine at its full power as compared with any place in the United States. I am quite certain that unless special adjustments be made to compensate for the relative difference in atmospheric density, an automobile engine brought here directly from a low situation and adjusted to run in the latter will not develop its full power. Am I not right? Your opinion in the matter will doubtless enable me to show my automobile-wise friend that he does not know it all.
Mexico City, Mex. EMILIO GONZALEZ.

Your inquiry is very opportune, as although it has been well known that altitude has a very appreciable effect on the horsepower of an internal combustion motor, there has been no definite data to hand previously. However, in the present issue, you will find a résumé of the experiments made along this line by a French investigator, who produced pressures corresponding to various altitudes from 1,000 to 4,000 meters, artificially. Of course, the apparatus employed was admittedly crude, and probably the results attained are not as accurate as they might be made when subjected to closer investigation, taking into account every possible factor that could have any bearing on the outcome. But they show, nevertheless, that altitude has a great effect on the horsepower of a motor, the decrease being practically fifty per cent. at an elevation of 4,000 meters.

EFFECT OF MIXING ALCOHOL AND GASOLINE.

Editor THE AUTOMOBILE:

[868.]—Kindly tell me through your columns the effect of mixing alcohol and gasoline, its proportions, effects, desirability and dangers, if any.

SUBSCRIBER A. E.

New York City.

Practically speaking, alcohol and gasoline will not mix. That is, one cannot be dumped into the other and a mixture of both result. It has been found by experiment that a mixture of 50 to 60 per cent. of alcohol to gasoline may be made, but six to eight days are required to combine the two liquids, this also involving a process not possible outside of a laboratory. As to its effect as a motor fuel we have no data. There is no danger involved.

FINDS THE MAKER'S ADJUSTMENTS CORRECT.

Editor THE AUTOMOBILE:

[869.]—In the Issue of August 8 of "The Automobile" I note your answer to my question, No. 850, and beg to state that I have received satisfactory results from lowering the level of the gasoline and enlarging the size of the jet, as originally arranged by the manufacturer of the car. As to my experience in repair shops, I might say that the manufacturer really adjusts the carburetor to the engine to give the best results. Kindly publish this in answer to my inquiry No. 850, as it may be of benefit to others.

Greenwich, Conn.

JOHN McWILLIAMS.



FRANKLIN MODEL D, FOUR-CYLINDER TOURING CAR.

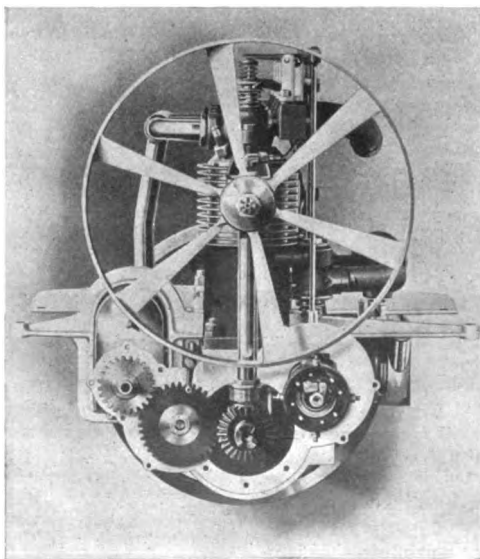
WHILE the Franklin models for 1908 probably embody more distinctive new features than have come to light on any of the new models thus far uncovered, their makers, the H. H. Franklin Manufacturing Company, Syracuse, N. Y., lay particular stress in their announcement on the fact that the new Franklin has more power. Through refinement, perfection in construction and a slight increase in size, the motor formerly rated at 20 horsepower has been constructed to give an actual output of 28 horsepower on the brake, and of the factors leading up to this result the increase in size has doubtless had the least influence. While still retaining the basic principles that have always distinguished the Franklin motor, its designers, through a process of evolution, have succeeded in bringing out something entirely new, and something that is, moreover, in direct accord with engineering principles calculated to produce the very highest efficiency in an internal combustion motor.

In place of the former cylinder construction, a dome-shaped head has been substituted, this semi-spherical form being considered ideal for the internal combustion engine, for the reason that a sphere exposes the least surface for any particular volume—in other words, a minimum amount of surface for a maximum volume—and thus there is less of the interior of the cylinder exposed to the direct heat of the exploded charge, and the efficiency of the engine is increased. A further advantage is obtained in that the fresh charge may be introduced directly into the cylinder, and thus be kept at a much lower temperature than is otherwise the case. To accomplish this, the intake and exhaust valves have been constructed with a common center and are made concentric, thus permitting of the utilization of a greater valve area, and making possible the induction and expulsion of larger quantities of gas than through the former type of separately constructed valves, which limited their size to one-half that which can be secured by this new method of construction. The horsepower was consequently restricted, as the limitations of the valves made it impossible to secure the highest degree of efficiency available from a given size of cylinder, while this construction tends to bring about this long-sought result. It

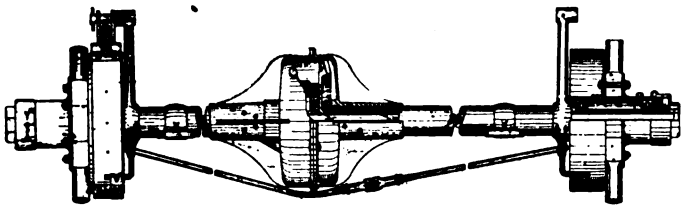
also adds to the cooling ability of the motor by insulating the exhaust valve from the cylinder, the burnt gases being discharged through the central valve, while the fresh charge is inspired through the large intake valve surrounding the exhaust.

The method of valve operation employed on the 1907 models has, however, been retained, the rods being actuated through the medium of a set of hyperbolic-shaped cams on the single camshaft. The design is such that the movement of the valve lifter has been reduced to a minimum and with the aid of the perfected shape of the cam this otherwise more or less noisy part of the motor has been effectually silenced. Nor has any change whatever been made in the design or construction of the auxiliary exhaust system, which has long been a distinctive characteristic of the Franklin, though, as a result of extensive experimenting with the aid of a Schulze manograph, it has been found that the back pressure upon the piston has been reduced to a maximum of two pounds through the use of the auxiliary exhaust. The Franklin designers were always confident that this reduction was a substantial one, but it was not until the establishment of the laboratory at the Franklin plant that they were able to verify it, or state the amount definitely.

Another new feature of the Franklin motor, the origin of which, however, dates back to several months ago, is the use of oil baffles over the open end of each cylinder, and through which the connecting rod operates in a transverse slot. This compels the splashing of the lubricant in the crankcase exactly where it is most needed—the working side of the piston—and likewise prevents its being thrown about indiscriminately on the working parts, thus giving more uniform and efficient lubrication with the same quantity of oil as formerly employed. In planning the motors of the 1908 models, considerable experimenting was carried out in order to ascertain the heat-conducting value of various different metals, with the result that phosphor bronze of a high elastic limit is found to be very much superior to other metals or alloys for this purpose. In consequence, it has been decided to cast the cylinders of the 28-horsepower Type D, plain, and equip them subsequently with flanges



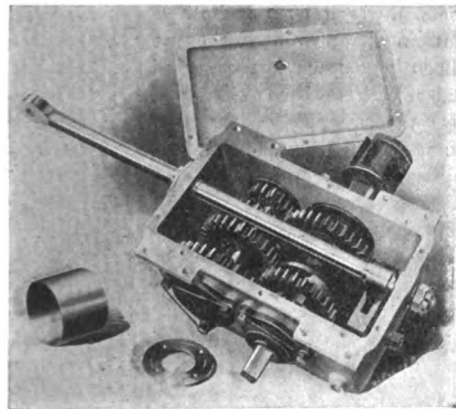
FRONT VIEW OF MOTOR SHOWING GEARS.



REAR AXLE UNIT OF FRANKLIN MODEL D.

made of this material, shrunk on by a process which causes them to bind tighter as the cylinder becomes heated, thus increasing their radiating capacity. The cylinders are not uniformly equipped in this respect, but the number of flanges is varied according to the position of the cylinder as regards the cooling fan. In accordance with this plan, the cylinder receiving the smallest volume of cooling air from the fan is provided with largest number of flanges, the placing of the latter being so calculated that the temperature of each cylinder will remain uniform under load. The cooling fans, both front and rear, have been so designed and so arranged as to increase their cooling power to the maximum for their size, with a minimum expenditure of energy to drive them, the forward fan now being gear-driven, while the rear one, embodied in the flywheel, serves to cool the engine base.

There are numerous other points of detailed refinement that are of interest as showing, for one thing, the extent of the study and the painstaking attention to detail that the designers have lavished on the car in the search for improvement. Thus a new intake manifold has been evolved; it is formed of brass tube, with the connections spun in, and so constructed as to be much lighter than that heretofore used, besides which it renders air-leaks impossible. Specially treated nickel-steel with a tensile strength of 120,000 pounds to the square inch has been adopted as the material for the crankshaft,



NEW FRANKLIN SELECTIVE GEAR SET.

while the connecting rods are also made of special carbon steel. The policy of subjecting every lot of material to thorough laboratory tests before acceptance has been adopted to a far greater extent than obtained previously, and special effort will be made in this direction from now on.

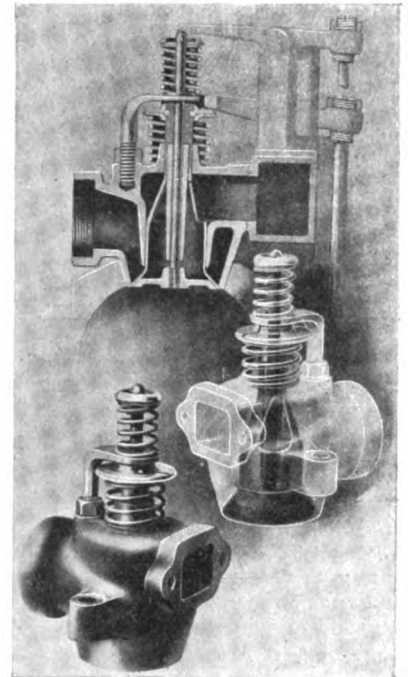
Various changes have been made in the design of the carbureter of the Type D car, including improvements in the jet, float and shape of the mixing chamber, the last-named now being in the form of a Venturi tube, thus securing the maximum effect from the velocity of the air going by the jet. The latter is of the multiple type, and is shaped somewhat similar to the chandelier, allowing the air to mix more thoroughly with the gasoline spray as it leaves the nozzle. A regulation Longuemare type of float is employed, this being designed so that the float level may be readily changed by turning two screws in the float-valve stem, and is noted for its stability on rough roads. Warm air is transmitted to the carbureter by a new method consisting of a heat collector encircling the exhaust pipe, and which conveys the heat thus accumulated through a pipe running around beneath the engine base.

Not the least important change in the new Franklin is to be found in the ignition, and here the chief addition has been the adoption of a Bosch high-tension magneto as one side of a duplicate system of ignition. For the other side, the regulation high-

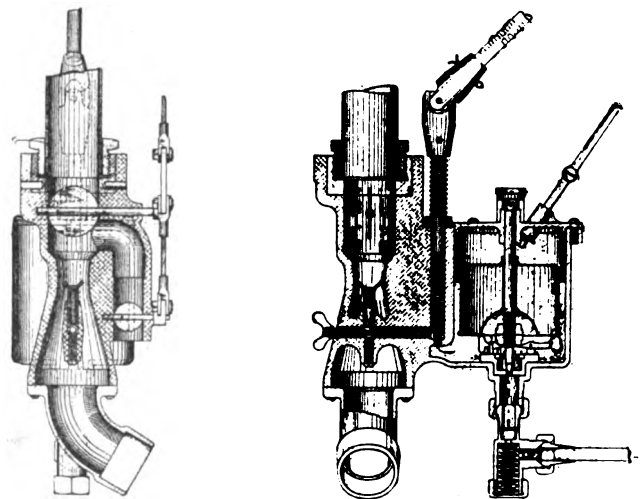
tension accumulator and coil outfit has been retained, the timer, however, being of special construction exclusive to these makers, and on which patents have recently been granted. It is of the roller contact type, but the contact blocks and rollers have been made from chrome nickel-steel and the pins from Tungsten drill rod, all of which are so shaped and hardened that little or no wear ensues from long service, and it has consequently been found possible to obviate any provision for adjustment.

The essential of lubrication is taken care of by a gear-driven oiler, instead of the belt drive formerly used and which is now bolted directly to the engine, thus making its operation much more positive and uniform than was possible with a belt drive. For the greater part, the lubrication system remains unchanged, but detailed improvements have been carried out as the result of past years' experience, so that the makers now feel confident that it represents as close an approach as possible to being trouble-proof.

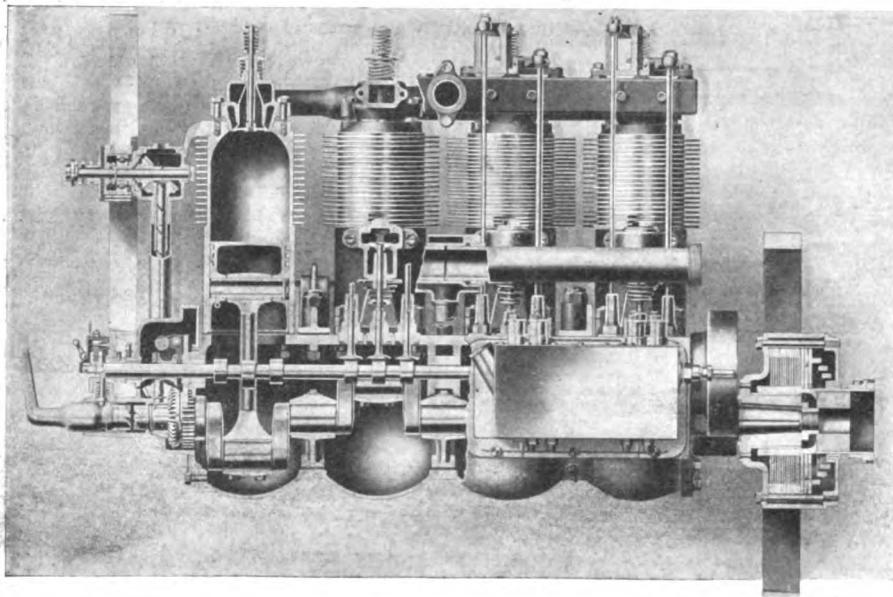
Where the transmission is concerned, the same style of clutch as employed in the previous model has been retained, its operation proving so satisfactory that no change whatever has been made in it. It is of the multiple-disk type, phosphor bronze and steel disks alternating, these two materials being found to give a maximum coefficient of friction without any objectionable sticking qualities. Running in oil, as it does, such a clutch is not only very durable, but extremely easy in operation and free from trouble. The chief change to be found in the transmission is in the shape of an entirely new gear-set, which is of the selective type and is characterized by a simple and effective method of shifting that eliminates the familiar H sector for the lever. Whenever the lever is brought to a vertical position it is automatically set into the neutral position by means of a spring tension. To go into first or low, from this, it is only



VIEWS OF CONCENTRIC VALVES.



END AND SIDE VIEWS OF FRANKLIN CARBURETER.



SECTIONAL VIEW EXHAUST SIDE OF FRANKLIN MOTOR.

necessary to slightly press outward on the lever and back. For reverse, the operation is similar, except that the lever is pushed forward to go into mesh instead of being pulled back. For intermediate, the lever is pressed inward slightly and pushed forward, and for the high-speed or direct drive, pulled back. The gear-lock and lever are integral, operating through a single pawl on the change gear-shaft by means of two teeth cut on one segment forming part of the trunnion. For each change, the spring tension is such as to bring the lever into neutral when shifting toward it, thus facilitating the operation of gear-changing. A new universal block joint has been added in the drive, which by reason of its design and construction is such as to minimize wear and prevent any lost motion, and a new dust-proof oiler is also a feature of the driving shaft.

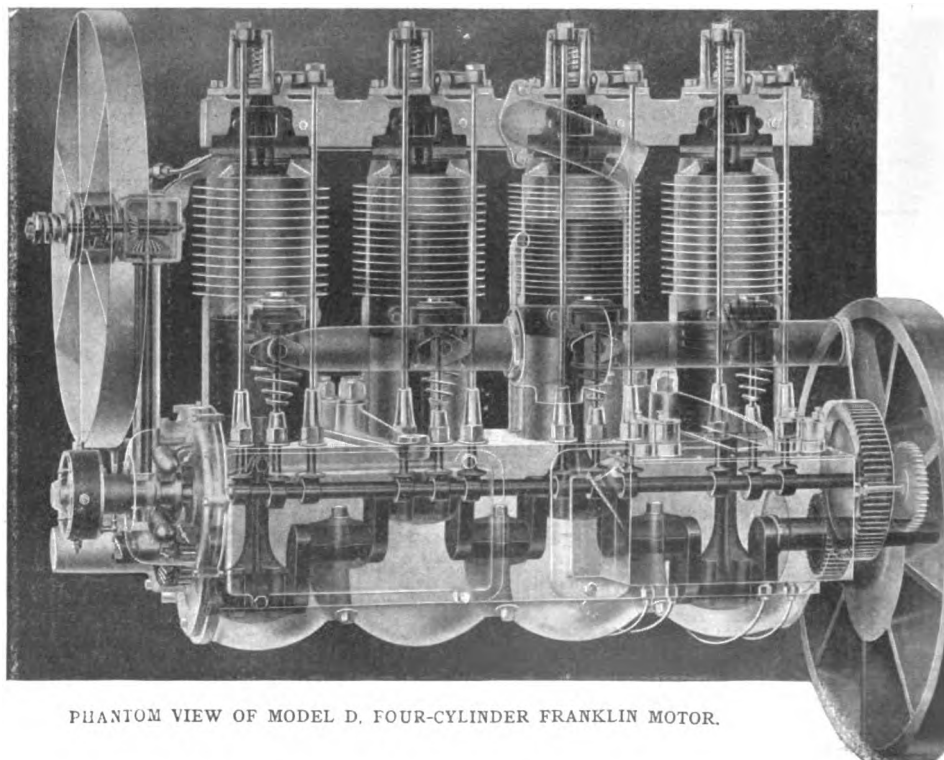
The great amount of attention that has been devoted to the selection of materials for other parts of the car is also visible here, annular ball-bearings now being used throughout the gear-set, as well as on the rear wheels and in the differential, while ball bearings and a ball-bearing thrust are also employed on the gear-driven cooling fan. The motor is distinguished by the use of special die-cast alloy bearings made in accordance with a process of which the H. H. Franklin Manufacturing Company is the owner. The steering knuckles are mounted on adjustable ball-bearings inclosed in dust-proof cases. The connecting rods and joints of the steering gear, which are of hardened nickel-steel, have also been made adjustable. The entire differential has been constructed of hardened steel, making possible a reduction in its weight and increasing its wearing qualities. In its present form of construction, the compensating gear-plate has been eliminated, allowing free access of the oil contained in the dust-tight case to all the pinions. That no possible detail which would tend to increase the comfort of the user or the service rendered by the car has been overlooked is apparent in every feature. An instance of this is to be found in the provision of a new type of starting crank arrangement, which, in addition to obviating the risk from back-firing, also prevents the crank from striking the hood when the latter is raised.

The seamless steel tubular axles with spring-chair, brake-carriers and axle spindles brazed

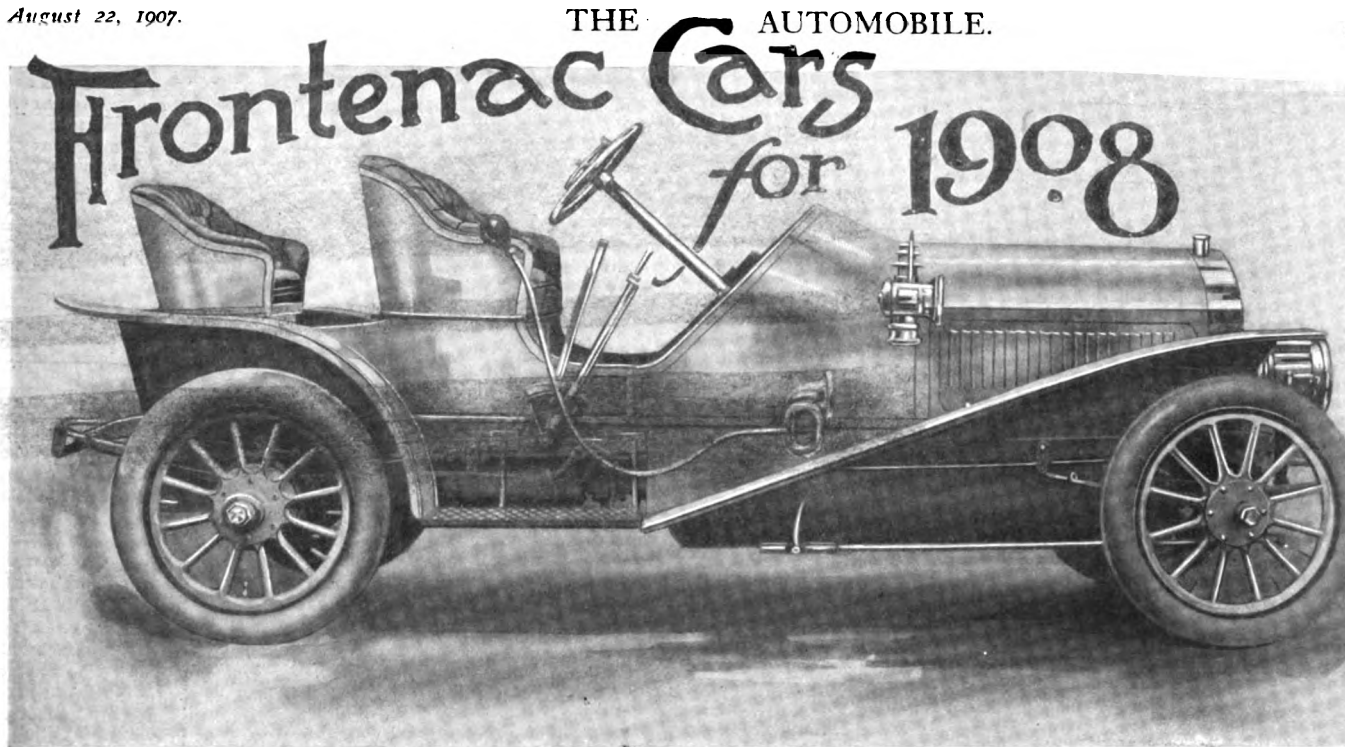
on, which have been a Franklin feature for some time, have been retained intact, but instead of brazing, the differential housing is now driven on and riveted, thus making it possible to subject the entire axle to special heat-treatment without affecting the differential case. In the hub of each rear wheel is a small concentric reservoir backed by flanging washers, making the hubs dust and water-proof. An increased amount of braking surface has been provided, particularly in the case of the transmission brake, which has been made extra large in order to insure freedom from overheating. The Raymond contracting type of brakes is used, and are prevented from rattling by means of a spring device which holds them firmly in a suspended position when not in use. All the brakes are faced with a special non-metallic lining. In view of the increased power of the car, the tires are of a larger size than formerly, Type D now having 34 by 3 1-2 inch front and 34 by 4 inch rear, which are said to be the largest in current use for the

weight of the car, which provides freedom from tire trouble.

The frame is of the special Franklin construction that has always characterized this car, being made of oak sills and carried on 40-inch full-elliptic springs, front and rear. The front mud-guards have been stiffened to prevent undue vibration, and the running boards have been lowered 1 1-2 inches. In spite of the increase of 40 per cent. in the power of the motor, the total weight of the car has been kept down to the same limit as in the 1907 model by a careful selection of materials, which constitutes a further guarantee that the tire bills on the new car will still be kept down to the same low level as has always characterized the Franklin in this important respect. Taken all in all, the new car is a typical Franklin product—the result of long study and close application to the evolution of a system which has proved unusually successful, as is evident from the great number of these cars in daily use all over the country. It may well be termed the evolution of an idea, as the Franklin cars have all been built round the principle of air-cooling, of which the auxiliary exhaust is the mainstay.



PHANTOM VIEW OF MODEL D, FOUR-CYLINDER FRANKLIN MOTOR.



FRONTENAC 40-45-HORSEPOWER, THREE-PASSENGER SEMI-RACER, WITH FOLDING REAR SEAT.

WITH every possible facility for automobile work, as the result of many years' manufacturing in other lines and the consequent establishment of a large and well-equipped plant, it may appear strange at first sight that the builders of the Frontenac car, the Abendroth & Root Manufacturing Company, Newburgh, N. Y., did not enter the market on a large scale immediately upon coming to the decision to enter the ranks of automobile manufacturers. While this company already had the solid groundwork of experience, capital and equipment in other lines, it was lacking at first in that of experience where the automobile was concerned, and has, in consequence, made haste slowly, rather than stand sponsor for an immature product or one that should not represent the closest possible approach to mechanical perfection. With every facility at hand, the Frontenac has been developed slowly and under ideal conditions, which even extend to the roads on which the finished cars are tested out, as it has been truly said of the highways of the Hudson River valley that they are two kinds—up hill and down. Every device which has come to represent a component of the Frontenac has had to go through the process of being tested out on these roads before meeting with the approval necessary to incorporate it as a feature of the car, and the finished cars themselves all get their last and most thorough trying out over these same up-and-down highways before reaching the hands of the purchaser—a process that means future and lasting satisfaction to the latter, as well as to the builder of the car.

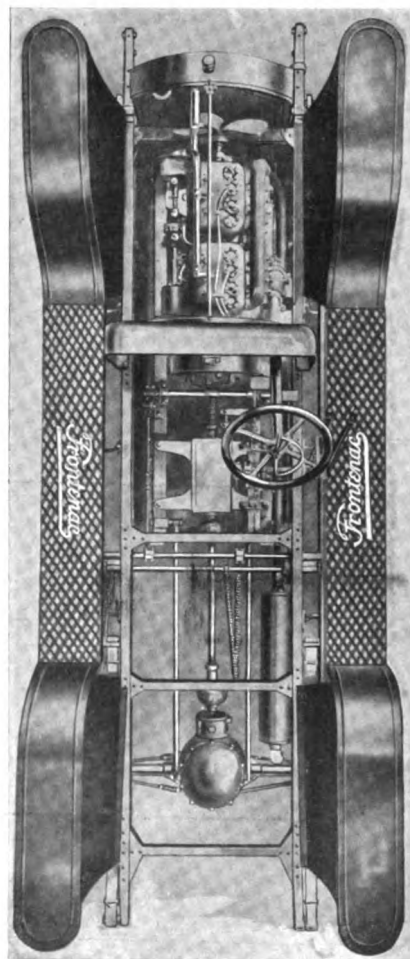
The Frontenac motor is of the standard four-cycle, four-cylinder vertical type, placed forward under a hood, and its dimensions are 4¾-inch bore by 5-inch stroke. It is rated at 40-45 horsepower, but shows an excess of 10 per cent. over these figures on brake tests, and this condition is made peremptory in the motors before they re-

ceive the seal of approval of the testing department. The cylinders are cast in pairs, with the water-jackets integral, and the pistons are cast with flat heads, and are provided with flat eccentric rings, slit at an angle of 45 degrees and placed in individual grooves above the piston pins. The latter are hollow of the rocking type, operating in large bronze bushings, thus

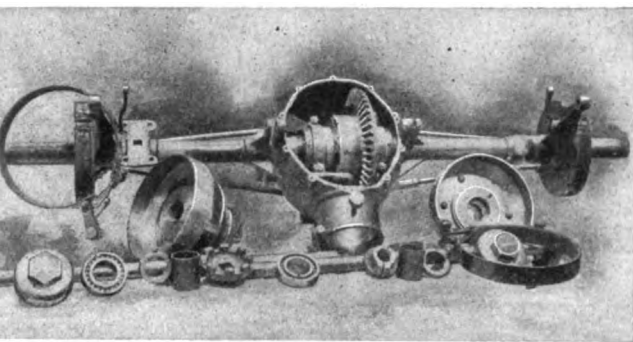
ensuring ample bearing surface and lubrication. The crankshaft is of the three-bearing type, and the journals and main bearings are all of liberal dimensions, while the bearing surfaces themselves are ground to an exact finish, this also being true of the cylinders, pistons and piston pins.

Both the exhaust and the inlet valves are placed on the righthand side of the motor. The plugs of the duplicate ignition system are being placed over the different valves. These systems consist of a self-contained unit in the shape of a high-tension magneto on one side, and an accumulator and timing system, working through a single unit on the other. The magneto is located on the left side of the motor and driven by fiber gears, which also operate the rotation of the circulation pump, forcing the cooling water from the radiator through the jackets and point immediately below the exhaust valves and leaving again at the top of the cylinders. To supplement the radiator a four-blade fan, running on ball-bearings, is provided. Lubrication is entirely by the splash system, fed by means of a gear-driven pump immersed in an oil-well.

The clutch is of the multiple-disc type, self-contained in the flywheel, and consists of alternate plates or rings of bronze and malleable iron, the latter of which are provided with cork inserts. The gear-set provides three speeds forward and the reverse, operating on the selective plan. Its components, as well as those of the rear axle unit, are shown in an unusual manner by the makers, as will be seen from the accompanying photographic illustration.



PLAN VIEW OF FRONTENAC CHASSIS.



REAR AXLE UNIT DISMOUNTED, SHOWING ITS COMPONENTS.

ch reveal both of these important parts dismounted. The use of chrome-nickel steel for the shafts and pinions of these parts, the employment of ball-bearings of the annular type, are features which show that the highest standards of engineering have been followed where these essentials are concerned. The gear-set is contained in an aluminum housing. The pinions have an especially heat-tested to enable the teeth to withstand shocks, making them practically proof against stripping, though in addition to this a special gear-locking device is provided, so that no trouble whatever has been encountered on this score. The drive is by propeller shaft, the wheels being attached to the axle by floating clutches.

The power plant and entire transmission system are supported by a subframe, which, like the main frame, is of heavy pressed chrome-nickel steel, amply braced, the whole being hot-riveted. The suspension consists of four semi-elliptic springs of liberal length and made of the same material, which, together with the shock-absorbers forming a part of the regular equipment of the car, make its riding unusually easy and comfortable. The braking mechanism is concentrated in special drums on the driving wheels, running brakes, which are pedal operated, consisting of a set of contracting bands on the external faces of the drums, while emergency brakes, operated by the side lever, are of the internal expanding type and are located in the same drums. The front axle is an I-beam forging of carbon steel, the steering knuckles being mounted on ball-bearings, while particular attention has been paid to providing a type of steering gear that not only has as high a factor of safety as possible, so far as design is concerned, but which is also made of unusually liberal dimensions for the size of the car. The steering column passes through a cast aluminum dash at an angle that is varied, according to whether the model is a runabout or a touring car. The wheels are of the standard artillery pattern, and are equipped with 34x2-inch tires on the rear and 34x4-inch tires front, the wheel-

base being 124 inches and the tread 56 inches. The length of the chassis over all is 171 inches, with a clearance of 9 inches, while it tips the scales at 2,600 pounds. The models listed include a three-seated runabout, a standard touring car and a limousine.

GERMANY'S TWO BIG SHOWS.

BERLIN, Aug. 14.—Berlin is preparing for a busy fall and winter, as the Imperial Automobile Club has decided to arrange a commercial van and omnibus competition for a period of six days. The competing vehicles will be divided into six classes, for each of which a proportionate daily task has been fixed. Besides this, preparations are on foot for two shows instead of the usual one this year. The limited space at the disposal of the exhibitors in the new hall near the Zoölogical Gardens, only opened last November and confined purely to show purposes, has rendered it necessary to divide the exhibition into (a) cars de luxe and (b) commercial and marine motors. The first is to take place from December 5 to 15 and the second from December 19 to 22. It will be noticed that the date fixed is a month later than ordinarily, when November was the chosen month.

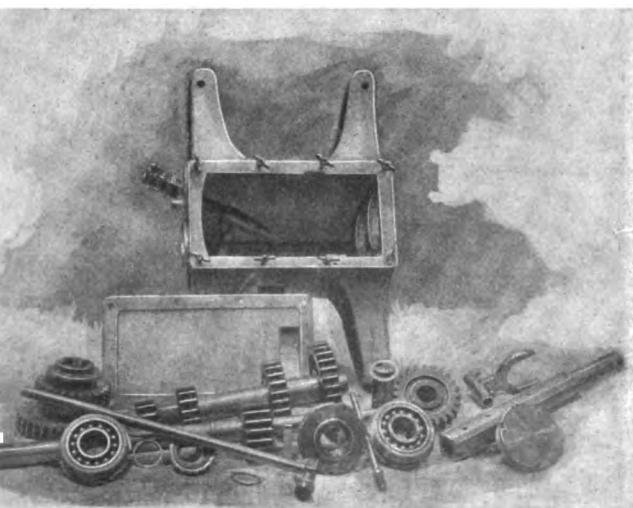
After the West German tour has had to be indefinitely postponed owing to the ministerial permission being connected with alterations of too wide a kind to permit the tour being held on its proposed basis, it almost seems that the fourth German contest, which is even a much larger affair, will meet with the same fate. Wurtemberg and Baden have refused permission for the contestants to enter their countries, and if Prussia is made still more the scene of the affair than was originally intended, it is not at all impossible that the Prussian Government will put up new regulations and turn the competition into a perambulation. The promoters are considering the present state of affairs very earnestly.

According to Professor von Herkomer himself, who is at present staying in Berlin, it seems a little premature to talk with certainty of an English Herkomer event. Questioned on this point, the Professor stated that he could not say, but if he did he would most decidedly be in favor of stricter regulations concerning reckless driving, a thing he himself loathes and abhors, as all who love the car and its future do.

Of all the many proposals for the site of the intended German autodrome, those in the Eifel and the Taunus ranges have found the most favor with the committee, and on the return of the German Emperor the rough plans will be laid before him for his approval. A decision will certainly follow then very shortly. The Taunus is very much favored owing to its central and picturesque position and its standing as a motor track in the automobile world.

AUTO 'BUS TO REPLACE TROLLEY LINE.

One of the most healthful sections of North Carolina embraces Pinehurst and Southern Pines. The country roads of the vicinity hardly deserve the name, being little more than wagon trails over the deep sand and making traveling exceedingly slow and laborious. A trolley line connected Pinehurst and Southern Pines, but there was not enough traffic to make the road a paying investment, and it has been discontinued. There is in process of construction an excellent clay road, the cost of which is being borne by the two towns. An auto 'bus, and one with a capacity of from twenty to twenty-five, is being sought by Southern Pines interests, the representative of which is Leon St. John, one of the managers of the Piney Woods Inn. When good roads become an actuality in this part of North Carolina it will be a favorite section for winter tourists who desire to take their cars South, but are unable to do so on account of the impassable highways. North Carolina will profit to a great degree by the building of good roads, and this fact is being realized by some of its wide-awake communities, as also the fact that nothing tends to bring about this much-needed improvement so quickly as the automobile.



THE PARTS OF THE FRONTENAC GEAR-SET AND ITS HOUSING.

DOES THE PNEUMATIC TIRE INJURE ROADS?

Living as I do close to the main road from Chichester to Worthing, I had ample opportunity of watching the action of fast and large cars last year during Goodwood week, says a writer in *The Engineer*. The large, fast cars might be said to be followed by a rain of small stones or coarse sand, and by the evening of Cup Day—Thursday—the road was more like a sea beach than a main road. I frequently examined a piece of road after the passage of several large cars, and I invariably found that, whereas the road was compressed and the stones crushed down by a farm cart, with an automobile the stones were lifted, in some cases to a considerable depth. The action of a pneumatic tired wheel takes two forms: (a) The load on the wheel tends to bed, *i. e.*, to press down a stone more firmly. The maximum load cannot, however, be applied more than momentarily, owing to the shape of the wheel, and with fast-running cars, the pressure being applied for such a short time, the stone resists movement by its inertia. (b) Owing to the compression of the tire, the tire can act as a "sucker," and, therefore, clings to the stone before action (a) is at its maximum, and the stone, if small, is rolled out of its bed by its connection with a moving wheel, and either thrown off behind or left in place as a "loose" stone. Unless the stone is held in place by an active force, such as being keyed in with others, or being made practically *encastre* with cement, nothing will stand under fast-running pneumatic tired wheels but heavy blocks of stone. A floated surface to an under-bed of rough concrete will be liable to destruction by "rolling out," in the same way that two metal plates soldered together can be separated by rolling out, *i. e.*, by stretching one plate unequally to the other. Ultimate separation is certain in course of time. The time required depends on quality of workmanship and solder.

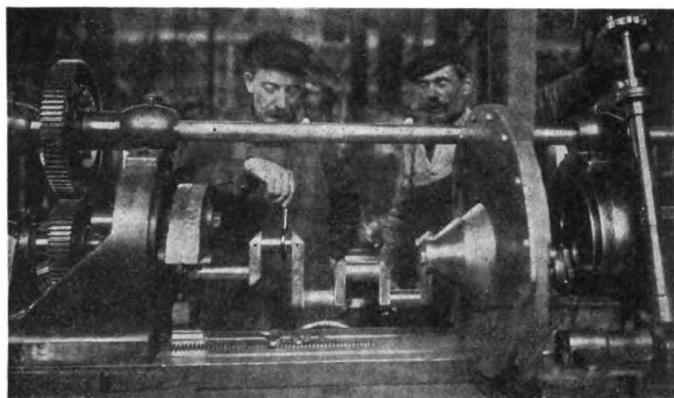
FOREIGN TRADE OPPORTUNITIES.

Among the numerous inquiries received at the Bureau of Manufacturers for automobiles from American consuls in other lands, are the following two, which should merit the attention of makers who devote attention to the export trade. The first is from a consul in one of the Portuguese possessions, naming five persons in his district who are in a position to invest in machines. The demand is chiefly for low-powered cars, ranging from 6 to 12 horsepower, and to give satisfaction they must be of the strongest possible construction, owing to the nature of the roads.

The second is from a consul in Asia, doubtless Siberia, who desires American manufacturers to correspond with a prospective buyer whom he names, and who is in the market for eight 45-horsepower commercial cars fitted to carry about ten passengers in addition to some two tons of luggage. They must also be adapted to run in a country where the snow reaches 8 to 12 feet deep, and on frozen rivers, the temperature reaching 40° C. below zero. They are intended for travel partly through country having no roads and partly on the frozen river. They should be provided with snow shovels. The addresses and necessary data are on file at the Bureau of Manufactures, Washington, D. C., to which inquiries should be addressed.

A new type of induction coil has been invented which has for its advantages small dimensions and but a slight dispersion of the magnetic flux. The current from an accumulator is sent through a first coil, primary and secondary of which have an equal number of turns, and from the secondary of the first coil into the primary of the second coil with closed magnetic circuit, which transforms it to a high potential.

To keep steel tools in their handles, says *Machinery*, fill the handle with powdered rosin and a little rotten stone. Heat the tang of the tool hot, and then push it down hard into the handle. When it is cold it will be firmly set.

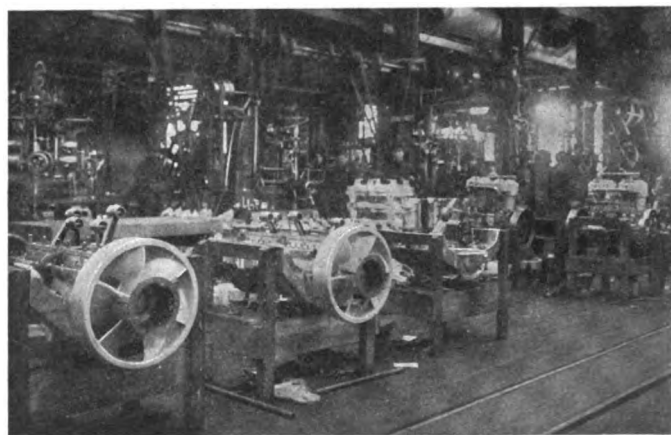


GRINDING A CRANKSHAFT IN THE LOZIER FACTORY.

FACTORS IN THE COST OF A HIGH GRADE MOTOR.

Probably not one autoist in a thousand has the faintest conception of the seemingly endless processes that are necessary to the completion of a really high-grade motor—the hundred and one touches of refinement to which every one of its parts is subjected before it is passed as complete—operations that are not essential to its existence as a motor, but that are imperative if it is to deserve the foregoing appellation. It is something difficult for the average layman to understand how it is that two motors of similar dimensions can be turned out to look almost alike as two peas from the same pod, but that, nevertheless, are miles apart in price and in performance and lasting qualities.

To illustrate just where it does come in, the very genesis of the motor—the receipt of the material at the factory—may be taken as the starting point. To the layman cast iron is that and nothing else, but to the engineer there are as many grades of cast iron as there are of gold, and poor cast iron is about as good for motor cylinders as a gold brick is for conversion into coin of the realm. If it contain an excess of sulphur, phosphorus or other impurities, the result will be a casting that is brittle and worthless. Thus to insure satisfactory results the material must be given a preliminary testing, and this is true of all the material that enters into the construction of a high-grade motor, from beginning to end. It would be impossible to detail here the thousand and one precautions that must be taken in every step of the processes involved, if the result is to be in accordance with the plans of the engineer. The accompanying illustrations, which are from photographs taken at the plant of the Lozier Motor Company, serve to show two of the steps in the building of a high-grade motor that consume a great deal of the time of high-priced mechanics. One of these is the grinding of the crankshaft journals to a few thousandths of an inch in a machine especially built for that purpose, and the other shows the assembly of the various finished parts into the motor as a complete whole.



MOTOR ASSEMBLY ROOM OF LOZIER MOTOR COMPANY.



WHERE THE WINDING HIGHWAY CROSSES THE MORRIS CANAL AT TOWACO.

EVANS is an automobilist. This in itself is not a very serious accusation. The trouble is, however, that he is a Jerseyite—lives in New Jersey, the land of the mosquito—the State where they won't let you use non-skids—the State where the automobile laws are shocking beyond words—the stronghold of the Oil Trust that rockets the price of gasoline—and there are other things, too. When Evans moved over there from little old New York with his automobile and the rest of his possessions, including his family, his sorrowing friends and relatives bade him farewell sadly, and, after he had gone, fought off the depression following upon his departure.

When Brown one day found an envelope in his mail, addressed in Evans's imitation-of-a-road-map hand, he hesitated about opening it. "Perhaps it'll upset me for the day's business," he thought. But finally he read the letter.

First he looked relieved, then puzzled, and then incredulous; for Evans actually said he liked New Jersey—*liked* it! "If you don't believe it, come over and spend a couple of days with us and I'll hike you round some of the beauty-spots in my old car," wrote Evans. Brown hesitated, but at last asked Evans to set a date. Evans wrote: "Meet you at the 7.50 in Elizabeth with the car Sunday morning. Bring along Mrs. Brown and the two Browns." The message was brief and at once to the point.



HUNGER OVERTOOK AND CAPTURED US NEAR DENVILLE.

So it happened that Brown and Mrs. Brown and the two Brown boys met Evans and his wife and six-year-old boy on the platform of the Elizabeth station on Sunday morning, bright and early. Evans bundled all the Browns into the tonneau and got them settled. The engine snorted, the horn honked, the car started, headed east, and the voyage of discovery had commenced.

Every one was so busy talking and trying to listen at the same time that it wasn't until Westfield was reached, six or seven miles from Elizabeth, that the party, as a whole, awoke to the fact that it was being propelled through New Jersey scenery at the rate of—well, whatever the legal ratcis. At Westfield a sharp

turn to the right was made into Westfield avenue, and at Springfield, five miles from Westfield, another sharp turn to the left was made into the Morristown Pike. A smooth, rolling road, with lovely bits of hill and valley scenery on either side, led along for four miles to Chatham and two miles more to Madison.

The next five miles—two to the Morris County Golf Club and three to Morristown—led through scenes extremely upsetting to the man who would like to own a country residence, but can't afford it. The road is simply a smooth driveway between the most delightful country homes—Italian villas, English residences, Colonial houses, modern castles—estate after estate, garden after garden, sweep after sweep of smooth, velvety lawn, till one feels as if he were trespassing on a millionaires' colony. Piously inclined millionaires were starting for church; at the great front doors stood carriages and automobiles, and into them, with Sunday decorum, were climbing beribboned and beruffled ladies and frock-coated and top-hatted men—all looking intensely churchy. Even the chauffeurs looked solemn and law-abiding; they wore no goggles and their collars were clean. At the links of the Morris County Golf Club—a beautiful estate and a delight to the heart of the golfer—a lot of flanneled enthusiasts were quietly swishing little white balls into flag-marked holes in the ground—when they didn't miss them—but they seemed only to add to the Sunday quiet of the atmosphere.

Finally the panorama of palaces ceased and Evans ran his car into Morristown. Really, the Morristown automobilists ought to wake up and erect a few sign-posts for the guidance of brother automobilists. You go into the town by the main road, which leads along the left side of the big public square, and if you are a normal human being you'll go right ahead, past the square. Now, if you're bound for Lake Hopatcong, or some of those beautiful Jersey spots, where nearly everyone goes who automobiles in that direction, you must turn to the right, following the square, and take the road that leads off from the opposite side of the square, running in the same direction as the road that took you to the square in the first place.

Out of Morristown the road winds and bends in and out among the trees and the country is quietly beautiful. Four miles of this brought the car to a picturesque bit, to the left of the road. In the foreground, just over the wire fence, is a round pond, with a tiny island in the middle; beyond and beside the pond, a series of barns and stables, clean and white; nearer

the road, a low, bungalow-like house, with wide verandas and awnings; and, as a background for the whole, the tree-clad hills, whose dark green made an effective setting for the dazzling white of the buildings.

"Gee!" ejaculated Brown, "whose joint is that?"

"That?" replied Evans, "that's where Homer Davenport lives—the cartoonist."

"You don't say! Let's photograph it."

"Ladies on the veranda. Maybe they wouldn't like it. I'll take the photograph if you'll go and find out if they'll let us."

Brown walked to the most obvious gate, and was confronted by a sign: "Please Use the Other Gate." Wondering if the people on the veranda were snickering at him, he trudged back to another gate and entered. Now, Mr. Davenport probably knows why that sign was put up, but poor Brown doesn't. He got into a maze of wire netting fences and fowl-yards and little gates and hen-houses till he perspired in his efforts to get out. Finally he saw an opening, dashed out and made his way across the smoothly-cut lawn to the veranda. His meek request was courteously met with the information that doubtless Mr. Davenport wouldn't object.

"There he is now, coming around the pond."

A big, sunburned man with an old straw hat on his head, in his shirt-sleeves, looking for all the world like a contented farmer taking a stroll around his place. Was that Davenport? Must be; no one else around.

"Sure. Go right ahead. Photograph all you like."

Brown said "thank you," and made for the car. But this time he did *not* "use the other gate."

Four miles further on, after passing Mount Tabor, a stop was made for lunch, just beyond Denville. At Denville there is a hotel that looks as if it might be one of the many places where "Washington spent a night," but it isn't. But it's a place where uncounted automobilists have stopped and eaten and drank, and outside is an old iron pump where many and many an automobilist has stopped and filled up his water tank—that is, the tank of the car. The autoist's personal tank is usually filled inside.

A sharp turn to the right past the faithful old pump, and the car was speeding down the Rockaway road toward Parsippany—a typical country store with a few houses near it—and the great reservoir whence Jersey City derives its water supply. At Parsippany Evans turned off to the left, onto a road skirting the reservoir and crossing an iron bridge. It was on this road that the first, last, and only mechanical trouble of the day arose. The engine, a two-cylinder vertical, began to hiss fiercely at every stroke.

"Oh, Lord!" groaned Evans, "there goes an inlet valve."

In two minutes the cap was off the valve chamber of the forward cylinder; the valve stem was down and out of sight. On



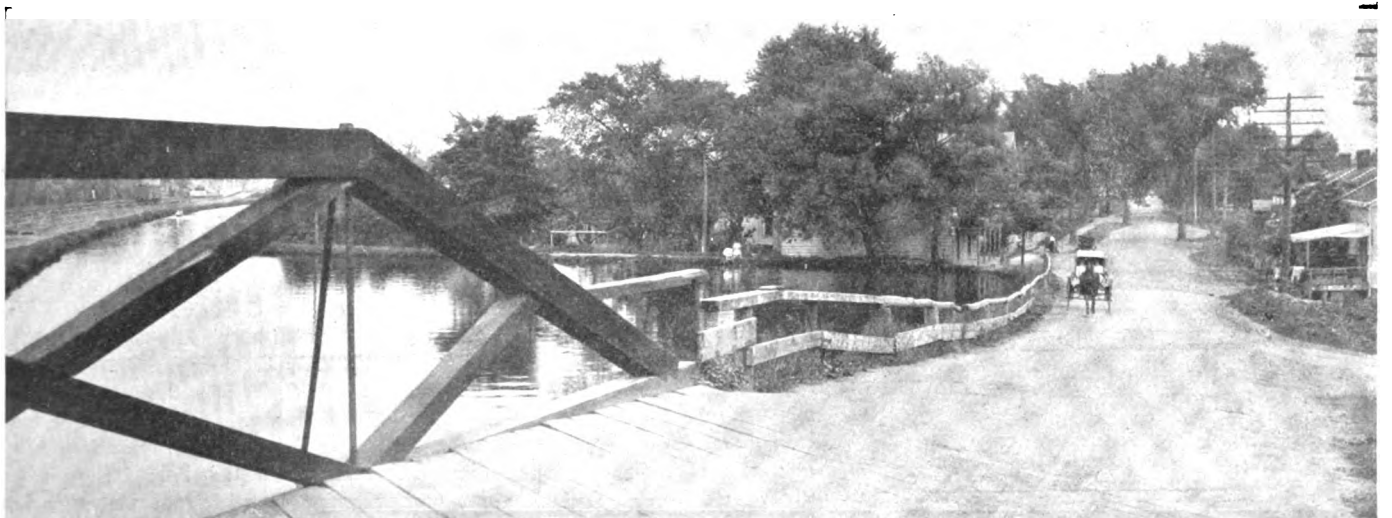
IN FRONT OF ARTIST DAVENPORT'S FARM NEAR MORRISTOWN.

top of the cage was the spring, in two pieces. Evans picked them out tenderly, cussed each one separately when it was safely out, and reached for the pin that should have been there. Nothing doing. Out came the cage and then the valve. "Thank goodness, it's all right," said Evans. But the pin? Maybe it was on top of the piston, waiting a chance to chew grooves in the cylinder walls. Horrible possibility! But Evans, with delicate touch, fished around in the valve passage with a pair of pliers, and triumphantly dragged forth the tiny steel pin.

"Hooray!" said he, fervently.

Evans fished out of the box a new valve spring, put there for just such an occasion, and in fifteen minutes from the first hiss the engine was chugging away as merrily as ever.

Four miles from Parsippany, a half-dozen houses and a hotel are called Oklahoma. A few miles further on the old Morris canal was crossed on one of the many very disconcerting bridges that carry the roads over this quaint old waterway. The road, running almost parallel with the canal, takes a sudden turn, almost at right angles, and at the same time shoots up—Evans said it was nearly perpendicular, but he exaggerates sometimes—and onto the hump-backed bridge. The process is reversed on the other side, the road pitching suddenly down and turning back in



MOUNTAIN VIEW DOESN'T MEAN THAT MOUNTAINS ARE VISIBLE, BUT THE WOODED CANAL BANKS PLEASE THE EYE.



THE PUMP AT THE CROSS ROADS AT DENVILLE.

the original direction. These canal bridges are really dangerous places if the car is not very carefully driven.

At a spot in the middle of the fields called Towaco a stop was made to photograph one of these bridges—the mildest specimen encountered—and to inspect and photograph one of the inclined planes that are used in lieu of locks on the Morris canal. The canal is brought to a place where the rising country would, ordinarily, require the construction of locks and the continuance of the waterway on a higher level. Here they simply stopped digging, walked up the hill a few hundred yards and started another canal on the higher level. The ground between the two sections of canal was smoothly graded, a very broad, heavy steel track laid, reaching to the bottom of the canal both above and below, and a ponderous truck placed on the rails. When a barge comes up it is floated over the truck, which is run down under water; the barge is made fast to the carriage, and is hauled high and dry overland, and at the top the truck dips down again into the high level canal till the barge floats, and that's all there is to it. The power for hauling is supplied at this particular plane—Plane No. 10, East—by water taken from the high level canal and led, through a wooden flume, to a water wheel in a power house; the huge endless steel cable is hauled by a drum slowly turned by the wheel.

At Mountain View—so-called because there is no mountain in sight and nothing in particular to view—the Pompton road was taken with a turn to the right, and just as the odometer indicated three miles from Mountain View the car rolled out on the bridge over the Hackensack river at Little Falls.

It is really a beautiful spot. The river runs through a deep rocky gorge, spanned by the highway bridge perhaps fifty or sixty feet above the water. Above, a dam has rather increased than lessened the natural beauty of the rapids—or falls, as they seem



WHERE THE HACKENSACK FLOWS BELOW LITTLE FALLS.

to be called—and a huge factory building on the bank looks as if it grew out of the rocks. Below the bridge the sides of the gorge are quite wild, innocent of buildings. A massive stone bridge crosses the river a few hundred yards below the highway bridge and carries the canal over the gorge.

The Pompton Pike took the car into beautiful Montclair. From the heights of Upper Montclair it is possible, on a clear day, to see New York, some 25 miles distant.

At Bloomfield the party was hailed by a hospitable friend of Evans, and everybody was treated to welcome refreshments on a cool veranda.

Elizabeth. Everyone began comparing notes. "Well, how about New Jersey?" asked Evans, as the car drew up at the station platform, twenty minutes before train time. And it was agreed that nothing in the shape of a poor road has been seen, except in some of the village streets; that no one had seen even a single stray mosquito; that the country was picturesque and devoid of monotony. In fact, Brown's sorrow for Evans vanished completely, and he even caught himself regretting that he must return to his little flat in a wilderness of brick walls and glaring pavements. Then the train came in.

"Good-bye, old man," said Evans. "Suppose there won't be any use asking you to come over and take another trip, will there?"

"Just try it. And as soon as you like," said Brown, jumping for the last car.

Towns and villages and distances:

0	Elizabeth.	35	Parsippany Store.	Reser-
4	Cranford.		voir.	
6	Westfield.	37	Boonton.	
11	Springfield.	39	Oklahoma.	
16	Chatham.	46	Mountain View.	
18	Madison.	49	Little Falls.	
21	Morris County Golf Club.	52	Cedar Grove.	
22	Morristown.	54	Montclair.	
27	Davenport's Farm.	58	Bloomfield.	
29	Mt. Tabor and Denville Sta-	63	Irvington.	
	tion.	68	Elizabeth.	
31	Denville crossroads.			

SOME IGNITION DON'TS FOR THE NOVICE.

Ignition is a subject of interest, especially to the amateur driver, and these don'ts from J. D. Maxwell, vice-president of the Maxwell-Briscoe Motor Company, are well worth keeping in mind:

Don't forget to test the batteries and note that they are strong; don't guess.

Don't screw down battery connections with your fingers, use pliers.

Don't let the various electrical connections become corroded, but keep them clean. You cannot get a good connection with dirty terminals.

Don't run an accumulator or storage battery till exhausted.

Don't make electrical connections by using simply a stripped wire, always use a regular battery terminal, and see that the wire is securely fastened to the terminal. It pays to keep your ignition system up.

Don't allow your electrical wires to become oil soaked.

Don't use a coarse file to true the vibrators, platinum is expensive. Use only a dead smooth file, and use that sparingly.

AIRSHIP "PATRIE" VISITS PRESIDENT.

PARIS, Aug. 15.—A striking example of the utility of steerable balloons was given last week when the French military airship *Patrie* sailed from Meudon to Rambouillet, thirty miles away, on a visit to the president of the Republic. President Fallières was waiting in the grounds of the chateau to receive the four officers on board the airship. After an hour's interview, during which the *Patrie* was anchored above the grounds, the officers mounted on board, the motor was cranked and the return journey made at a speed of 37 miles an hour. The *Patrie* will shortly make the long journey to its military station on the eastern frontier, traveling the entire distance under its own power. It is intended to ask for funds to build three more airships of the *Patrie* type this fall, and there is little doubt but that the necessary appropriation will be forthcoming without much delay.

CLUBS PREPARE FOR SEPTEMBER DOINGS

JOINT MEETING OF ALL BAY STATE CLUBS.

BOSTON, MASS., Aug. 19.—It has been voted by the directors of the Massachusetts Automobile Association that it is advisable for the members of all constituent clubs to get together and decide what can be done for the benefit of the fraternity as a whole, as well as for the interests of sport, and it has therefore been decided to hold a joint meeting which will take place from Friday to Monday, September 6-9, at the Hotel Wentworth, Newcastle, N. H. The meeting is to be held on the ground of the famous peace conference between Russia and Japan, and it is expected to have a representative showing of the Massachusetts State Automobile Association. A committee, appointed by the directors, has planned a run, the arriving time being Friday night, when suitable entertainment will be provided. This is to be followed on Saturday by a baseball game between members of the different clubs, and on Sunday there will be a short run and a clam bake, while on Monday the management of the hotel will give a gymkhana for owners only. On Saturday night there is to be a banquet at which some prominent down east autoists will speak. Particular attention is to be paid during the course of the meeting to legislation, which is necessary for the safety of the autoist and the pedestrian, and the so-called Light Bill will come in for an extended discussion. It is expected that the Bay State Automobile Association will send a large delegation, while the majority of the other clubs from all parts of the State will be suitably represented. Frank C. Hall, manager of the Hotel Wentworth, and who is a member of the Bay State Automobile Association, will make special preparations for the reception of the visitors.

PITTSBURG CLUB RACES SEPTEMBER 9 AND 10.

PITTSBURG, PA., Aug. 19.—The Automobile Club of Pittsburg has fixed upon September 9 and 10 as the dates of the annual races to be held here. Owing to the fact that the Tri-City Fair is held at the track during the preceding week, the meet is to be held at the Brunot's Island track and there will be five races each day, Oldfield having been secured to make a new attempt on his previous record of 52 seconds for the mile. D. P. Collins, 452 Seventh avenue, has charge of the entries, and the program as thus far arranged is as follows: The first day is to be opened with a fifty-mile race for fully equipped touring cars for a \$100 cup, and is to be followed by a five-mile event for all cars up to 20 horsepower, the prize being a \$50 cup. Then comes a twenty-mile race for four-cylinder gasoline cars, followed by a ten-mile special match race for special racing cars, and winding up with a fifteen-mile handicap for four-cylinder cars, all to be 1908 models. The second day is also opened with a fifty-mile event for stock touring cars, followed by a fifteen-mile handicap for stock runabouts costing up to \$5,000, the prizes being \$100 and \$50 cups in the two events. The third race is a twenty-mile event for four-cylinder cars and is followed by a special match race for stripped racing cars at ten miles, the prizes in both this and the fifth race, which is a twenty-mile event for six-cylinder cars only, being \$100 cups. The rules permit the removal of mufflers where cars are not provided with cut-outs.

ALAMEDA COUNTY AUTO CLUB BANQUET.

OAKLAND, CAL., Aug. 16.—One hundred members of the Alameda County Automobile Association were the guests of the Criterion Café at Fruitvale, a few nights ago, and had the best chance to forget, even tire troubles, that they have enjoyed in a long time. Twenty odd machines left the corner of Broadway and Twelfth street at midnight, all well loaded with passengers, and an hour later they sat down to an elaborate spread provided for their benefit. President R. S. Cole of the association officiated.

MOTOR BOATERS AND AUTOISTS TO COMBINE.

INDIANAPOLIS, IND., Aug. 18.—Due to the fact that they have many interests in common and could achieve their ends much more satisfactorily as one body, the Indiana Automobile Club and the Indiana Motor Boat Club, both having headquarters in Indianapolis, have combined, the plan having been favorably acted upon by a committee of the two organizations. The Automobile Club of Indiana, which is allied with the American Automobile Association, and gives its members all the privileges of that body, is booming its membership and expects to reach the 2,000 mark by the end of the year. The combination with the boat club makes an addition of 100 members in one block, and better enables the combined body to carry out a plan long pending with both of them—that is, the erection of a large and commodious clubhouse. The Motor Boat Club is at present erecting a clubhouse on the river at Broad Ripple, which will shortly be completed. The headquarters of the automobile club are at present in the Denison Hotel.

In addition to its good roads campaign and other works for the benefit of autoists generally, the club is at present actively getting after Indianapolis' young vandals who delight in tinkering with machines, scattering glass along the roadway and the like, and have already secured a number of convictions.

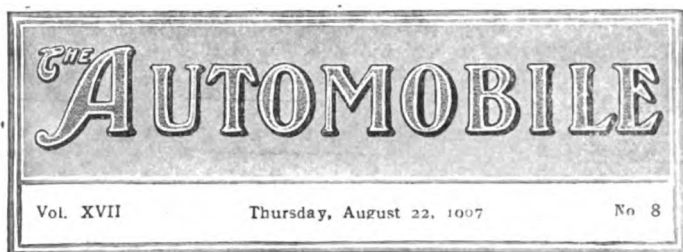
QUAKER CITY MEET FOR POINT BREEZE TRACK.

PHILADELPHIA, Aug. 19.—The Contest Committee of the Quaker City Motor Club has changed the date of its meet, scheduled for August 31, to Saturday, September 7. The committee also decided that Belmont track, although it possesses a superior surface to Point Breeze, is too far from the city and too hard to reach, and the latter track will be utilized. The 100-mile race, which will be the star event of the programme, will be for the championship of Pennsylvania, and already quite a number of entries have been received from the owners and representatives of fast cars. Many of the high scorers in recent 24-hour events will also be here for the event. Two 25-mile races will be the curtain raisers. The first will be for stock runabout, and was put on in response to several requests from owners of certain "low, rakish, piratical" craft in that class, each of whom believes that his car can sprinkle its dust on all the others. The second 25-miler will be for stock touring cars, "all on." Both these events have already filled well.

Chairman Johnson, of the Quakers' Contest Committee, is endeavoring to get together a crowd to attend the fall meeting of the Pennsylvania Motor Federation, at Bedford Springs, sometime in September. The officers of the Philadelphia and Germantown clubs are also working to the same end. No specific date has been set for the Federation meeting, but it is proposed to have it on some Sunday in September, allowing Saturday for the run from the various cities to Bedford and Monday for the return.

PORTLAND AUTOISTS TAKE A MOUNTAIN RUN.

PORTLAND, ORE., Aug. 16.—Members of the Portland Automobile Club held an enjoyable outing this week in the shape of a mountain run. The latter was to a place known as Welche's Resort, in the heart of the Cascade Mountains and about fifty miles from Portland. It is on the road to Mount Hood and, for the most part, the roads are good, though many of the grades are very steep. The trip can be made in a car in about five hours, so a number started earlier in the day in order to have an opportunity to cast some of the mountain streams for trout, the main body leaving in the afternoon. The trip was planned for a week previous, but was found to conflict with the endurance run and was accordingly postponed.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor

R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager

LOUIS R. SMITH FRANK B. BARNETT

W. I. RALPH, 1035 Old South Building, Boston, Mass.

C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00

To subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hilfe & Sons, Limited, 20, Tudor Street, London, E. C.

FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.

GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.

Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the
Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October,
1903, and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905,	- - - - -	730,000
" " in 1906,	- - - - -	791,000
" " This Issue	- - - - -	16,500
" " Since January 1,	- - - - -	554,150

Value of a Uniform Basis of Rating for Contests.

Interest soon wanes in anything that is not well understood, and the public wants to be amused rather than instructed. Hence, the extremely limited amount of popular favor that has been extended to events conducted on a scientific basis, in which every possible factor has been taken into consideration. It is quite evident that a race in which, after an exciting finish, the apparent winner is robbed of its honors and the latter are awarded to a car that came in a poor third, can hold but a small amount of interest for the spectator. He wants to see a car win with his own eyes, and, knowing little of abstruse mathematics and caring less, such awards savor more of injustice to the winner than a mathematically exact consideration of all the factors concerned. In brief, the man in the street wants to see actual victories, rather than a performance which means nothing until logarithms have been called into play to decide the result.

For this reason the suggestion of the Importers' Automobile Salon that a joint committee from such representative organizations as the Association of Licensed Automobile Manufacturers, the American Motor Car Manufacturers' Association and the Automobile Club of America, be appointed to consider uniform methods of rating cars in all tours, runs and contests, is one that should meet with favor from all concerned. In the interim, it is recommended that simple horsepower basis be employed, and this also is a suggestion of great value. The sooner such a uniform code of regulations as that proposed is adopted the better it will be for the industry at large.

But the actual conduct of these contests and the enforcement of the rules governing them, in our opinion, should be left to disinterested bodies. Therefore, after the conditions have been agreed upon by the various manufacturers—at least by a majority of them—the contests should be managed by the clubs of the American Automobile Association and by the national organization itself, when it comes to the holding of the Vanderbilt cup race or the one big tour of the year. With New York City as its field of operations, the Automobile Club of Amreica will have an advantage over the other clubs of the country in making its events stand out prominently.



In the Founding of a Great Industry, Grown Suddenly. To the general public, whether automobile wise or not, it doubtless appears as if the American industry were passing through a crisis. It must be admitted that, to the uninformed, a succession of financial troubles, in the face of the prevailing prosperity, certainly does not seem to augur well for the future permanency of the industry, nor for its present economic solidity.

To a certain degree, the automobile industry is an entirely anomalous growth of the past half decade. In that short period it has assumed proportions entitling it to rank with others of many years' standing, and it is not strange that its career thus far has been marked by conditions impossible in other fields. Though the comparison may not be altogether just, in a certain sense the business of making and selling automobiles has grown like a mining settlement, springing into being over night, advancing by leaps and bounds, and at the end of a few years presenting all the outward appearances of an old and well-settled community, but actually crude and in the first stages of development. This appears to be the present situation of the automobile industry, which, having passed through the constructive period, is now entering upon a second stage in its growth, that is destined to leave it firmly established.

So far as the failures themselves are concerned, it is not difficult to discern their moving cause, nor need their number or close succession give rise to any apprehension whatever, even though two of them are of unusual prominence, as well as being members of an association whose boast has long been that it represented the backbone of the industry—but one of its members ever having gone under, and it was a failure before it was admitted. Investors have been attracted by promises of huge dividends, and, disappointed by the reality, have stranded their concerns by withdrawing support; inexperienced concerns have entered the field, while mismanagement and unsound engineering have contributed their quota to a list that is not over large.



Racing on Highway Without Proper Protection.

To those who think that the wishes of William K. Vanderbilt, Jr., should be utterly disregarded and a race for his cup held on American roads, without the protection of a militia guard, attention is called to the fate of the Criterium of France, conducted by the Automobile Club of France. Because of a large number of fatalities, resulting from the absence of military, the Government terminated the affair on its second day. Combined with the Criterium of France was the Coupe de la Presse, the latter event subsequently being successfully held over a guarded course with no accidents of any kind.

Mr. Vanderbilt is to be commended for insisting that his cup shall not be raced for except with military protecting the on-lookers from their own dangerous curiosity. Furthermore, it is a certainty that the Automobile Club of America has no desire to take away from the American Automobile Association the honor and profits from this big race, as long as its holding must be over unprotected highways.

The efforts of those who, for selfish reasons, have endeavored to make it appear that the cup donor and those associated with him have not been sincere in trying to conduct a 1907 race will find that their dishonest criticism will only react upon themselves.

SOME MORE VANDERBILT CUP COURSES.

Though it is somewhat late in the day to come forward with courses for the Vanderbilt Cup race and obtain the consent of the donor of the cup to the holding of the event in the far West, the latest proposals are from Nevada and Colorado. Of course, there is nothing to prevent the automobilists of those States from conducting road races of their own, but they seem to think that the Vanderbilt event is far more desirable.

What the Gold Diggers Can Offer.

The *Examiner* prints the following:

CHICAGO, Aug. 17.—If "Tex" Rickard and Capitalist Coburn have their way about it, the Vanderbilt Cup race of 1907 will go to Nevada. Rickard, Coburn and a party of automobilists met at the Annex last night. The upshot of the pow-wow was a decision on the part of Rickard and Coburn to start for Goldfield to-day and rush the plans through. They propose to raise \$50,000 for the purpose, and are positive they can do this.

The Nevada course will be twenty-eight miles in length, and wide enough to permit ten or more cars to race abreast. The course circles a dry lake, and is perfectly level, the turns being about three miles long. Rickard proposes to build a great amphitheater in the center, and spectators with field glasses will be able to watch the race from beginning to end.

Messrs. Rickard and Coburn will have photographs made at once of the course and will forward them to A. R. Pardington, acting chairman of the Racing Board of the A. A. A., together with a definite offer to hold the race. They point out that population considered the mining camp of Goldfield has more automobiles than Chicago and that faster time is made there daily than on most of the race tracks in the country.

The motorists present at the meeting last night thought that the high altitude would have an effect on the drivers and this is one of the points that will have to be considered. While Rickard and Coburn will push the matter, the absence of W. K. Vanderbilt, Jr., and Racing Chairman Thompson in Europe is apt to have a bad effect on the outcome.

What Colorado Can Supply.

DENVER, COLO., Aug. 17.—G. A. Wahlgreen, editor of *Motor Field*, has "wired" the Commission on the Vanderbilt Cup race, which New Jersey has repudiated, that he can give them a course at Denver, either from Denver to Colorado Springs and return, a distance of two hundred miles, or a course ten miles east of the city, guaranteeing the best of patrolling by State or Federal troops. Mayor R. W. Speer, who has championed the cause of good roads for the benefit of automobilists, not only in Denver, but in all points out of Denver, is co-operating with Mr. Wahlgreen in his efforts to furnish the contestants with a safe course. Governor Buchtell of Colorado also favors the proposal. The Twenty-second Infantry, now at Fort Logan, may be used.

Western people are interested in constructing a boulevard on the route from Kansas City to Colorado Springs, like the old Roman roads, for eastern and western automobilists. The road is intended to connect with the national highway.

THOMAS B. JEFFERY STARTS A SIGN CAMPAIGN.

KENOSHA, WIS., Aug. 17.—Next to improvement, Wisconsin roads need signboards more than anything else, and as little or no progress has been made thus far in properly marking them, Thomas B. Jeffery, of T. B. Jeffery & Company, makers of the Rambler automobiles, has undertaken a progressive campaign for this purpose, having set aside a fund of \$25,000 to carry it out. He will not confine attention to Wisconsin, but will also mark Illinois roads, and the Rambler agents in both States will undertake the work of erecting the guide posts immediately. The signs will be placed at every intersection, as well as at every danger point, and such signs will state the nature of the danger, while many of the Illinois signs will also give the legal speed limits.

THE STORY OF AN UNPAID 24-HOUR PRIZE.

Before the finish of the 24-hour race at Brighton Beach, N. Y., August 9-10, W. H. Pickens, manager of the United States Motor Racing Association, endeavored to disgorge \$1,000 in bills of various denominations, but several officers of the Long Island Automobile Club, whom he asked to receive the big prize of the "twice around the clock race," declined becoming a depository for the twenty-four hours which would have to elapse after the conclusion of the race before the prize money could be paid to the winner. Therefore, Mr. Pickens redeposited the money with President Joseph M. Gaites, of the United States Motor Racing Association.

It happens that Messrs. Gaites and Pickens are also engaged in the theatrical business, and recently arranged to present a version of "Raffles," the famous cracksman. In the production of the play containing this famous personage, it seems that a copyright misunderstanding has arisen, and resulting from it a suit which has made necessary a temporary deposit of a round sum of money. Thereupon, the funds of the United States Motor Racing Association were drawn upon, and as late as Wednesday morning Montagu Roberts, the winner of the 24-hour event, was still looking for his prize money, though it was stated that the matter would be attended to in the next day or so.

As soon as Acting Chairman Pardington heard, Tuesday noon, of the failure of the promoters to straighten out the prize money, a formal complaint having been filed by the Harry S. Houpt Co. in behalf of Roberts, he immediately endeavored to get into communication with Messrs. Gaites and Pickens, but failed to do so owing to their absence from the city.

Prompt punishment will be meted out to the promoters unless the unpaid prize money and cups are attended to at once. In any event, Roberts will not lose his prize money, for Mr. Bowles, of the Houpt Company, says he will pay the plucky driver out of his own pocket if the United States Motor Racing Association fails to meet its obligations. It is the general belief that since the matter has been brought to the official attention of the A. A. A. Racing Board, the U. S. M. R. A. will quickly comply with the demand made for a prompt settlement of all prizes.

MAXWELL'S SEALED-BONNET PERFORMANCE.

The performance of the 16-20-horsepower Maxwell car, driven by Charles W. Price, has rolled up such a tremendous mileage that it now stands above all the other sealed bonnet performances, the distance covered being close to 5,000 miles. The seals were originally affixed June 28, and since then Price has successfully competed in various sealed bonnet contests, running the car from city to city to do so, competing under the ominous "No. 13." It was run in the Chicago reliability contest, the Peoria 6-hour race, the Chicago 24-hour race, and was then driven in the A. A. A. tour, again returning from New York to Chicago. The seals were affixed by Charles P. Root, chairman of the Contest Committee of the Chicago Motor Club, and David Beecroft, chairman of the Technical Committee of the same organization. They were also frequently examined by the same committeemen, who have gone on record as certifying to the genuineness of the performance throughout. The car's total mileage is given as 4,788.6. After a rest it is Price's intention to continue through the West and South, probably going clear to the Coast.

P. R. R. TO INSTALL MOTOR CAB SERVICE.

ALTOONA, PA., Aug. 19.—Though it has not been officially announced as yet, the Pennsylvania Railroad has made all preparations for substituting motor cabs for the horse-drawn hansoms and coupés so long used in its service at the principal stations. What is even more significant is the fact that it is going to build its own motor cabs, arrangements being about completed to construct them at the Juniata shops at Altoona. One department of the shops will be devoted entirely to their construction.

TORONTO HOLDS A SUCCESSFUL ORPHANS' DAY.

TORONTO, ONT., Aug. 17.—Instead of being a fixed celebration, Orphans' Day has come to be regarded as a sort of movable feast, the Ontario Motor League making the date of its annual event on Wednesday last, when an unusually successful observance of the new institution was held. Some 500 children from the Protestant Orphan Home, the Girls' Home, the Sacred Heart Orphanage and the Children's Aid Society were treated to a day's outing that they will long cherish the memory of in times to come. It was a bright spot such as seldom enters into the lives of these waifs. Sixty cars gathered at the quarters of the Ontario Motor League, from which they were dispatched to the various homes to receive their burdens of happy children. This accomplished, the procession lined up at 11:30 A.M. and, after passing through a number of the principal streets of the city, wound up at Scarboro Beach Park at 1 o'clock.

The weather man had done his best and conditions could not have been better. The cars were gaily decorated and each urchin was presented with a small flag with which to help celebrate, so that the passing of the procession was a sight that attracted large crowds along the entire route. The arrangements all went smoothly until the arrival at the park, where it was found that the "grub wagon" had defaulted in some way or other, and what is an outing without something to eat, particularly when one is gifted with the appetite that goes with but ten or twelve summers of life? The lunch had been loaded on a motor truck, which was to have preceded the parade to the park, but there was no sign of it on arrival there. It had gone astray, but was soon located and the delay only served to increase the edge on the waiting appetites. Once the important ceremony of disposing of the edibles had been completed, the children were given *carte blanche* to enjoy themselves in their own way, every show on the grounds being open to them, the park management concluding the entertainment with a representation of the San Francisco earthquake. Toronto's business interests contributed liberally to the celebration, the refreshments all being donated by various local houses, even in-

cluding a supply of souvenirs, consisting of a doll for each girl and a rubber ball for each boy. The affair was excellently managed by the Motor League, the special committee consisting of the following members: Noel Marshall, William Dobie, R. J. Christie, T. A. Russell, G. H. Gooderham, M. C. Ellis, H. C. Osborne and Harton Walker.

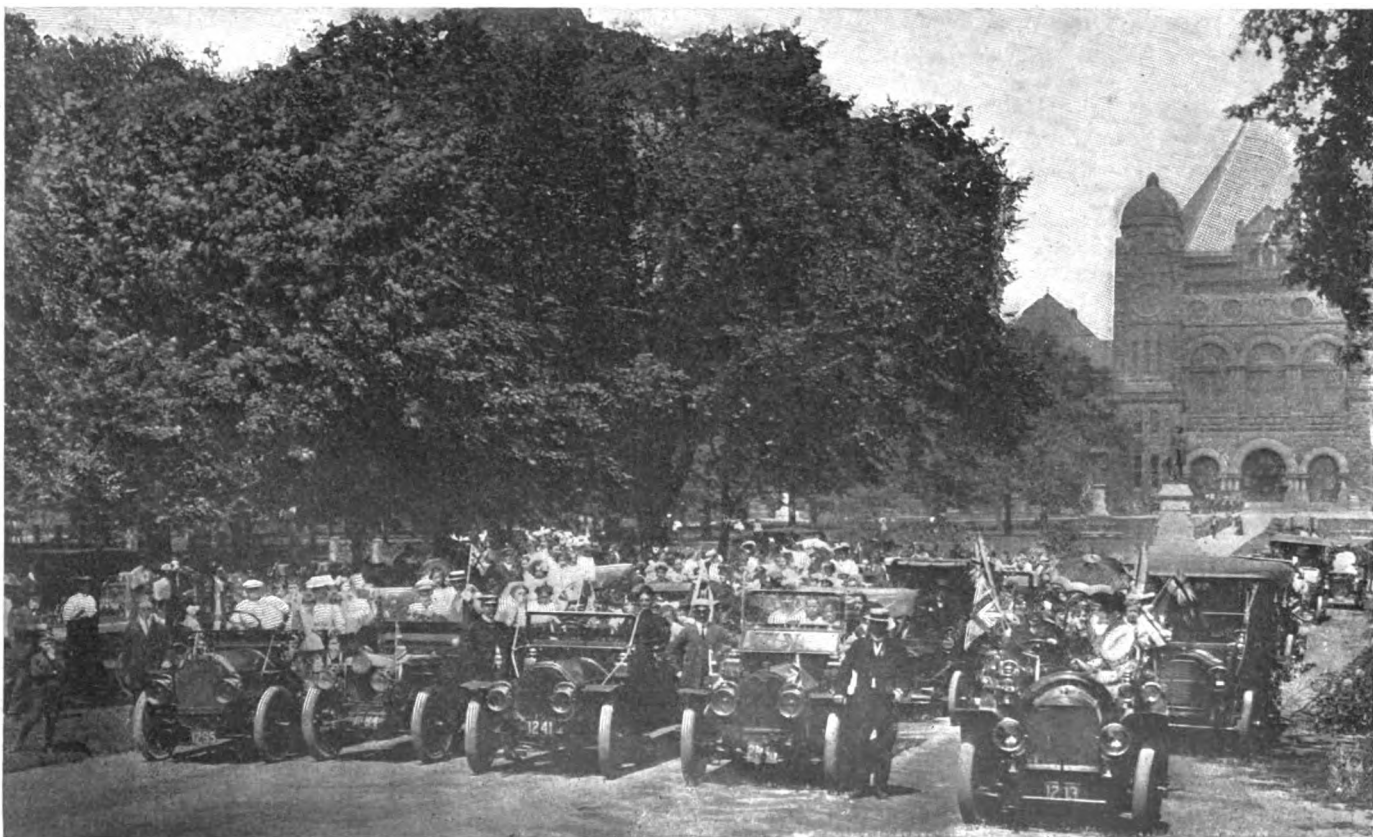
A. M. C. M. A. SHOW SPACES TO BE DRAWN AUG. 30.

All applications for space at the eighth annual show of the Automobile Club of America, to be held at the Grand Central Palace October 24-31, and in which members of the American Motor Car Manufacturers' Association are the chief exhibitors, must be received at the office of the latter association by Wednesday, August 28, as the drawing for spaces is scheduled for two days later and will take place at the association's headquarters, 29 West Forty-second street. At the show itself a new system of admission for exhibitors and their assistants will be inaugurated, and as it is to be used at all automobile shows this season its first trial at the Palace will be watched with interest. It is known as the double check system and consists of the use of a badge and ticket, which will be supplied exhibitors as applied for. The badge is not good for admission alone, but must be shown and the ticket delivered at the door. On passing out, showing the badge entitles the holder to a return ticket, which must again be given up on re-entering.

PREPARATIONS FOR THE IMPORTERS' SALON.

An entirely new scheme of decoration is to be supplied for the Importers' Automobile Salon, to be held in Madison Square Garden, December 28-January 4. The S. R. Ball Company has been given the contract and promises something so novel that the well-known interior of Madison Square Garden will not be recognized by its oldest frequenters.

Tuesday, December 31, and Friday, January 3, have been decided upon as the days when the \$1 admission will be charged. On the other days the regular 50-cent fee will be in effect.



LINING UP THE ORPHANS' DAY PARADE IN QUEENS PARK, TORONTO, PRIOR TO THE START.

GASTON PLANTIFF'S NEW YORK RECORD.

Ford runabouts and "sixes" to the value of \$190,059.43 constitute the enviable July record of Manager Gaston Plantiff, of the New York branch of the Ford Motor Car Company, Detroit, Mich. And that is only one month, so that Manager Plantiff holds other records as well. During the ten months dating from October 1, 1906, the beginning of the Ford fiscal year, he has disposed of some \$920,000 worth of Ford cars. This means 1,400 runabouts and 130 six-cylinder touring cars, nearly 1-7 of the entire Ford output for the year. Six weeks still remain of the latter, and in them Mr. Plantiff is confident that he can pass the million-dollar mark, thus establishing another record.

In speaking of his achievements in this line, Mr. Plantiff says: "I believe this record has never been equaled in the automobile business, for it must be remembered that with us July deliveries mean July sales. Nothing is carried over, and only those sales are included in the month's report which have been made and delivered in that month. This is not the case in a great many instances, many concerns concentrating their deliveries in one or two of the spring months.

THE MORRIS PARK MOTORDROME.

The Morris Park Motordrome Club, of New York City, is to revive automobile racing on the once-famous Westchester running course. The Morris Park property is owned by the Fidelity Development Company, of which J. G. Robbins is the president, and he will also occupy the same position at the head of the new racing club, with Walter C. Allen as its secretary.

Alfred Reeves, well known as a promoter of many successful meets in the metropolitan district, has consented to serve as chairman of the race committee, assisted by A. B. Tucker as racing secretary, while A. F. Camacho will be the track superintendent, thus insuring a most competent trio for the competitive branch of the enterprise.

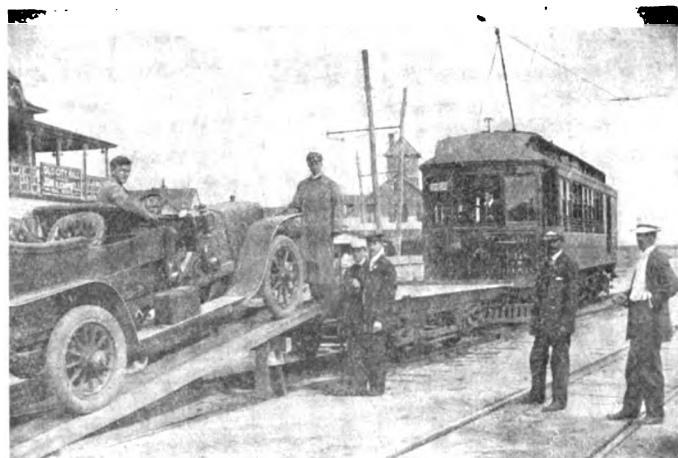
The first meet is to be a 24-hour race, September 6-7, preceded by several shorter races and a series of gymkhana games. A number of the most prominent trade and racing men have been asked to officiate at the 24-hour track race, and there will be special lighting of the track for the night hours and special treatment of the track by extra banking and thorough oiling for the races. The new organization promises to leave no stone unturned to make the races to be held at Morris Park the most notable, both in entries and officials, and the most carefully conducted of any ever held in or near the city.

A CHADWICK AGENCY FOR CHICAGO.

PHILADELPHIA, Aug. 19.—H. B. Larzelere, of the Fairmount Engineering Works, has just returned from Chicago, where he located the Chadwick agency with the Hamilton Automobile Co.



MORRIS PARK TRACK IS NOW HAVING ITS NEEDED SHAVE.



LOADING THE STEVENS-DURYEA BIG SIX ON THE FLAT CAR.

VISITING ATLANTIC CITY EN ROUTE TO CAPE MAY.

OCEAN CITY, N. J.—Aug. 19.—Almost every tourist going from New York City to Cape May has found it impossible to take in Atlantic City on the way without making a very long detour to avoid the bad roads between Atlantic City and Ocean City. The distance, as the bird flies, from Somers Point, just below Atlantic City to Ocean City, directly across the mouth of the inlet is 2 1-10 miles, but the distance by the road is 27 sandy miles.

The Shore Fast Line Trolley Company, July 2, started running a trestle and dike route from Somers Point to Ocean City. August 3 was opened up a flat car service to carry automobiles across the two miles of trestle. The first car to cross was a Stevens-Duryea "Big Six," driven by S. H. Hancock. In the party were C. J. Neff, general superintendent of the electrified lines of the Pennsylvania Railroad; Frank A. Broadhead, secretary and treasurer of the Atlantic Automobile Company; A. E. Corbin, of the Stevens-Duryea Company; James C. Ash, and D. J. Jameson.

FIRE AT THE PREST-O-LITE PLANT.

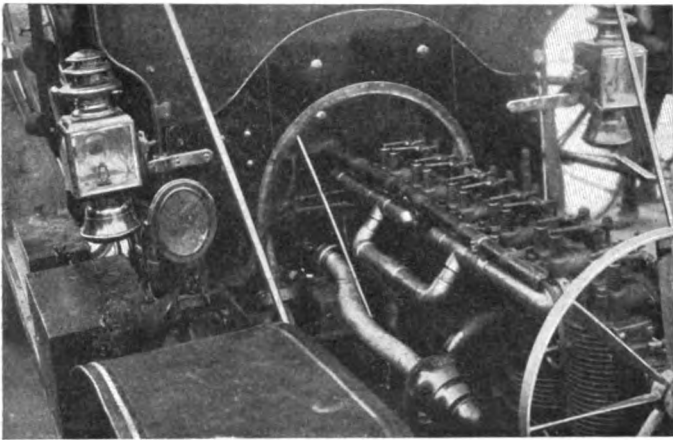
INDIANAPOLIS, Aug. 19.—One of the five factories of the Prest-o-Lite Company, in this city, was damaged to the extent of \$25,000 by fire Saturday, August 19. President Carl G. Fisher, of the company, who was at the New York City plant at the time of the fire, makes the announcement that the company's customers will not suffer any inconvenience, as thousands of charged tanks are kept in readiness for immediate delivery from any of the other main pumping stations of the company, at New York, Boston, Toronto and San Francisco. The fire was very spectacular. The heat, of course, melted the little safety caps at the end of each tank that was charged, and released the gas, which burned furiously. Fortunately, no one was killed or even seriously injured. The Indianapolis plant will be reconstructed immediately.

STOCKBRIDGE TO BECOME A WHITE STEAMERITE.

PHILADELPHIA, Aug. 19.—Frank W. Stockbridge, formerly connected with the Reo agency in New York and this city, and later in charge of the Cadillac business of the Foss-Hughes Motor Car Company here, has been secured by the local branch of the White Company and will act as factory representative in this section, looking after the agencies and sub-agencies in the eastern part of this State. Mr. Stockbridge will take up his new duties next week, going to the Cleveland factory first to familiarize himself with the latest improvements in the White system.

SPALDING TO SELL STEVENS-DURYEA IN PHILA.

PHILADELPHIA, Aug. 19.—A. G. Spalding & Bros. have secured the local agency for the sale of the Stevens-Duryea.



APPLE DYNAMO APPLIED TO A SIX-CYLINDER FRANKLIN.

APPLYING A DYNAMO TO A SIX-CYLINDER CAR.

What constitutes a rather unique illustration of the adaptability of the Apple dynamo and its flexible driving connection is shown by the accompanying photograph depicting one of these small direct-current generators installed on a Franklin six-cylinder car. It will be noticed that the large flexible shaft permits of locating the dynamo some distance from the engine flywheel from which it is driven. The automatic governor is at the shaft end at this drive and makes contact with the flywheel. Provision is made so that the necessary adjustments may be made for charging the batteries at the proper rate while the motor is running. The dynamo itself is placed well forward on the right side of the engine, while the driving shaft extends rearward toward the flywheel, as shown, both being thoroughly protected by a dust and waterproof casing, the brush end of the generator being readily accessible through a hinged end cover. The entire output of the machine is used for storing a set of accumulators, the current from which is employed both for ignition and lighting the side lamps shown on the car.

SECRETARY OF WAR TAFT LIKES THE WHITE.

One of the fixtures of the "summer capital" at Oyster Bay, ever since President Roosevelt's return to his home on June 12 last, has been two 30-horsepower White steamers, fitted with seven-passenger Pullman bodies. They are "on the job" every day in the week from 7 A. M. to 1 o'clock the next morning, and the reception they meet with at the hands of the various government officials who are conveyed in them is often amusing. "A regular government star route conveyance" is the way Secretary of War Taft characterized them to Postmaster-General Meyer, as they entered one of the cars at the Oyster Bay station last



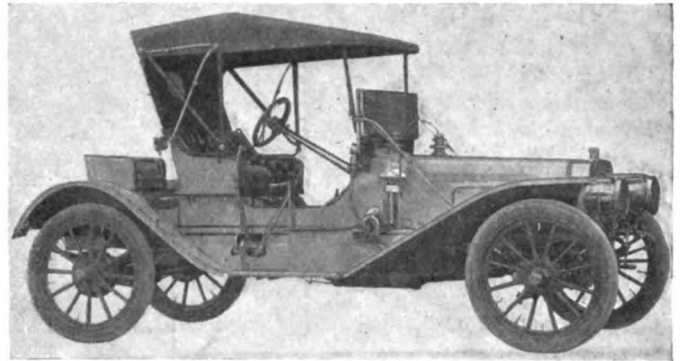
SECRETARY OF WAR TAFT IN WHITE STEAMER AT OYSTER BAY.

week. There is a sign at the gate to the presidential estate which reads "No Automobiles Allowed," but it does not apply to the two government White steamers, and in a few minutes the two cabinet officials had reached the house.

"I wish Sagamore Hill was further away from the station," remarked the Secretary of War. "Well," replied the President, "it is quite a distance from the station at Long Island City, and when you go back there is no reason why you should not go all the way in the machine." And go back all the way he did, not alone to Long Island City, but over the ferries until the Pennsylvania Railroad depot was reached. The White machines are considered absolutely indispensable to the expeditious handling of government work at Oyster Bay, and one or both of them meet every arriving train all day long, beside performing numerous other forms of service.

SPECIAL TOPS FOR HIGH-POWERED RUNABOUTS.

It is only natural that with the very general demand for the high-powered, four-cylinder runabouts there should also be a call for a special type of top adapted to this style of car. To meet this demand the Rands Manufacturing Company, Detroit, Mich., has just brought out a top of this kind, which is shown on a car in the accompanying photograph. There is no bow extending from the side of the seat to the front part of the top, thus avoiding any obstructions that would prevent free ingress and



HOW THE RANDS SPECIAL TOP LOOKS WHEN IN POSITION.

egress from the car. The top of the hood is also made long enough to extend over the dashboard of the car, so that when used with a windshield or storm front it will give the same result as a coop top for stormy weather, and is an ideal equipment for physician's use. The operation of raising or lowering the top only involves the use of two thumb screws, which are loosened from their position at the upper part of the center socket, and placed at the bottom of the same socket, or vice versa. When folded it is more compact than any style of top yet produced. For cold weather use the top is so constructed that two side curtains can be attached to the edge of the front seat with suitable fasteners which may be permanently put in place.

COUZENS RETURNS FROM EUROPE.

James Couzens, secretary and treasurer of the Ford Motor Company, and also manager of its sales department, yesterday arrived home from the other side. Two months ago he began a tour of Continental Europe and Great Britain for the purpose of studying conditions there and laying plans for a big export business in Ford cars. During the time he was away Mr. Couzens visited every country and every city of importance in the old world. The Ford company is already a large exporter of motor cars, shipping regularly twenty-four runabouts per week to London, sixteen to Berlin and eight each to Paris, Milan and Brussels. Mr. Couzens' trip will result in multiplying these numbers as well as opening up much territory never before reached by American automobile manufacturers.

ACTIVITIES OF THE NEW YORK TRADE ASS'N.

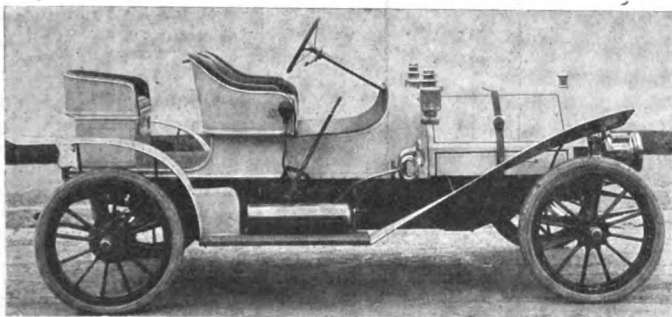
Three additions have been made to the membership of the New York Automobile Trade Association; Cimiotti Bros., agents for the Mora car; Corbin Motor Vehicle Corporation agency, and the Waltham Manufacturing Company agency.

The present officers of the association are: President, Percy Owen, of Percy Owen, Inc.; first vice-president, Frank Eveland, of A. G. Spalding & Bro.; second vice-president, E. C. Partridge, of Wyckoff, Church & Partridge; treasurer, W. P. Kennedy; secretary, and general manager, E. V. Stratton. The headquarters are in the Motor Mart, Broadway and Sixty-second street, and the telephone number is 3743 Columbus.

The association has just established a collection department for the benefit of its members, and has under consideration the organization of an employment bureau through which members may secure reliable salesmen, mechanics and chauffeurs.

EARL ROADSTERS BEING BUILT IN KENOSHA.

Kenosha, Wis., is now the home of another popular-priced car, known as the Earl Roadster, which formerly claimed Milwaukee as its home. The object of the manufacturers in producing this car has been solely to turn out a vehicle that should be light, powerful, durable and speedy, at a moderate selling price, as well as one capable of being maintained at a minimum cost. That they have succeeded in this will be quite evident from a review



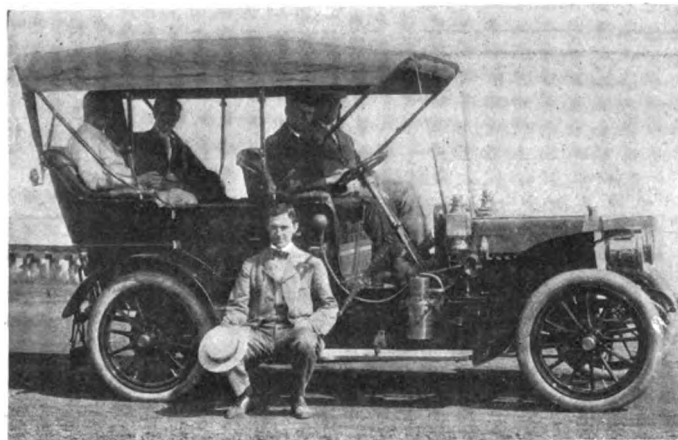
EARL LIGHT ROADSTER FOR 1908 WITH FOLDING SEAT.

of the following specifications: The motor is of the horizontal, double-opposed type, located under the hood forward, and is rated at 15 horsepower. The ignition is of the high-tension type, current being supplied by two sets of dry cells, carried in a battery box on the running board.

The transmission is of the friction type, providing four forward speeds and reverse, all of which are controlled by a single side lever in much the same manner as a sliding gear. The friction wheel is carried on a countershaft, on the ends of which are two sprockets for the final drive, which is by means of special silent chains. Two sets of brakes are provided, the running brakes being in the rear hubs. A channel section, pressed steel frame forms the foundation of the chassis, which is carried on four full-elliptic springs of liberal dimensions and which in turn are supported on 30 by 3-inch artillery wheels and clincher tires of this size, front and rear. The wheelbase is 100 inches and the weight of the car all on is 1,200 pounds. The control is by the usual small levers on a stationary sector over the steering wheel, and the car is capable of a speed of 40 miles an hour. Complete with the usual full equipment of lamps, it lists at \$950.

SWINEHART TIRES TO BE MADE IN EUROPE.

During his recent European business trip, B. C. Swinehart, vice-president of the Swinehart Clincher Tire and Rubber Company, of Akron, O., made arrangements with a European concern to manufacture Swinehart tires abroad. During his three months' stay Mr. Swinehart also negotiated the sale of German patents to Metzeler & Company, Munchen, Bavaria.



FIRST 1908 LOCOMOBILE GOING TO FINAL FINISH TEST.

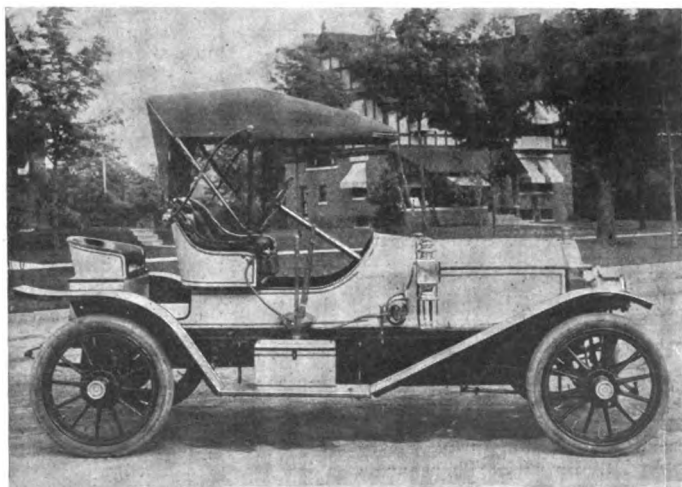
A. L. Riker, designer, is seated in the tonneau. J. A. Kingman, advertising manager, holds down the running board, and "Bill" Hall is the driver.

ENGLISH CONCERN TO ESTABLISH PLANT HERE.

KANKAKEE, ILL., Aug. 19.—It is reported here that the plant of the defunct St. Anne Kerosene Motor Company has been acquired by an English firm, which will take possession on September 1. The firm is now said to operate a plant in Wales and that its specialty is an automobile wheel, besides which it builds high-priced cars, the intention being to carry on both branches here. Color is lent to the report by the fact that a representative of the Stepney Spare Motor Wheel, Ltd., of Llanelly, South Wales, has been in this country for the past two or three months gathering statistics as to the extent of the American industry, and visited the offices of THE AUTOMOBILE before sailing.

NEW MODEL BLOMSTROM RUNABOUT FOR 1908.

Having studied out the design of the Blomstrom "Thirty" well in advance, covering every possible point of practise as exemplified by current usage on a large number of cars, the only change to be made in the Blomstrom cars for 1908 will consist of a slight increase in the size of the cylinders, which are now being made 4 5-8 inch bore by 4 1-2 inch stroke, with a consequent increase in the power of the motor. A few other detailed refinements have been found possible here and there, though with the exception of the increase in the size and power of the motor the car remains essentially the same as described in these columns several months ago. The appearance of the new Blomstrom runabout for 1908, which will be a strong feature of the line, may be judged of from the accompanying photograph.



1908 BLOMSTROM "30," FITTED WITH CAPE TOP.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

The Health and Street Cleaning Departments of New York City have just purchased three Lozier 40-horsepower cars.

The Gearless "Big 6" has arrived in Chicago, and its huge length of bonnet and snow white color was the sensation in automobile circles there last week.

The partnership known as the O. G. Roberts Automobile Company, with quarters at Ninth street, Columbus, O., has just been dissolved by O. G. Roberts buying out the interest of his partner, Richard Hammond. Mr. Roberts will continue the business at the same place without change.

By reclaiming a fifty-acre tract of sand flats lying southeast of its present plant, the Locomobile Company of America will be enabled to double its land holdings on the water front at Bridgeport, Conn. The new land will permit extensive factory additions from time to time and also make possible a 140-foot pier into the harbor.

It has been objected that 24-hour races really prove nothing and therefore are not helpful either to the sport or to the industry. To this A. R. Pardington, speaking unofficially, makes the rejoinder: "But why should there not be some purely entertaining or spectacular feature to the sport. If the public finds such events interesting, I can see no objection to professional promoters catering to this portion of the public."

The Milwaukee Motor Company, at present located at 615 Clybourn street, Milwaukee, Wis., will commence to move to their large new factory at Thirty-second and Burleigh streets shortly. It is the intention to install new machinery in the new plant and have it running before the old factory is dismantled preparatory to moving, so that there shall be no cessation of work that is usually incident to moving a large plant.

Judging from present conditions at the factory of the Electric Vehicle Company, Hartford, Conn., there would seem to be little, if any foundation, for the alleged rumor that the limousine body was becoming passé. Instead of being a winter equipment alone, there are a great many users who now specify limousine bodies for both summer and winter use, the lowering of the liberal-sized windows readily converting the car into practically an open type with little trouble.

The great possibilities attending the use of automobiles as conveyors of mail over rural free delivery routes were clearly shown by a recent test made at South Bend, Ind. The route selected was 25 miles long, numbered 115 families and is said to be the hardest in St. Joseph county, Ind. With a horse and wagon eight hours are required for the carrier to get over this route, but in the recent test the mail carrier drove a Studebaker electric and covered it easily in three hours.

Owing to the need for expansion, the H. H. Franklin Manufacturing Company, Syracuse, N. Y., has just leased the old Syracuse bicycle plant in that city for a term of two years. There are two buildings, one 132 by 40, five stories high, and another 80 by 32, four stories high, giving a combined floor space of 35,000 square feet. The new quarters are to be devoted

to the sundry stock department and the painting and finishing department, and more men will be added to the working force, together with the increased facilities.

The recently organized Winston Automobile Company has just opened for business in Charlotte, N. C., and forms a notable addition to the State's automobile establishments. The large building on the corner of Fourth and Elm streets has been renovated, and is now fully stocked with cars and accessories, Joseph Hamlin, the manager of the company, was with the Forsyth Sporting Goods Company for some time, beside being known as one of the best mechanics and auto experts in the State.

The Empire State Tire Company is the title of a new concern just organized in Buffalo, N. Y., for the purpose of manufacturing a puncture-proof tire. It is capitalized at \$20,000, and a factory site is now being looked for in Buffalo. The construction of the new tire involves the use of jointed, copper-plated, steel discs arranged in the tread or layer of rubber, without interfering with the flexibility of the latter, and placed so as to practically form a continuous band, thus effectively preventing punctures.

Muncie, Ind., has an acquisition which most of the citizens knew little or nothing about until it had actually happened. This is the location of the Rider-Lewis Motor Car Company, which has rented the plant of the old Anchor Silver Plate Company, and is already converting it into an automobile factory. The plant is expected to be ready by about the middle of September and the first cars are promised for early in October. They will be six-cylinder cars from the designs of Ralph C. Lewis. The company was recently incorporated with a capital of \$150,000, the incorporators being William A. Rider, Indianapolis; Ralph C. Lewis, Muncie; George D. Rider, Kentland, Ind.; R. E. Stevenson, Muncie, and Hiram D. Lingle, Denver, Col. The incorporators are also the directors.

It is interesting to note that the longest endurance run ever undertaken, the race from Pekin to Paris—a distance of more than 6,000 miles over a trackless wilderness—was made in a car provided at every point with ball bearings. These were of the D. W. F. German make and their performance is noteworthy, as owing to the necessity of carrying everything in the shape of supplies, the car was extremely heavy. The Hess-Bright Manufacturing Company, Philadelphia, is just in receipt of a cable from the home office in Berlin as follows: "Prince Borghese made automobile trip, Pekin-Paris, on our bearings, which stood up excellently without replacement." The Italian victor of the longest race ever run was also enthusiastic over the good qualities of Vacuum Mobiloil, which he used throughout the entire trip with great satisfaction.

NEW AGENCIES ESTABLISHED.

Buckwalter & Burnell are the new agents for the Stearns line in Chicago, and have opened quarters in the salesrooms formerly occupied by the Buick agency at 1412 Michigan avenue.

The Tokheim Manufacturing Company, Cedar Rapids, Iowa, have opened

a Chicago branch on "Automobile Row," and intend to make a strong campaign for business in Chicago and that city's adjacent territory.

It has been reported that the H. H. Franklin Company, of Syracuse, N. Y., in opening new branch headquarters in New York City, would occupy the premises recently vacated by the Aerocar Company, but instead they will be situated in the Severn Building, located at the southeastern corner of Broadway and Seventy-third street, extending to Amsterdam avenue and facing on Sherman square, so that while not in the same building, the new salesrooms are in the immediate locality indicated.

September 1 the Winton Motor Carriage Company, of Cleveland, O., will open a branch house of its own in San Francisco, Cal. A new building occupying the territory on Van Ness avenue, between Birch and Grive streets, has been in course of construction after plans drawn for the Winton company, and is now nearing completion. The site is within a block of the city hall, thus opening up a new automobile center, while the structure itself will be both ornate and spacious, furnishing one of the finest automobile homes on the coast. Charles M. Brown, who scored so highly as manager of the Winton company's Chicago branch, is to have charge of the new establishment, and will have under him a staff largely recruited from the Winton factory. Harry L. Owsney, late of Cook & Owsney, and since district supervisor for the Winton company, will be Mr. Brown's chief lieutenant. Mr. Brown's successor in Chicago will be B. C. Day, who has been associated with that department for several seasons. The new San Francisco branch is the tenth establishment maintained by the Winton company, others being situated in London, New York, Boston, Philadelphia, Pittsburg, Cleveland, Detroit and Seattle.

PERSONAL TRADE MENTION.

W. H. Dougherty, for some time connected with the head office of the G & J Tire Company, Indianapolis, Ind., has recently severed his connection with concern.

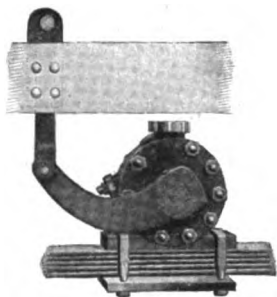
R. A. Wadsworth, formerly of the Excelsior Supply Company of Chicago, has been engaged by the Buick Motor Company, Chicago branch, as manager of the accessory department, and will install a full line of accessories and supplies at once.

F. J. Pardee announces his resignation as sales manager of the St. Louis Car Company, to take effect September 1, and though it is understood he has already been placed in a similar rôle with another well known concern, no details are forthcoming at the moment.

Ernest Waterman has just been appointed sales manager for the Hartford Suspension Company, manufacturers of the Hartford-Truffault shock absorbers, and as the number of manufacturers who are now employing the latter as a part of the regular equipment of their cars, as well as the jobbers and dealers, who are handling the Hartford, is rapidly increasing, Mr. Waterman will doubtless find plenty to do.

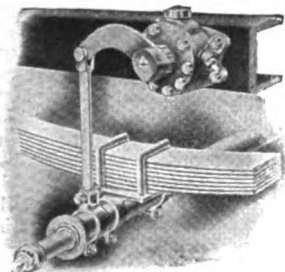
INFORMATION FOR AUTO USERS.

Hotchkin Anti-Jolt Device.—For the season of 1908 the Hotchkin Manufacturing Company, 1256 Michigan avenue, Chicago, will market two models of the well-known Hotchkin Anti-Jolt Device, to be designated as Model 100, the type with which the automobiling public has already become familiar, and Model 101, which



MODEL 100, HOTCHKIN ANTI-JOLT.

though given a separate number really only differs from the standard type in the manner of its attachment to the car, and the makers call attention to the fact that it is somewhat of a novelty nowadays to find a mechanical appliance so perfect when first put on the market that it is found profitable to put it out year after year without a single change in its vital essentials. The anti-jolt absorbers, for use on the rear axle, incorporate the attachment referred to, enabling them to be bolted to the chassis frame by simply drilling holes in the latter, the connection with the axle being made by a link together with a collar or other suitable part, as shown in the illustration. The old method of installation was found to present difficulties on some cars that could not be overcome by the mechanic entrusted with the job, hence this reversal of the method of attachment for the rear absorbers was determined upon, though both models will be made and supplied, according to the car to which they are to be fitted. The principle of the Hotch-



MODEL 101, HOTCHKIN ANTI-JOLT.

kin is that of forcing glycerine alternately through a large valve and a needle valve, through a small opening which may be diminished or increased to suit the weight of the car. It exerts no retarding motion while the springs are being depressed, but merely retards the throw of the springs after compression, the enclosed piston working radially like the spokes of a wheel.

Springfield Motometer's New Models.—The R. H. Smith Manufacturing Company, Springfield, Mass., makers of the Springfield motometer, are showing their progressiveness by the addition of several new and valuable features to this ster-

ling auto accessory. The most important of these is the new "maximum hand," which, as its name indicates, is a supplementary pointer traversing the vertical scale with the regular indicator but which remains at the maximum or highest speed attained, from which it may be instantly released by pressing a button. On dropping, it again returns to the point at which the regular indicator happens to be at the time. It can also be made inoperative by equally simple means, so that it travels up and down the scale together with the regular indicating hand, not even being visible to confuse the observer. The vertical scale of the motometer is well adapted to the application of a device of this nature and full advantage has been taken of that fact. In conjunction with this new indicator, the motometer will also be supplied with



THE NEWEST SPRINGFIELD MOTOMETER.

what extensive study and experiment has shown to be the very best form of dial, the new scale being calibrated with figures fired on in jet black enamel against a pure white background. Improvements have also been made in the transmission by the addition of a new tempered steel reinforcement at each end of the shafting, forming a protection against the short bend or kink at these points that is so fatal to any flexible shaft. The use of oil-tempered steel spring stock in the shaft also gives more room for the latter and produces better action under flexion. An innovation of unusual merit is to be found in the adoption of a self-clearing or rather non-clogging pinion in connection with the hub transmission, and which after exhaustive tests has been found not to clog under the most severe road conditions. So far as the appearance of the motometer or its essential features are concerned, these have undergone no changes whatever, and it will be noted that those described are rather in the nature of detailed refinements suggested by experience than radical changes necessitated by difficulties encountered, as all of them may readily be added to any of the models of the motometer now in current use.

Springfield Ratchet Screw Jack.—The latest product brought out by the Shawver Company, Springfield, O., is a powerful ratchet screw jack for cars weighing from 1,000 to 4,000 pounds. The base is of malleable iron, heavily ribbed and is made dust proof, while the screw is of the regulation type, being of steel with a four-



SPRINGFIELD RATCHET SCREW JACK.

pitch, square thread. The height of the jack over all is 12 inches, and its extreme rise 7 inches. The ratchet works in a grease-tight, malleable casing, from which both screw and ratchet are lubricated, one filling being sufficient for a season's use. The ratchet is made of steel and hardened. As shown by the accompanying illustration, when not in use, the jack is most compact, requiring very little room in the tool box, and as all its parts are securely locked together, it is absolutely rattle-proof.

Robert Spark Plugs.—The Robert Instrument Company, 56 Shelby street, Detroit, Mich., has just added a new specialty to its line of auto specialties in the shape of a spark plug for which many advantages are claimed. The insulation is composed of the best East Indian white transparent mica, and from the



NEW ROBERTS SPARK PLUG.

extended study the makers have given the problem of spark plug construction, they claim that the vertical mica wrapping around the shank of the plug, over which the body of the insulation is compressed under great pressure, makes it leak, crack and soot-proof, regardless of

compression or temperature conditions. The plug terminals are of non-corrosive platinnite, a composition which is said not to be affected by very high temperatures. The material for this purpose is imported from Sweden, the latter country already having attained a reputation as the producer of the finest materials for this purpose. The new Robert plug is made only in 1-2-inch iron pipe size.

Buffalo Carbureter.—That simplicity and fewness of small parts constitute the prime essentials of success is probably true to a greater extent of the carbureter than of any other part of the motor, and this has been fully recognized by the makers of the Buffalo carbureter. the Buffalo Carbureter Company, 889 Main street, Buffalo, N. Y. As will be seen from the accompanying sectional illustration of the Buffalo, it not only is composed of a minimum of parts, but also differs in other respects from cur-

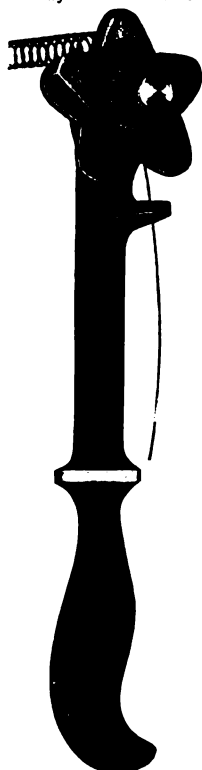
cred. To enable the autoist to avoid this the Clysmic Spring Company, 251 Fifth avenue, New York, has prepared what is termed a "special automobile package," the convenient size and contents of which are illustrated by the accompany-



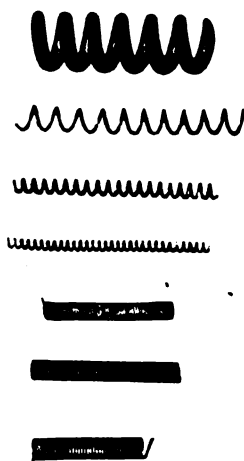
SPECIAL AUTO PACKAGE OF CLYSMIC.

ing cut. The latter consists of two quarts, two pints and five "splits" of sparkling Clysmic water, and one quart and two pints of natural Clysmic, thus providing a generous supply in a small compass. Doubtless the innovation will meet with general favor at the hands of those tourists who have not always found it possible to obtain a convenient supply of good water for drinking purposes along the road.

Perfection Spring Winders.—This is a new tool that has just been introduced to the automobile trade, and its value as an adjunct to the shop outfit of every repairer as well as to the tool kit of every autoist will be apparent at a glance, as it can be used with a lathe, drill or vise, and will wind compression or extension springs



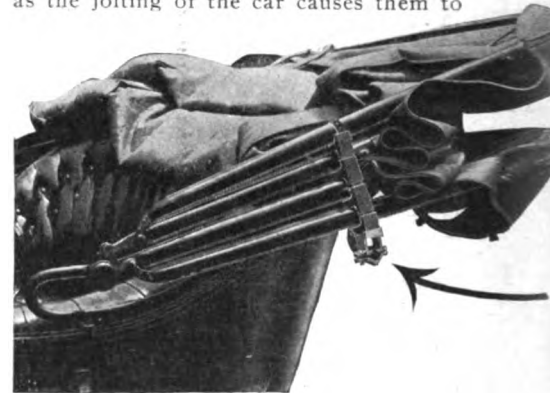
PERFECTION WINDER.



of any length from any gauge of wire. To use, a spacing washer of the thickness desired is selected on the web and

moved opposite the handle. The end of the spring wire is then passed through a hole in the lug cast on the handle, as shown by the accompanying illustration of the complete tool. From here it is passed through the brass friction washers, at the same time passing through the hole in the stud on which the washers rotate. Then the end of the spring wire thus drawn through is fastened on the arbor, the spacing washer is rested against the arbor and the nut on the stud tightened to give the required tension, care being necessary to give the proper amount of tension as the wire passes through the friction washers, the makers stating that the wire should be dragged through the washers rather than pass through loosely. In winding, a slight pressure to the left produces a uniform spacing of the coils of the spring. A lefthand spring may be wound by reversing the operation described, starting from the opposite end of the arbor. The Remington Tool & Machine Company, Boston, Mass., is the manufacturer.

Gleason Cushioned Bow Rest.—The almost universal use of the cape top has brought with it a demand for some simple and effective device for the protection of the bows when the top is down, as the jolting of the car causes them to



GLEASON BOW REST IN SERVICE.

rattle and, if not restrained, to break and also damage the top itself. To prevent this the India Rubber Tire Company, 477 Wabash avenue, Chicago, Ill., have just placed on the market a device known as the Gleason Cushioned Bow Rest, which, in design, is extremely simple. It is made of a number of sections of pure rubber with a leather strap running through them, while a metal holder screws on to the bracket and holds it in place. It is adjustable and will fit any machine, the illustration showing one with four openings, but they are made with three and five openings also.

Aluminum Solder.—One of the greatest disadvantages inherent in aluminum has been the impossibility of soldering it by ordinary means, which accordingly greatly restricted its uses. Now, however, an aluminum solder is being placed on the market by the Aluminum Solder and Refining Company, of Oswego, N. Y. The invention dates back to about a year ago, and it is the claim of the makers that it will not only join aluminum to itself by soldering, but will also permit of its being joined to other metals, and as aluminum is an electrical conductor, this invention will open a broad field of usefulness to aluminum in the latter industry. They give an absolute guarantee with every bar of solder.

rent forms of construction. The float chamber with its cork float is placed at one side of the tubular mixing chamber, which is of unusual length, and the fuel enters at one side of the bottom, a drain cock being placed in the center. In fact, its construction may be taken in at a glance and scarcely calls for any extended description. That it has stood the test of time in no uncertain manner is evident from the number and standing of the manufacturers, who employ it as a part of the equipment of their cars. Some of these are the De Luxe Motor Car Company, Detroit, Mich., on their Queen cars; the Ford Motor Company, Detroit, Mich.; Jackson Motor Car Company; Knox Automobile Company; Wayne Automobile Company, Wayne Works, Richmond cars; Welch Motor Car Company; the H. E. Wilcox Motor Car Company, and others. Some of its notable performances are the winning of the 24-hour race at Detroit by the Ford Six and the showing of the Haynes stock car in last year's Vanderbilt race.

Clysmic Water for Autoists.—One of the great drawbacks of touring through sparsely settled country, or in fact any great distance from home in whatever direction, has been found in the indifferent and, at times, unpleasant character of the drinking water encount-

THE AUTOMOBILE

LONDON, Aug. 20.—John Bull's land being a tight little island, it is easy for the police, municipal councils, county councils, village councils and every other body with judicial or assumed authority to take a maternal interest in the welfare of automobilists. On our pleasant, high-hedged dusty country lanes—from flowery Devonshire to grimy Lancashire—automobiles are generally a nuisance to everybody but the automobilist, and the special aversion of the conservative village squire and the one-man village police force. When speeders grew inconsiderate speed traps came into existence. Neighboring villages learned how Slocum - cum - Slocum was filling its coffers at the expense of the "beastly motor cars" and forthwith decided that it would have some recompense for the crops and gardens disfigured by the dust from our once deserted country lanes.

To-day police traps exist from John o' Groat's to Land's End, thickly scattered round every big city and thinning out in the rural districts where villages are four miles apart. Wherever you are touring there is the ever-present joy of knowing that hidden away retiringly in some thick hedge bottom or peeping out between the chinks of some north country graystone wall is a blue-coated constable with a Waterbury watch which has never been known to tell a willful lie.

But British motorists have got tired of paying five shillings and costs into town and village treasuries and have organized protective associations as complete in their working as the best organized constabularies. The Automobile Association first took up the matter by an active campaign for considerate driving on the part of its members and automobilists in general, and a lively fight against the principal police persecutors. In every district in which the association was represented voluntary and paid teams of scouts have been formed to denounce to fellow members the existence of traps. Technical journals naturally aid to their utmost in this work, publishing weekly a list of places in which the police are showing activity. One weekly magazine publishes a map of England showing about one hundred and fifty traps in operation from the South coast to the Scotch border. Week by week it is brought to date, indications being given

on the manner of operation and the time of greatest activity. Newly formed traps being the most dangerous, parties of scouts are kept on the roads to discover and report to passing automobilists where special caution must be observed. In addition to protecting inoffensive travelers likely to be the victim of over-zealous police officers, scouts are enjoined to keep an eye on unreasonable automobilists and either prevent or report all cases of abuse. In order that he may be known of automobilists and his advice accepted with confidence, the scout is provided with an association badge. Where this was not used individual autophobes have taken up the gratuitous work of sending automobilists full speed into known traps.

Scouts and police rarely show much brotherly love. Recently the latter have begun to play the game very low by copying the association badge and appearing in plain clothes. It is, however, a dangerous proceeding, for when discovered by the association, as it inevitably is, the arm of the law is severely dealt with.

Last week the Motor Union of Great Britain and Ireland went into the scout business, designed a badge and put a number of men on the roads most frequently used by automobilists. The scouts, who have been largely

recruited from the ranks of retired police sergeants and constables, are instructed to act with the police in warning drivers of dangerous places and advise automobilists where special caution is needed in driving through towns and villages. In addition they are to act as directing guides to the district in which they work, supplying all desired information on hotels, garages, etc. These model automobile policemen keep a close watch on their confrères of the regular force and do their best to frustrate any attempts to trap automobilists for speeding on short sections of open road. Information of this nature gathered by them is at once forwarded to headquarters and distributed through the usual channels.

Unfortunately, there is some jealousy between the two bodies, the A. A. accusing the M. U. of stealing its badge, and neither body showing any desire to be helpful to the members of the rival association. The unattached automobilist with neither of



A WORD OF CAUTION FROM THE MOTOR UNION SCOUT.

the club badges on his car receives the cold shoulder when he approaches the roadside scout with a winsome "My dear man, can . . ." and the member of the M. U. is sometimes told that there may be a hidden trap for A. A. members. To be perfectly protected when touring through England it is necessary to carry the two badges in some conspicuous position.

HASTINGS WINS IN BRITISH AUTOCYCLE RUN.

In the open reliability trial organized by the Auto-Cycle Club of Great Britain, Theodore K. Hastings, the only American entrant, has obtained a clean score with an Indian motorcycle. A series of cablegrams received from the American competitor announces his progress in the British competition as follows: "August 12, arrived in London after pleasant voyage. August 19,

Hatfield; cordial reception by English motorcyclists; carbureter and machine adjusted to varying conditions of this country, runs like a charm. August 19, Coventry; rain, bad going, road greasy; qualified first day; arrested for speeding. August 20, Dangolten; qualified second day; rain, road greasy, tire trouble. August 21, Aberystwyth; qualified third day. August 22, Cardiff; qualified fourth day; tire trouble, roads excellent, fine running. August 23, Gloucester; qualified fifth day; more tire trouble. August 26, London; finished perfect score.

The Auto-Cycle Club's five-day reliability run was laid through rather difficult mountain country in Wales, the test being rendered more arduous by the heavy rain, which made going difficult at all times. Motorcycling has taken a stronger hold in England than in any other country, the competitions organized by the national club always being keenly contested.

BROOKLANDS TRACK NOT AN ASSURED SUCCESS

LONDON, Aug. 17.—The Brooklands track has certainly not been altogether a success. The opening race meets were characterized by a lack of attention to details which caused great annoyance to competitors and spectators alike. In later events these mistakes have in great measure been remedied, but the improvement comes almost too late. The novelty of the idea has worn off and no longer will the public flock out to Weybridge merely to see a few runaway wins, with interminable intervals between events.

With the object of stirring up public interest once again, the club has decided to have but four classes in all open events in future. These divisions will be limited by the d'n over 2.5 formula, the powers in each case being as maximum 25 horsepower, 40 horsepower, 80 horsepower and 160 horsepower. Class III will include all engines built in accordance with the specification agreed to at the recent Automobile Congress at Ostend, while Class IV will hold any car that could manage to stay on the track at the corners. It has also been found advisable to shorten the races considerably and five miles will be the maximum distance for ordinary events.

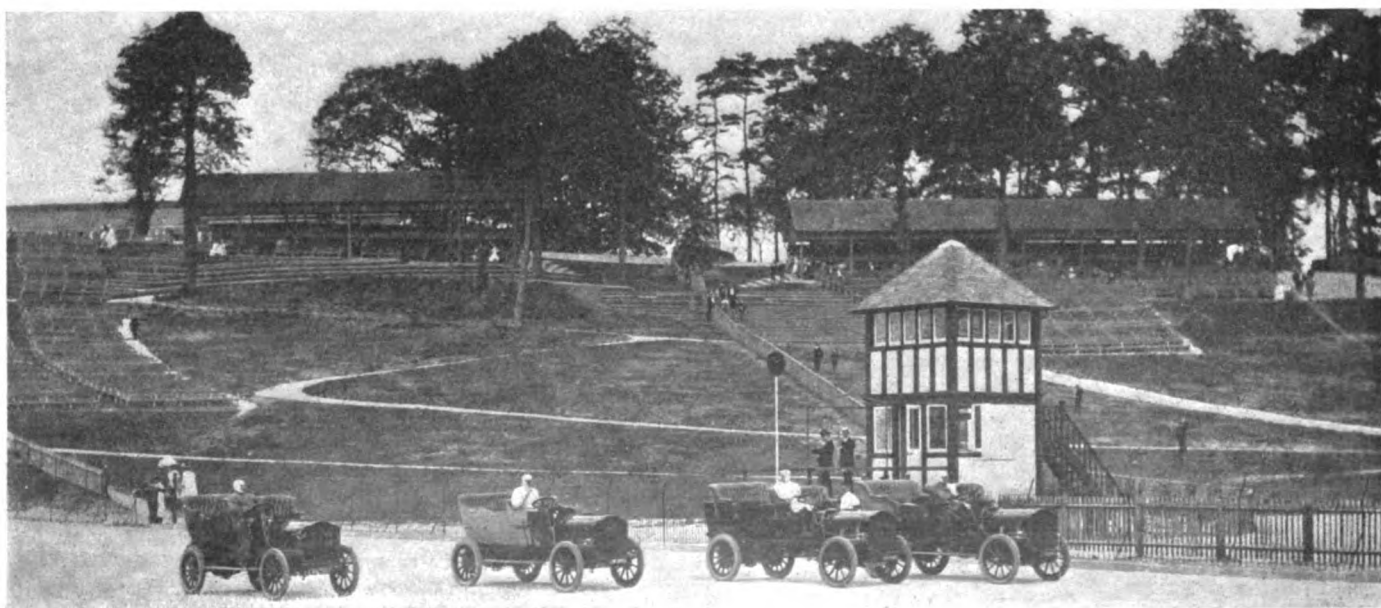
Even with its defects, Brooklands has already served a useful purpose by showing up some weak points yet remaining in the modern automobile. The extraordinary number of breakdowns has been a feature of almost every race, and cars which might normally be considered beyond reproach developed all kinds of

ailments when forced along all out for a dozen miles. Water circulation troubles have been most prominent, closely followed by carbureter derangements. Rather an unforeseen source of trouble has been the fine cement dust from the track, which has played havoc with insufficiently cased-in joints and bearings, particular sufferers in this respect being cars on which the under screen had been discarded. All these points will, without doubt, be carefully noted and trouble obviated in future productions—showing the advantages and influence of the racing game in the evolution of the perfect automobile.

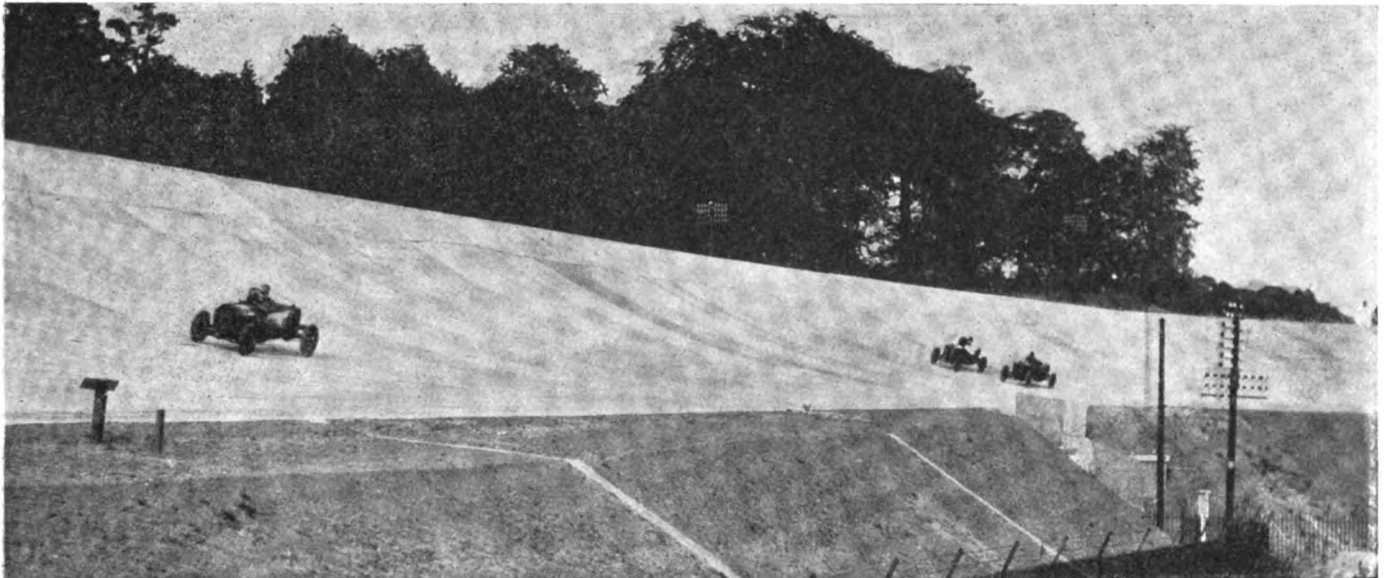
Good Sport and Improved Management at Bank Holiday Meet.

Public interest revived considerably in the Bank Holiday meet. There being a shilling gate, society folk kept away, their absence, however, hardly being noticed in the 15,000 crowd from Greater London.

The race for the White steam car plate, in which only 30-horsepower White steamers, 1907 model, were eligible, provided excellent sport. There were eight entries, but Earl Russel's and Lord Blythswood's cars failing at the last moment, the starters were reduced to six. For the six miles F. Coleman's and Colonel J. Roper Wright's steamers raced bonnet and bonnet, the former finally making a sprint and winning by half a length. F. Payne's steamer got third position, nearly a mile behind, and the three others finished well bunched far in the rear.



WHITE STEAMERS, ENTERED BY PRIVATE USERS, HAD THEIR OWN RACE ON THE ENGLISH AUTODROME.



MOORE-BRABAZON LEADING WITH A BELGIAN MINERVA IN THE RACE FOR THE WALTON STAKES.

America was also represented in the Oatlands Selling Plate, which could hardly be called a race, for it united such diversified models as two 10-horsepower Cadillacs and 40-horsepower Napiers, very imperfectly equalized by a weight limit. Edge's 38-horsepower Napier came first, Charles Jarrott's Sizaire & Naudin second, a 10-horsepower Darracq third and the two Cadillac cars fourth and fifth, followed by a Napier and a Queen. The winning owner received \$750 and his car was sold at auction for \$1,075.

The race of the day was the running of the Prix de la France of 800 sovereigns for the entrant of the winner, and 200 sovereigns for the entrant of the second. Only machines which complied with the regulations of the French Grand Prix were eligible, their gasoline allowance for the 15¾ miles being proportionately the amount allotted for the race in France. D. Resta, driving a Mercedes, proved the winner, against a field consisting of three each of Mercedes, Napier and Dietrich, and one each of Motobloc and Darracq. When the gate went up J. E. Hutton's Mercedes took the lead, with Resta's Mercedes second, the others in order being Newton's Napier, Motobloc, Mercedes, Edge's Napier, and Dietrich. On the fifth round, after an exciting tussle, Hutton's Mercedes passed Resta's machine on the banking. Immediately afterward a series of mishaps occurred to Hutton, the car bonnet flew off, the accelerator pedal broke and a water pipe burst. This allowed Resta to get ahead again and finish first, but did not prevent Hutton securing second place on a deflated rear tire. Gabriel and Duray drove Dietrichs and Demogeot handled a Darracq.

J. C. Moore Brabazon, driving the Minerva with which he was victorious on the Ardennes circuit, captured the Walton stakes of 200 sovereigns, Huntley Walker's Darracq being second and two Minervas third and fourth.

In the contest for the Belgian plate, competitors for which had to comply with the regulations of the Ardennes circuit race, Napiers took first and second positions, Minerva third, Napier fourth, Moore-Brabazon's Minerva fifth, Huntley Walker's Darracq sixth and a Napier last.

A keen race was run for the International plate, for cars to be driven by subjects of the country of origin of the machine. S. F. Edge's Napier proved the winner, closely followed by Gabriel on a Dietrich. Tom Thornycroft's Thornycroft car was third.

Official Results of the Scottish Trials.

The recently published results of the Scottish Trials are of great interest on this side, in that out of nine cars qualifying for first awards all but two are British, the exceptions being two Mass cars from France. To the American reader, in whose mind "all-

British" does not arouse feelings of noble pride, the points of interest in this Scottish Trial are the general absence of tire trouble and the big fuel economy of the competing cars. The tire makers must indeed be given big credit for the advances they have made.

When a hundred cars can cover a 750-mile course over every class of road, and in no single case have tire stoppages totalling to one hour, one trouble of motoring is clearly on the wane. This satisfactory demonstration is the more conclusive by the backing it has had in other European automobile competitions.

Hardly less remarkable is the low fuel consumption, which was throughout carefully checked by the observers. First place in this line is given to the 24-30-horsepower Arrol Johnston, credited with 41.4 ton miles per gallon of gasoline and 24 car miles per gallon. Next in merit comes the 16-horsepower Albion, with 37.6 ton miles and 23.6 car miles for each gallon. To take a few other notable examples, the 50-horsepower Rolls-Royce did well with 32 ton miles and 17 car miles per gallon, while with the same quantity of fuel the 40-horsepower Berliet and the 35-horsepower Iris could each cover 22 miles of road. The biggest distance per gallon, irrespective of weight, was made by the 10-horsepower Chambers in Class I, which touched 37 miles.

Over 14,000 Miles for the Rolls-Royce Non-Stopper.

The longest officially observed reliability trial has just ended with the conclusion of the 15,000th mile of the 50-horsepower six-cylinder Rolls-Royce, and only then because the R. A. C. decided that the official observers had had quite enough fresh air for the present season. This big run was commenced at the Scottish Trial, but hardly had the car started on the second day's journey when the gasoline tap closed itself and the car came to a standstill—though nobody but an official observer would mark down the twenty seconds taken to get going again as a stoppage for mechanical trouble. From this time onward the car behaved in an exemplary manner, and for six weeks four sets of drivers and observers ran the car from London to Glasgow and back, 400 miles being traversed every twenty-four hours, with stop for Sundays only. To the end of the 15,000 miles no further stoppage occurred, so that the world's observed non-stop record stands at 14,371 miles to the credit of the Rolls-Royce. Such a performance speaks for itself and hardly needs any further comment. Certain it is that this record is not likely to be in danger of being increased for some time to come. Examination of all the running parts of the car is being made at present by the club's technical committee and when any necessary renewals have been effected the entire running costs of the run will be published.

TO TRAVEL 62 MILES AN HOUR ON WATER.

PARIS, Aug. 20.—Surrounded by half a dozen mechanics in his private workshop, at Neuilly, Santos-Dumont is actively at work, while all good Parisians are idling at the sea shore or in the mountains. A \$10,000 bet depends on the activity of the next few months, and the young Brazilian aeronaut is not the man to be beaten easily. At a recent dinner, held to celebrate a bet between M. Archdeacon and M. Charron relative to a hydroplane performance, Santos-Dumont formed one of the party, and was led to take up a wager with the head of the C. G. V. automobile firm that he would travel over the water within eight months at a speed of 100 kilometers (62 miles) an hour.

"Up to the present those who have given attention to hydroplanes," declared Santos-Dumont, "have made the mistake of constructing machines far too heavy. To obtain high speed on water, as well as on land, weight is of primary importance. The apparatus I am now building consists of this aluminum and wood carcass, 32 feet long, cigar-shaped, to be covered by a rubber envelope and filled with compressed air. At the forward end it will rest on the water by means of a transverse float 13 feet in length, and by a smaller float at the rear—about 5 feet in length.

"My motor will be a 16-cylinder Antoinette, developing 120 horsepower. It will be placed at the forward end of the hydroplane just above the larger float, and will weigh, all accessories included, not more than 330 pounds. The total weight of the hydroplane will be 550 pounds. No, it is impossible to say when the hydroplane will be ready for its first test, but I am sure of traveling 100 kilometers in the hour before January 1."

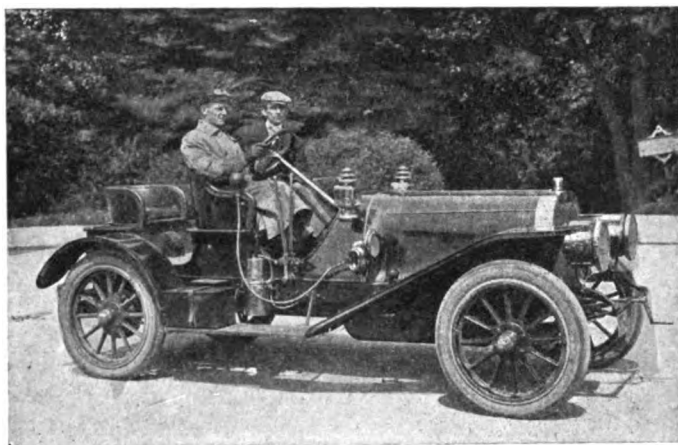
PIERCE CO. OPENS TOURIST OFFICE IN PARIS.

PARIS, Aug. 19.—A remarkable increase in the number of American automobiles touring in France has been noticeable during the past two seasons. In 1905 an American family touring Europe in an American machine was a distinct novelty. In 1906 scores of the best known makes of cars from across the Atlantic could be found in the principal Parisian garages and in the large provincial touring centers. This year the number has further increased. As a convenience to their numerous clients who now tour Europe in Pierce machines, the George N. Pierce Company has found it necessary to open offices in Paris, where spare parts can be obtained and where tourists may find all information on European travel. N. Smith Goodsell, for many years an American resident in Paris, has charge of the establishment. During the present season no fewer than forty Pierce machines have reported at the French headquarters. Other American automobiles frequently seen touring in France are Packard, Lozier, Rainier, Stearns, White, Winton and Oldsmobile.

3,071 EUROPEAN MILES WITH ONE SET OF TIRES.

H. M. Sternbergh, president of the Acme Motor Car Company, is now touring Europe, and in a letter he writes:

"The other day in our Acme we ran to Bern, on to Morat, near Neufchatel, and returned, making seventy-one miles in less than four hours, over fine roads and through charming country, without a hitch or drawback of any kind. This is pretty good, considering that we had to slow down frequently for sharp curves in the road and in passing all sorts of vehicles, such as two and four-horse wagons, two-cow wagons, one-horse and one-cow wagons, dog and man carts, baby carriages, and men, women, children and dogs afoot. We came all the way in the car through Holland from Rotterdam, along the Rhine, over the Taunus Mountains, where we encountered snow banks in the road, and up and down steep hills. We then came through Wiesbaden, Darmstadt, Stuttgart, and Heidelberg, through the Black Forest to Freiburg, Schaufhausen, Zurich and Lucerne to the delightfully quaint and interesting little Swiss town of Thun, making all told 3,071 miles, with but one set of tires."



R. G. KELSEY IN HIS NEW 50-HORSEPOWER HAYNES.

SOME NEWS FROM GERMANY.

BERLIN, Aug. 17.—The German Motor Volunteer Corps is sending a great number of cars to the Imperial maneuvers early in September, and although the most important work will be put into the corps' hands, the military authorities have had to hire several other cars outside the corps in order to meet all requests for automobiles made by the various departments and staffs. The importance of the automobile in modern warfare is thoroughly recognized in the Fatherland.

The South-German tour for this season has met with the same fate as the West-German event—postponed until next season—and the promoters of both contests have only to thank the fierce opposition of the South-German press for these lamentable endings to labor extending over a period of several months. The South-German tour, although national, would well have vied with the last Herkomer as far as importance for Germany event, as it had a large number of entries, close on 150, and magnificent prizes had been donated. After Wurtemberg and Baden had refused permission for the tour to traverse their territories, the committee came to the conclusion that it would be unwise to work out a new and wider route for Prussia. Hesse and Bavaria, as the Prussian Government, while giving the last West-German tour full permission, at the same time nullified this by a most handicapping set of regulations, turning the event into a procession with no passing of any kind, and a like result was also feared for here.

An interesting English-German suit will be heard after the law vacations in England, as the German Daimler Motor Company has taken steps in the London High Court of Justice to prevent the newly founded British and Colonial Daimler-Mercedes syndicate from using the words Daimler-Mercedes.



THE NEW WATER-COOLED CORBIN APPEARS IN PUBLIC.

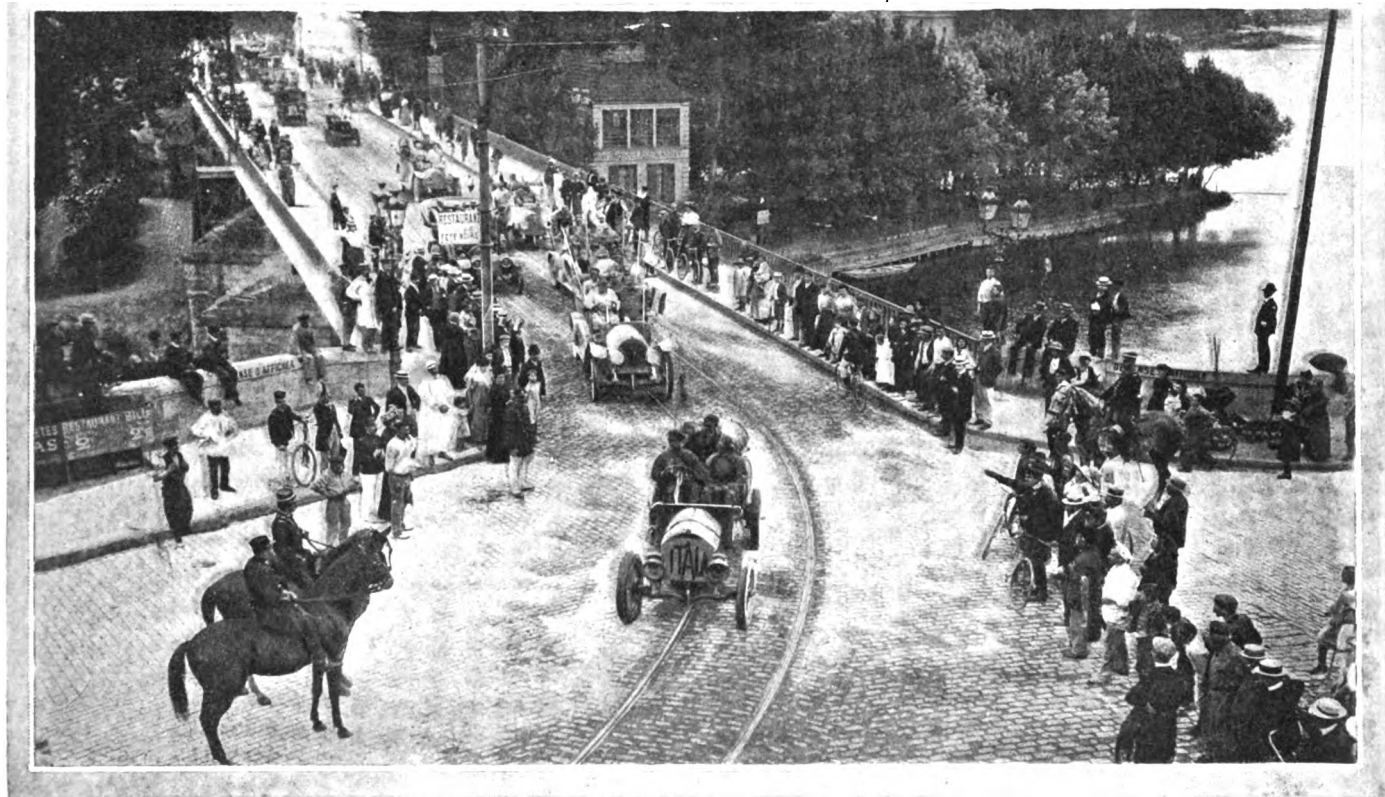
PEKIN TO PARIS BY AUTOMOBILE IN 62 DAYS

PARIS, Aug. 16.—Drizzling rain damped the boulevards, but was incapable of lowering the enthusiasm of Parisians on the arrival of Prince Borghese and his Itala car home from the 8,000-mile run from Peking. Boulevard Poissonnière again brought out its fourteenth of July flags and decorations; *Le Matin* establishment reveled in tricolor flags outside and within had transformed its business offices into a banqueting hall, where champagne flowed and where eatables were distributed in gratuitous profusion.

On the heights of Champigny crowds of automobilists, cyclists and foot passangers had congregated to escort the procession of Itala cars, with the prince at its head, into the city.

Borghese, however, evidently decided at the outset to push ahead of his companions, for he arranged for his own supplies in China through his brother, a chargé d'affaires at Peking, and had his own gasoline stations established in Russia and Siberia through influential friends in those countries. It was an easy task to outstrip his companions, for the Itala car has a 40-horsepower engine and a runabout body, whereas the other machines are not over 20-horsepower and carry a fully equipped tonneau. The Contal tricar had but a modest 10-horsepower engine to propel it over untraveled regions.

When Prince Borghese decided to undertake the journey his request for a machine was at first refused by the Itala Com-



HOME FROM CHINA—TRIUMPHAL PROCESSION OF ITALA ON JOINVILLE BRIDGE, EIGHT MILES FROM FINISH.]

Over the Marne at Joinville, the last river to be crossed, through the Bois de Vincennes, the populous district of the Throne and down to the Grands Boulevards, where a detachment of Republican Guards gave official dignity to the travelers, the procession increased in volume and importance. Cyclists held on to the sides of the victorious car, glorying in the opportunity to risk life and limb—for the Parisian cyclist considers himself the half brother of the automobilist; occupants of cars worked themselves into a frenzy, and the idle boulevardier cheered as he felt in honor bound at anything pertaining to the automobile industry which the patrie created.

Sixty-two days ago—on June 10—Prince Borghese's Itala, together with two De Dions, a Spyker car and a Contal tricar, left Peking for Paris in response to a challenge issued by the Parisian journal *Le Matin*. It was agreed that the five contestants should keep together until Lake Baikal was passed and be helpful to one another, the contest being undertaken to prove the ability of an automobile to cross two continents under its own power, irrespective of speed. A route was planned out by the *Matin* and a number of gasoline stations fixed at intervals. Prince

Finally they acceded to his request by furnishing a 1907 model 40-horsepower car, set on specially high wheels and with its under body cleared as much as possible to provide against damage from the rough country to be traversed. Two bucket seats were fitted in front and a single seat placed in the center of the rear platform, flanked on each side by a large gasoline tanks capable of containing sixty gallons, calculated to be sufficient for 625 miles. Across the rear of the platform was a box in which tools and spare parts were carried, and the remaining space was used for two tanks, one to hold twenty gallons of lubricating oil, the other for water, which it was expected might be needed in the desert. Pirelli & Co., of Milan, supplied the tires to special order, sending large quantities to various stations along the route. It was found, however, that very few tires were needed, the total consumption being sixteen shoes and the same number of inner tubes. In place of mud-guards four stout wooden planks, one inch thick and five feet in length, were used, two being fixed obliquely at each side of the car to a footstep near the middle of the frame. When an obstacle was met with these were taken off and used as a

bridge. The entire car was of Italian construction, with the exception of the low-tension magneto, supplied by the Simms-Bosch firm of Paris.

Chinese Country Proved Most Difficult of the Tour.

On the third day out from Pekin the Itala was imbedded over the axles in a morass held up by immense roots of trees which had to be cut away with axes before the car could be liberated. Two days later another morass detained them for an hour, and when this was overcome the car had to be dragged through eighteen miles of deep sand by coolies and mules. The first part of the journey from Pekin to Kalgan was practically the only one where outside aid had to be obtained. Animals were used at first, but it was soon found that natives were better, owing to their greater quickness in obeying commands. Over this stretch of country the special mud-guards were found invaluable when used under the wheels.

At Pong-Kiong the newspaper correspondent accompanying the prince sent the first message, the only one which had been dispatched within a radius of 100 miles within six years. At this point Pons, driving a Contal tricar, abandoned the contest: The Itala had, got a big lead, the De Dions and the Spyker

had been thrown away to reduce weight on entering the desert; consequently little aid could be given by the engine when the bog was struck. Mongols, armed with long beams which they used as levers, and a big team of oxen finally extricated the car. The automobile was in an even worse position the next day, when, in order to get it out of the morass, the body had to be removed and four hours hard tugging indulged in. After the mud-guards had been cast off the water tank was abandoned, nothing being carried on the car but the crew's personal effects, tools and four spare tires. When rivers had to be forded the magneto was always removed, for it could never be ascertained accurately beforehand to what height the water would rise. On three occasions every article was removed from the machine and oxen dragged it through the water, which once completely covered the car, but without causing any damage. The task occupied three hours.

Daily Attention to Engine Was Well Rewarded.

Much of the credit for the safe arrival of the Itala, says Prince Borghese, is due to the painstaking work of the mechanic. During the day he occupied a little nest on the rear platform with a gasoline tank on each side and a tool box behind him.



SKETCH MAP SHOWING ROUTE OF THE FOUR AUTOMOBILES FROM PEKIN TO PARIS.

- | | | |
|-----------------------------------|--------------------------------------|--|
| June 11—At Cha-tau-Chung. | July 4—At Nijnjudinsk (1,770 miles). | July 23—At Kazan. |
| " 12—At Shimpamwan. | " 5-6—At Kans (2,000 miles). | " 24—At a mill about 60 miles from Kazan. |
| " 13—At Shin-wa-fa. | " 7—At Krasnolarsk. | " 25—At Nijni Novgorod. |
| " 16—At Kalgan. | " 8—At Atchinsk (2,200 miles). | " 26—At Vladimer (5,600 miles). |
| " 17—Fifty miles from Kalgan. | " 9—At Mariinsk. | " 27-30—At Moscow. |
| " 18—At Pong Kiong (300 miles). | " 10—At Turuntayeva. | " 31—At Novgorod. |
| " 19—At Udde. | " 11—At Tomsk (2,500 miles). | Aug. 1—At St. Petersburg. |
| " 20—At Tuerin (650 miles). | " 12—At Kollvan. | " 2—Near Dvinsk. |
| " 21-23—At Urga. | " 13—At Kalnsk. | " 3—At Kovno. |
| " 24—Daturdaba Mountains. | " 14-16—At Omsk (3,000 miles). | " 4—At Stargard. |
| " 25—At Klatkha. | " 17—At Ishim. | " 5 and 6—At Berlin. |
| " 26—At Verkhnouidnsk. | " 18—At Tumén. | " 7—At Bielefeld. |
| " 27-30—At Misovsk (1,260 miles). | " 19—At Ekaterinburg. | " 8—At Liège. |
| July 1—At Tankoe. | " 20—At Perm. | " 9—At Meaux. |
| " 2—At Irkutsk. | " 21—At village near Perm. | " 10—AT PARIS (between 7,000 and 8,000 miles). |
| " 3—At Zima. | " 22—At Melet. | |

DAILY PROGRESS OF THE CONTESTANTS.

Figures on map mark daily progress of the Itala on its 8,000-mile journey from Pekin to Paris. Map is reproduced from English "Motor."

were traveling together with the Contal slightly in the rear. Owing to some repair the little tricar was left behind by its larger companions, but pluckily held on its way until the emptying of its gasoline tank brought it to a final stop. According to the French driver, no attempt was made to help him, although the worst stage of the journey had been covered and he was in a position to continue, and he was consequently obliged to work back to Pekin on foot, disappointed and disgusted, then proceed to Paris by train.

The most fearful part of the journey was across the Gobi desert, a distance of about 1,000 miles, as nearly as could be ascertained. Frequently the heat in the desert reached 122 degrees F., parching the throats of the travelers and making breathing most oppressive. No road existed, not even a track was visible, the telegraph posts alone indicating the direction of travel. No help could be had from a compass, for the Itala did not carry one.

The 60-gallon gasoline tanks proved specially valuable on this stage of the journey, allowing the Italian car to continue uninterrupted, while the Spyker was held up awaiting supplies and the Contal was abandoned. But Prince Borghese had his own troubles. At Ourga the Itala stuck in a morass and fell over on its side. To the deep regret of the team the mud-guards

When the night stage was reached he made a thorough inspection of the engine, often working long after the others were asleep, laboring so conscientiously that the car was never delayed by mechanical troubles.

On June 30 a bridge broke down, precipitating the car and its occupants into a torrent from which they escaped with difficulty. The car suffered much damage and was only salvaged after three hours work. For a large portion of the journey the railroad tracks ran parallel with the road. An attempt was made to run the car on the track, one wheel being between the rails, the other on the outside. It was never known when a train would be met, for drivers would run ten or twelve hours late without any compunction. After a very close escape from a collision, owing to the outside wheels sticking in the sand, it was decided that this was not a very safe method of travel and the boggy track was again followed.

Before reaching Omsk, in Central Asia, the seizing of the brake bands caused overheating and set the car on fire. Axes had to be used before the flames could be extinguished. Just when the Ural mountains had been crossed and European ground was entered upon, the left back wheel spokes became loose. They were soaked in water all night, but this was not sufficient to prevent the wheel collapsing the next day. A local workman,

who had never before seen an artillery wheel, rigged up a makeshift, which gave indifferent service until a substitute could be sent out. The second rear wheel was changed as a precaution. At Moscow both rear springs broke, and one front one having become weak was changed to prevent future delay.

From Moscow an unending series of fetes awaited the leader of the Pekin-Paris tour. The Automobile Club of Russia organized a procession of automobiles, among which was an American Buick, a large English omnibus and a number of French cars to go out to meet the Itala, a Cossack guard escorting the party in triumph into St. Petersburg.

Belgium Provided the Skeptical Police Officer.

After forty-one days' traveling through the land of the Czars, the German frontier was crossed at Wierzbolor and Berlin was reached on August 5. An enthusiastic reception was given by the Imperial Club, but the travelers were too anxious to reach their destination to stay longer than two days, and on the 6th made their departure accompanied by half a dozen Italas. Except for a stoppage in Belgium by a gendarme, who refused to believe that the prince was other than a smuggler or at best a law-breaking automobilist, no incidents marked the remainder of the journey until the Parisian wave of enthusiasm broke out.

When the car had been stripped of its mud it was found that it had lost about 250 pounds in its 8,000-mile journey, all unnecessary articles having been shed en route. For a few days the Itala occupied a position of honor in the windows of the *Matin* offices; it has now taken to the road again with Milan as its destination, where illuminations and banquets will be the lot of the modest travelers once more.

The exact mileage from Pekin to Paris is not yet known, the Itala car not carrying a distance recorder, owing to the owner's desire to save weight; it is calculated, however, to be between seven and eight thousand miles. Sixty-two days were occupied in making the journey, 12 of which were spent in different towns making adjustments, waiting for stores or being entertained by the enthusiastic populations. Prince Borghese believes that the trip could have been accomplished in 55 days and that 45 days might be sufficient to make the journey from Pekin to Paris at the right time of the year.

A cable from Cormier, the head of the De Dion team, announces that he is at Moscow together with the Spyker. Enthusiastic crowds gather round the three cars, examining them in detail and admiring them without stint. They are eighteen days behind the Itala and in order to gain time have decided to refuse invitations, avoid St. Petersburg, and make for Berlin.

1908 GRAND PRIX DATE AND CONDITIONS ANNOUNCED

PARIS, Aug. 20.—Hardly have the echoes of the 1907 Grand Prix died away than announcement is made of the great French race for next year. According to an official notice, just issued by Secretary Sautin, the 1908 Grand Prix will be run between June 20 and July 5, the exact date to be decided later. Regulations adopted are those decided upon at the Ostend conference, and are officially condensed into three brief paragraphs:

"All cars taking part in the 1908 Grand Prix must have a four-cylinder motor with a bore of 155 millimeters (6.1 inches), or this equivalent when any other number of cylinders are used.

The cars in running order, but without water, gasoline, tools, spare parts or extra tires, must weigh a minimum of 1,100 kilos (2,425 pounds).

"In this weight of 2,425 pounds, oil in the motor and gear-case will be included."

No official announcement has been made regarding the circuit, but, as most of the members of the Sporting Commission are in favor of the Dieppe circuit again and Dieppe naturally has no objections to make, it is exceedingly probable that the 1908 Grand Prix will be held over the same ground as the race of this year.

The proposal is afloat to retain the Dieppe circuit as a permanent course, on which not only the Grand Prix, but all other events of the A. C. F. would be contested. Such a move has become necessary owing to the expense of organizing a military-guarded race on a fresh course each year. Excepting the last event, every international race in France has entailed a heavy loss on the French club. With a fixed circuit this loss would be changed to a substantial profit. If the Dieppe circuit is decided upon as a permanent course, it will probably be reduced in length by cutting out Eu and running the road direct from Londinières to Criel.

A lively technical discussion has been raised on what shall be the equivalent dimensions for engines having other than four cylinders. Certainly four-cylinder four-cycle motors will predominate in the race, but it is felt that an early decision should be arrived at on regulations governing the possible entry of six and eight-cylinder machines and two-cycle motors. Constructors intending to depart from the beaten track must wait until the next meeting of the conference, in December, for a final decision, while those who will adhere to the regulation type of racer can commence building at once.

MILITARY FOR ALL FRENCH TOURING TESTS

PARIS, Aug. 19.—No further contests in which any fixed speed has to be maintained will be allowed over unguarded roads in France, according to a declaration made by M. Hennequin, general secretary of road traffic at the Ministry of the Interior. As the result of the deplorable accident in the Criterium of France touring competition, stopped by order of the Government, an order has been issued that the Rochet Schneider Cup, intended to be held under similar conditions, will not be authorized. This competition has been held for three years without accident, but the Minister declares that it is impossible to allow it to be held again after what has happened in the A. C. F. competition.

Interviewed on the probable attitude of the Government regarding future competitions, M. Hennequin, who is a strong supporter of automobiling, declares that no definite decision has yet been taken, but it is probable, owing to abuses which have developed in recent competitions, that no more events will be allowed on a time schedule. In the Criterium of France, organ-

ized with the consent of the Government on a schedule calling for twenty-four miles an hour—the legal speed is only eighteen—many competitors ran at an average of fifty miles an hour over the most thickly populated stages. Their speed during the tour was only slightly inferior to that of the race on a guarded and tarred circuit.

"In future," said the Minister, "we shall only authorize contests on closed circuits, well guarded by troops, and perfectly tarred or oiled. Events such as the Criterium of France will, I hope, never again be seen in this country."

As the result of this decision the question of a permanent autodrome has been brought forward more prominently than ever. French constructors are not adverse to such a scheme provided the circuit is not less than twenty-five miles round and follows the natural outline of the country, without any special banking. A speed course in the nature of that at Brooklands in England is strongly opposed.



AIR-COOLED FRANKLIN, CHICAGO-NEW YORK RECORD BREAKER.

FRANKLIN LOWERS CHICAGO-NEW YORK MARK.

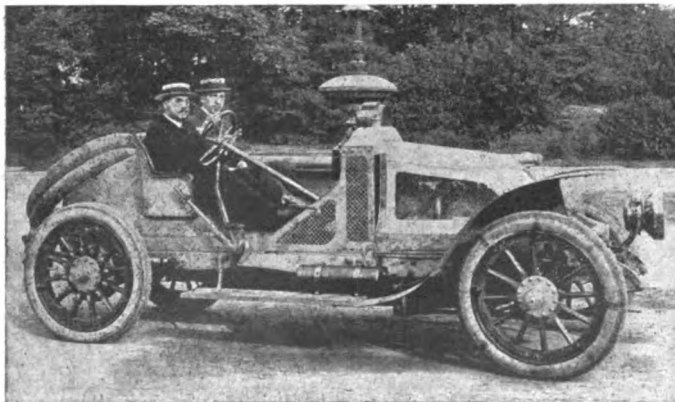
From 56 hours 58 minutes the Chicago-New York time established last year by a six-cylinder Franklin, the 1,240-mile journey has been reduced to 39 hours 53 minutes by a Model D 28-horsepower 1908 Franklin car driven by a team of four men. The start was made from Chicago at 3 A.M., August 21; South Bend was touched at 6:40 A.M., and at 9:20 P.M. the Franklin was in Erie. Between Buffalo and Syracuse the exhaustion of the gasoline supply caused some delay, but when Weehawken, across from New York, was reached, at 7:53 in the evening, seventeen hours had been cut from all previous records. James Daly, Melvin Bates, Charles Talbot and Clayton Carris alternated at the wheel of the Franklin. Only one puncture occurred on the journey, but as Diamond quick detachable tires were used this caused but a momentary delay.

The average mileage for the run is about 30. The exact number of miles traveled is not known, the speedometer breaking off owing to the rapid going over exceedingly rough roads.

RENAULT POSTPONES CHICAGO-NEW YORK RUN.

Owing to the breaking loose of the gasoline tank, the Renault attempt to lower the Chicago-New York record has been postponed until next week. At 3 A. M. last Saturday Paul Lacroix and Bernin started from Chicago on a 35-45-horsepower Renault, with runabout body, reaching Toledo, Ohio, at 1 P.M. Owing to the rough going the gasoline tank broke loose. It was repaired, but breaking loose again and some little trouble developing with the oiler, the run was temporarily abandoned at Cleveland. M. Bernin, who had handled the car on the outward trip, took it back to Chicago at a more moderate pace and arranged for a stronger tank.

It is claimed by the Renault people that at Toledo they were three hours ahead of the Franklin record, the car then running excellently and capable of continuing but for the tank mishap.



RENAULT TRIO HAVING DESIGNS ON CHICAGO-NEW YORK RECORD.

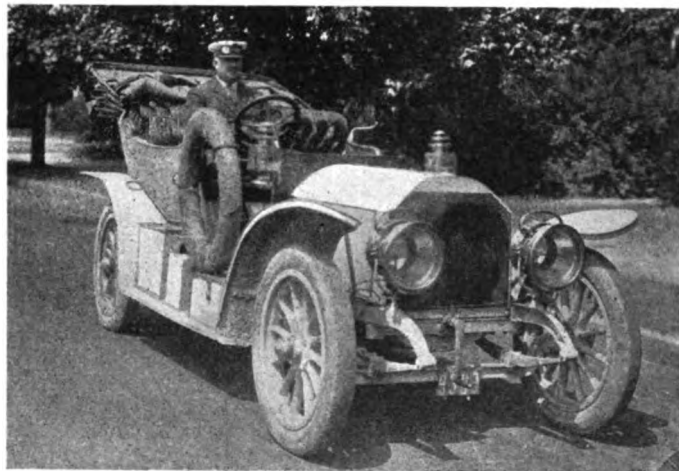
GEORGIA FARMERS OBJECT TO RESTRICTION.

ROME, GA., August 19.—A recent story sent from here to the *Atlanta Constitution* was as follows:

The Farmers' Union of Floyd county has gone on record as opposed to any drastic legislation prohibiting automobiles from traveling on the public highways of the State. As a reason for opposing any severely restrictive measure, the Floyd county union holds that no factor has been or will be so important in the development of good roads as automobiles. The Union realizes that any bill that will prevent automobiles from running on the public highways of the State—and they hold that measures now pending in the Georgia legislature will have that effect practically—will seriously retard the good-roads movement in the State. It is understood that this is the general sentiment of the union all over the State, and the action of the Floyd county union will probably be followed by a similar stand by all of the county organizations.

SIX PERFECT SCORES IN OHIO ENDURANCE RUN

COLUMBUS, O., Aug. 26.—Six automobiles finished with perfect scores in the two-day endurance run for the Ohio Sun trophy. They were Pope-Hartford, Buick (2), Thomas, Premier and Oldsmobile. Twenty-three cars started from Columbus, the number of persons in the tour being about ninety. One of the two Logans which entered in the runabout class came short of a clean score by the narrow margin of four points.



HARLAN W. WHIPPLE, EX-PRES. A. A. A., IN HIS 60-H.P. MATHESON.

INDEPENDENTS NOW NUMBER 46 MAKERS.

A grand total of forty-six is now the membership of the American Motor Car Manufacturers' Association, which makes it numerically the largest trade organization of its kind in the world. The forty-sixth member is the Pennsylvania Auto-Motor Company, of Bryn Mawr, Pa., makers of the Pennsylvania car, recently elected. The American Association members this year will have about 26,000 square feet of space in the Grand Central Palace Automobile Show, to be held in New York, October 24-31. This is an increase of 50 per cent. over the space which was last year assigned to the association. The drawing for spaces and the allotments will be made at the New York headquarters, 29-31 West Forty-second street, Saturday, August 31.

DRAWINGS FOR POSITION IN PALACE SHOW.

Drawing for space in the Grand Central Palace show, to be held from October 24 to 31, will take place at the A. C. A. clubhouse, West Fifty-fourth street, New York City, on Wednesday, September 4, at 10:30 A. M. This drawing is independent of the one on August 31, for members of the A. M. C. M. A. only.

CONSTRUCTION OF MOTOR VEHICLE SPRINGS

By J. G. RUMNEY.

THE laws which govern the construction of springs, to obtain the best results, not only in durability, but in other respects also, have been long known, but are very seldom made use of in the proper way, even by persons who are familiar with the formulas commonly used.

Many manufacturers furnish and guarantee the life of springs which are constructed not upon well-prepared specifications, based upon the properties of the steel and upon a full knowledge of the service in which the springs are to be used, but upon the crudest data imaginable, and without the least inquiry as to the service; and many specifications are received by manufacturers defining conditions which cannot be complied with. The results are increase in cost of production and failure in service.

When springs of this kind break the makers are held responsible and a replacement is requested, and unless they succeed in proving rough usage it is generally complied with; whereas, if conditions or actual requirements were thoroughly understood, the cause of the trouble would be removed and the manufacturers would not be blamed.

The cause of all trouble with springs, aside from poor material and workmanship, is found in an excessive deflection; *i. e.*, a deflection which produces stresses in the material beyond its endurance.

The deflection of a given size of steel is limited to an amount corresponding to the strain the material is able to endure without rupture, and consequently if this is exceeded failures will result. When, therefore, the deflection is forgotten or not considered in the calculations, springs are generally produced which prove anything but serviceable and must be frequently renewed, at great cost and inconvenience.

The deflection is therefore the paramount issue in the construction of springs. There are, however, three kinds of deflection, which may be termed: desirable deflection, permissible deflection, and possible deflection.

The desirable deflection is the amount a spring should be able to deflect in order to avoid shocks and produce good riding over a rough road, and must be provided for in the construction of motor cars so that a sufficient amount of material of proper dimensions may be used.

The permissible deflection is the amount a spring may be deflected repeatedly without breaking or without changes in its original shape.

The ability of a spring to deflect within safe limits depends entirely upon the proportions of the plates, which will be explained further on.

The possible deflection is the total distance a spring may have the opportunity to deflect if allowed to do so, and which is generally not provided for in the construction of springs.

In full elliptical springs the possible deflection is the distance between the centers when free. The distance can be so proportioned to the dimensions of plates that when the centers meet the material has not been overstrained.

In half or semi-elliptical springs the distance may be much greater than the permissible deflection, and if the springs are permitted to deflect the entire distance they are apt to break or take a permanent set, either of which is equally objectionable.

Constructions should, therefore, be made so that the possible deflection does not exceed the permissible deflection, and if this is impracticable in the ordinary construction of frames, etc., some means should be introduced to accomplish same results.

The object of this paper is, therefore, to call attention to the methods which should be followed in the calculations of elliptical and semi-elliptical springs so as to guard against an excessive

deflection, which is the principal cause of broken springs, and thus bring about a better understanding between the makers and users of such springs.

To make the subject clear to those who may not be perfectly familiar with the laws governing strains in materials, some elementary explanations will be used, which it is hoped will be excused by those to whom they may be unnecessary.

It is well known that if a piece of steel or other material in the shape of a bar is supported upon its two ends and a load is applied in the middle of the bar, the material will be subjected to strains, and if the load is great enough the strains will go beyond the endurance of the material and the piece will break or its original shape will be changed.

It is also well known that all material will deflect more or less when supporting a load in this or similar ways; and, further, that the amount a given piece will deflect depends entirely upon the magnitude of the load or its momentum, and that, therefore, the greater the load the greater is the deflection. It is equally as well known, but generally lost sight of, especially in spring construction, that the strain in the material increases directly as the load, and, consequently, as the deflection. Therefore, the strain in the material is twice as great if deflected two inches as it is if deflected one inch only, and three times as great if deflected three inches; from which may be seen that if there is no limit to the deflection the material will be overstrained, from which it naturally follows that, while springs are made use of for the purpose of obtaining deflection and to gradually check and bring to rest a suddenly applied force, it is evident that the deflection must be limited within certain boundaries.

The extent to which a given spring may be deflected (the permissible deflection) depends upon several things, among which may be mentioned:

First.—The nature of the material.

Second.—The length and proportionate arch.

Third.—The width and thickness of the plates.

Of these the first mentioned is perhaps the most important, for without proper material the most careful calculations will not produce the desired results. The importance of the other two items is found by calculations based on formula and experience.

These formulas show that the deflection is governed entirely by the length and thickness of the plates, and that the relative proportions between these two dimensions cannot be changed without a change in the deflection.

A plate of a fixed length and thickness, or a spring of fixed length and thickness, no matter how wide the plate may be or how many plates the spring may be composed of, has a well-defined (permissible) deflection, which cannot be exceeded without straining the material.

The relations between the deflection, thickness and length of plates must, therefore, be maintained within figures corresponding to the strength of the material, in order that the best results may be obtained. These relations are often overlooked in the construction of springs.

Springs are used on account of their ability to absorb through sudden deflection increases of loads and to regain their original shape when the excess load has been removed, thus avoiding violent shocks. The greater the distance through which a spring can deflect the longer is the time in which the load is fully applied, and consequently the less severe is the shock. The more sensitive they are to any variation in the load the easier the vehicle will ride. The nearer the spring is loaded to the elastic limit of the material, the slower, longer, easier and more uniform are the vibrations.

This statement may not be understood, but may be verified in a simple manner by placing a piece of wood or other material on

*Paper read before the Society of Automobile Engineers at Buffalo, July 30-31, 1907.

two supports and load it in the middle with a suitable weight. If the relation of the weight to the material and section of the piece is such that the stress in the material will be comparatively low, the action of the piece, if set in motion, will be in the nature of a number of small, very quick vibrations, as shown in Fig. 1.

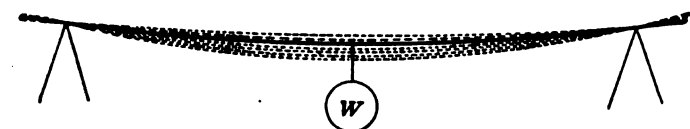


FIG. 1.—Showing quick vibratory action under light load.

The full line is intended to represent the position at rest, and the dotted lines the number and magnitude of the vibrations. If the load is increased so as to approach nearer to the elastic limit the vibrations will be as shown in Fig. 2—a few long, slow movements.

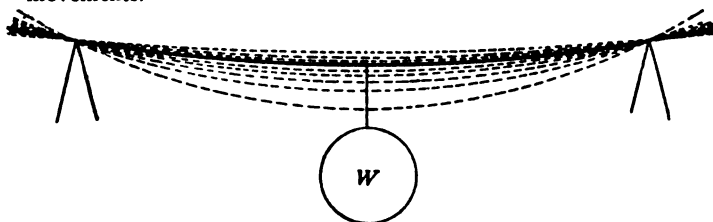


FIG. 2.—Showing slow vibratory movement under increased load.

There can hardly be any question as to which one of the two methods should be followed in order to produce smooth riding.

When deciding, however, as to how near the stress under the static load may approach the elastic limit, it must be borne in mind that if it is too near the limit very little additional deflection can be obtained before the elastic limit is reached and the usefulness of the spring is destroyed.

Practical tests have demonstrated, however, that a strain under a static load of 60 per cent. of the ultimate resistance of the material is permissible and will leave sufficient margin, in the majority of the cases, for the absorption of ordinary shocks.

We have tried to discover the reason why springs did break, and, looking into the matter in various ways, we came to the conclusion that there were, as it may be called, no safety-valves placed upon the springs—that is, at least upon the semi-elliptical springs. The full-elliptical springs have a safety-valve, and if properly designed the springs cannot be overstrained for when the centers meet the strain is at its limit; but with the semi-elliptical springs the situation is different—there is nothing to prevent the springs being deflected beyond their elastic limit.

The method of calculating springs has been laid down by Reulcaux in his formulæ, and if they are properly understood there is no reason at all why manufacturers should not make proper springs. But the formulæ are not understood, and as a last resort manufacturers generally specify the weights that the springs are to carry and leave the rest to the manufacturers, and allow them to design any spring that is suitable to carry the static load and which they think they can guarantee. Many manufacturers do not look into the conditions under which the springs have to work; they look on the load and the material, not on the deflection at all, and springs are placed in service in positions where they are not suitable.

It is quite easy to take all these things into consideration, and this paper was written for that purpose—to point out what should be considered in calculations of springs, and the main point, aside from proper material, is to pay due regard to the deflection. The breakage of a spring is due to an excess of deflection; that is to say, if the road is rough, and with fast speeds, the result is that either springs take a permanent set or the plates will break. The deflection is determined entirely by the length of the springs and the thickness of the material. Any spring that is properly designed should last until the material has become fatigued through constant use.

The question as to what should be a proper deflection for springs has been argued in many ways, but I think it will be agreed that the greater the deflection can be made the better the vehicle will ride, and after it has been determined what the deflection should be, the remaining requirements may be readily calculated.

The riding of the vehicle depends largely upon how high the strain in the material is allowed to be under the static load. The nearer the strain comes to the elastic limit the easier the springs will act; the farther away from the elastic limit, the rougher will be the riding.

The best spring-makers, using the very best steel, cannot make a satisfactory spring unless the deflection is limited within the bounds of the elastic limit of the material. Next to the steel, or perhaps more than the steel, the construction of the spring is, in most cases, of the most importance. Also of prime importance are a properly standardized uniform heat treatment, special composition, high tensile strength steel, and intelligent design, associated with modern refined heat treatment. These are necessary to produce springs such as are required by automobile manufacturers, who desire to maintain a good reputation.

I fear, gentlemen, that I have imposed upon you too long. I have endeavored to be brief, and have confined myself to one phase of spring manufacture, and I trust a phase which will be of some interest to you. Also, I would disclaim full credit for this paper, because, owing to illness and absence from home, I have been unable to give the matter proper attention, so have been compelled to use some extracts from papers of others, my chief authority being C. A. Lindstrum, M.E.

FAILING DUSTLESS ROADS, MAKE DUSTLESS CARS

Automobilists—and with them we are to a certain extent in agreement—urge that the roads should be constructed to suit the modern traffic conditions, says *The Engineer*. But we go further, and add that if manufacturers can produce cars which raise very little dust, then every encouragement should be offered for them to do so. From information which we have gleaned from a reliable source, we gather that the amount of dust raised was proportional to the speed up to forty miles per hour, at which the cars ran—and yet motorists urge the abolition of the speed limit! It cannot be said that the speed limit has been of any real use at all, but unless cars can be made to raise less dust—for it is obviously impracticable to reconstruct all the roads in the course of the next two or three years, even if the money were forthcoming to do it—there can be no hope of an abolition of this limit. For the good of the general public, those designs which are known to be prolific dust-raisers should not be allowed on the roads. We do not in any way wish to handicap so new and important an industry, but it must not be forgotten that it is in the best interests of motoring itself that the dust nuisance should be abated.

METHOD OF LIQUEFYING RUBBER.

To dissolve india-rubber, says *Work*, take one part of the raw or unvulcanized material, and cut it into thin shreds with a sharp knife wetted with water; dry the rubber, place it in a wide-mouth bottle, and cover with benzene; shake the bottle occasionally, and add more benzene from time to time, as the rubber swells, until a thick fluid product is obtained. The rubber used must be of the raw kind, not that which has been made up for sale; the latter has been vulcanized by heating with sulphur, and is quite insoluble in benzene. Moreover, there is very little rubber in ink and pencil erasers, as they are composed very largely of mineral matter. It is also important that the right solvent is obtained; benzene is the coal-tar naphtha or benzol. Petroleum ether or spirit, also known as benzine and benzoline, will not dissolve india-rubber. On evaporation of the solution of india-rubber in benzol, the latter passes off in the state of vapor, leaving the india-rubber quite unaltered.

DOES ALCOHOL ATTACK METALLIC SURFACES?*

By G. LESSARD.

NOW that it seems certain that alcohol is destined to ultimately form the world's motor fuel, it is apropos to consider whether this carburent is afflicted with an inherent vice that would render its use prohibitive for this purpose. It has been asserted that the most grave objection to the employment of alcohol as a fuel is its oxidizing action on metals, and it is said that tanks, cylinders, valves, piston-rings and mufflers are all damaged by the use of alcohol. We will examine these accusations at length, with a view to determining if they be justified, as well as the remedies to be adopted to counteract this noxious action attributed to the use of alcohol.

Chemical researches have long since demonstrated beyond the shadow of a doubt, that pure ethyl alcohol has no deleterious effects on any of the metals used in the automobile industry, with the exception of one, that of aluminum, to which alcohol gives up its oxygen, to form alumina, consisting of two parts of aluminum and three of oxygen, and which is the oxide of the metal. Consequently, it will suffice to avoid the use of aluminum for carbureters or elsewhere in contact with the fuel to eliminate all possibility of oxidation by alcohol, provided the exposed surfaces of the motor never come in contact with anything but pure ethyl alcohol. But, unfortunately, these surfaces are in contact with the air; with water; with the denaturants called for by the excise regulations; with those carburents that are frequently added to the alcohol, and with the products of combustion.

While gasoline is to a certain extent a lubricant that insures the metal against the oxidizing action of the air or water, alcohol is a solvent, and in lieu of preserving the metal against oxidation, it renders it subject to the action of whatever oxidizing influences it may happen to come in contact with. Experience shows, however, that metals suffer little from the action of the oxygen in the air or water, and it is easy to preserve surfaces that have been cleansed by alcohol from a prolonged contact with either, simply by the use of small amounts of lubricating oil from time to time.

But these do not constitute all the difficulties by any means, and the greatest of these is the fact that the alcohol is never employed pure, but denatured. In addition to ethyl alcohol, the fuel mixture called for by the government regulations contains a composition to the extent of 10 per cent. of the whole, consisting of the following:

Methyl alcohol, hydrated .....	.725
Acetone .....	.25
Pyrogenic impurities .....	.025
Benzene (government specification)	0.5001

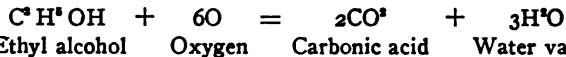
At ordinary temperatures methyl alcohol and acetone have no effect on the series of copper alloys, such as copper, lead, etc., nor on those of iron, such as iron, nickel, zinc, chromium. But the pyrogenic impurities will certainly have some action due to the presence of pyroligneous acid. Fortunately, this acid only exists in extremely small quantities and it is rendered inoffensive by its combination with alcohol, in the form of ether. As it is impossible to be certain that the etherification is complete, the few thousandths of pyroligneous acid not absorbed are always to be feared, and should lead to a demand for a diminution of the proportion of the denaturant.

The carburents which are generally mixed with the alcohol, may also have a deleterious effect on the metals proportionate to the amount of impurities they contain. Of all these carbureting substances, up to the present, the greatest success has been attained with benzene. It does not attack metals, but it may contain sulphur or sulphuric products due to its origin (i. e., from coal

tar), and it is well known that this sulphur is a powerful solvent, which contributes to prepare the metallic surfaces to enter into combinations with other attacking substances. Under the influence of heat it will sulphuret zinc, copper, and also iron, but, fortunately, it is easily possible for the refiners to supply benzine that shall not be contaminated by more than infinitesimal quantities of this deleterious substance.

It frequently happens that in the extraction of the light oils contained in coal tar from which benzene is produced the sulphuric action combines with the carburets of the aromatic series, giving sulphurous products, and in particular, sulphurous benzene acid. This acid attacks metals even when cold. But generally the presence of these sulphurous products need not be considered as an obstacle to the use of alcohol, though it may be well to indicate the influence that these impurities may have in order to direct the attention of the distillers to this point.

We may now take up the effect which the products of combustion of the alcohol may have on the metal surfaces of the motor. Theoretically, alcohol in burning produces carbonic acid and vapor of water as follows:



It may be well to remark that this combination does not become complete unless the conditions of the reaction are fulfilled; that is, unless the alcohol vapor is intimately mixed with seven times its own weight of air and the temperature is in the neighborhood of 1,500 Centigrade. Practically, these conditions are never exactly fulfilled, and in adding to that consideration the fact that alcohol denatured according to the government specifications contains large quantities of impurities, as we have already indicated, it is not to be marveled at that the secondary reactions, which in addition to the principal reaction, give birth to a number of products, of which we only enumerate those which may prove a menace to the cylinders and valves, such as acetic acid, formaldehyde, trioxymethylene, and, with certain carbureted alcohols, sulphuric acid. This last acid is derived from the combustion of the sulphur contained in the sulphurous benzene acid, found in the benzenes extracted from northern oils. With a certain amount of care in the distillation of the coal-tar, it is possible to achieve the almost total elimination of sulphurous products. The formaldehyde, due to the denaturant, does not appear below 450 degrees C., and at about 300 degrees the proportion is minute.

The presence of trioxymethylene has been observed in the exhaust gases at a dull red heat—600 to 700 degrees C., and in very small quantities; this substance is formed by contact with the hot walls of the exhaust ports. But the most dangerous product is the acetic acid, which attains to a proportion of 14 to 15 per cent. of the alcohol while combustion is incomplete; that is, a temperature around 400 degrees C. At 600 degrees C. not more than a trace of acetic acid is found. On the whole, the dangerous products are not formed except at a relatively low temperature, so that it is only while getting the motor under way that they are to be feared, that is, during a very short time. And it may well be asked, if the rapid contact of these extremely diluted vapors of acetic acid and other ethers and aldehydes really constitute a serious danger to the alcohol motor. Up to the present experience has demonstrated that the danger is hardly of sufficient moment to be seriously considered.

As a result of the extended and minute laboratory investigations of MM. Sorel, G. Chaveaux and Boulanger, it may certainly be said that the accusations against carburetted alcohol are not well founded. We may also call attention to the results of the test published by Cormier, in which a motor was dismantled after having been run 1,200 kilometers on carburetted alcohol without the slightest traces of deterioration being revealed.

*Translation from "La Vie Automobile," Paris, by Charles B. Hayward.

A CHAPTER ON MAGNETO IGNITION*

By ELMER G. WILLYOUNG.

THERE are two fundamental methods of electric ignition, viz., the "make and break" or low-tension, and the "jump spark," or high-tension, system, and each of these systems may be actuated by either dry cells, accumulators, or mechanical gen-

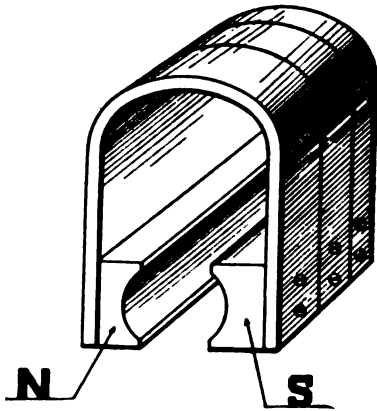


FIG. 24.—Typical magneto form.

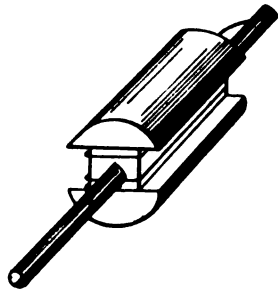


FIG. 25.—Armature.

erators. As used in the text, "mechanical generator" means a miniature dynamo driven in any convenient manner from the motor and delivering direct current; it supplies its own exciting current for the field magnets, has its own commutator, and is in every way a reduced copy of an orthodox dynamo.

In a self-excited dynamo, part or all of the current generated is passed around the soft iron field, and hence this current must be constant in direction and uniform in value in order that it may give to the field the constant magnetic properties necessary to the continuous generation of current in the armature. Its disadvantages are: (1) That it requires high speed (1,800 to 2,500 r. p. m.) to develop sufficient actuating current, thus making it necessary to start the motor on a battery; (2) uniform speed, especially with the jump spark system, because here the vibrator is exceedingly sensitive to changes in current, and, in fact, only works satisfactorily and without excessive burning of the contact points when the current is maintained within certain and quite narrow limiting values; burning of the dynamo commutator is also a result of varying speeds. A governor must therefore be provided and so set that a certain normal speed (obtained with a normal rate of motor speed) will never be exceeded, and this is, necessarily, a delicate added complication. So that mechanical generators have not been satisfactory.

This brings us, logically, to the magneto system, which is essentially nothing more than a substitute for the dynamo just described; a special form whose field, instead of being soft iron temporarily excited by the operation of the machine itself, is of steel magnetized permanently. In Fig. 24 we have a typical form of magneto and in Fig. 25 the corresponding armature; Fig. 26 shows (dotted lines) the direction and distribution of the magnetic force before the armature is in place; while in Figs. 27, 28, 29, and 30 the armature is inserted and we see the changes in magnetic distribution corresponding to its angular advance. The magnet is of steel specially treated and very hard, and the armature of very soft iron of "dumb-bell" section; about the neck of the bell is wound a suitable number of turns of insulated copper wire.

The conventional method of representing magnetic forces is by lines, the direction of these lines showing the direction of the force, and the number or density of the lines to a given area, the intensity of the force. Each line will always make up a

closed curve such that if a short magnetic needle be freely suspended so as to touch the curve at any point, it will always be tangent to it. These lines of force will always pass more easily through a magnetic material than through a non-magnetic material (or air), even though this involves an actually longer path. Thus in Fig. 26 we see the lines passing almost uniformly from pole to pole, but as soon as the armature is in place, as in Fig. 27, the lines immediately "bunch up" and pass across through the dumb-bell, although having to go further to accomplish it. In Fig. 28 the armature has advanced about one-eighth turn, and we see the lines still within it, though badly twisted; another one-eighth turn and the lines have divided and no longer interlace the armature wires, but pass straight through the heads of the bell; last, Fig. 30, we have the lines again passing through the neck, but in the reverse direction to before.

Now it is a fundamental electrical fact that whenever a magnetic line and an electrical conductor "cut across" one another, from whatever cause, and "electro motive force" (E. M. F.) is generated in the conductor and the intensity of this E. M. F. will be directly proportional to the number of lines cut across in a unit of time, and if the conductor ends be joined by a connecting circuit of any kind, there will be, in such circuit, a correspondingly greater or less current. Starting with Fig. 27 we get no cutting and no E. M. F. for nearly 90 degrees, when, suddenly, all the lines are "snapped" out and, note particularly, "snapped" in again in the reverse direction; i.e., between Fig. 28 and Fig. 30 we have cut the same lines twice, which is equivalent to cutting twice the number of lines once. As this action takes place there is a very sudden rise of voltage in the armature conductor and an equally sudden falling away of the same (actually in the best magnetos the entire effect begins and ends within about 10 degrees of rotation angle). As the armature continues to revolve, we once more have quiescence until "A" is nearly at the bottom, when again we have the same strong impulse of E. M. F., but in the reverse direction with reference to the conductor (and therefore the terminals), which is now turned end for end. There are thus two "peaks" of voltage (and current)

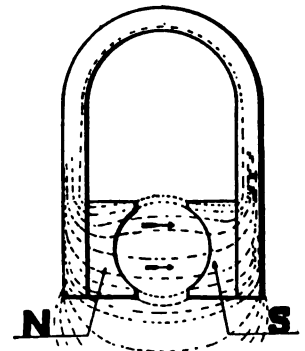


FIG. 26.—Direction and distribution of magnetic force before armature is inserted.

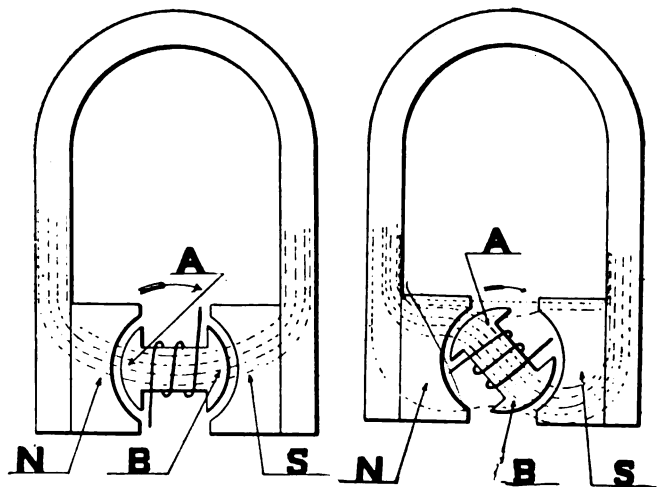


FIG. 27.

FIG. 28.

Showing changes in magnetic distribution corresponding to angular advance of armature. Lines "snapped" out and "snapped" in again in reverse direction

*Extract from Copyrighted Lecture No. 4, Correspondence School of Motor Car Practice, organized by the Maxwell-Briscoe Motor Company, Tarrytown, N. Y.

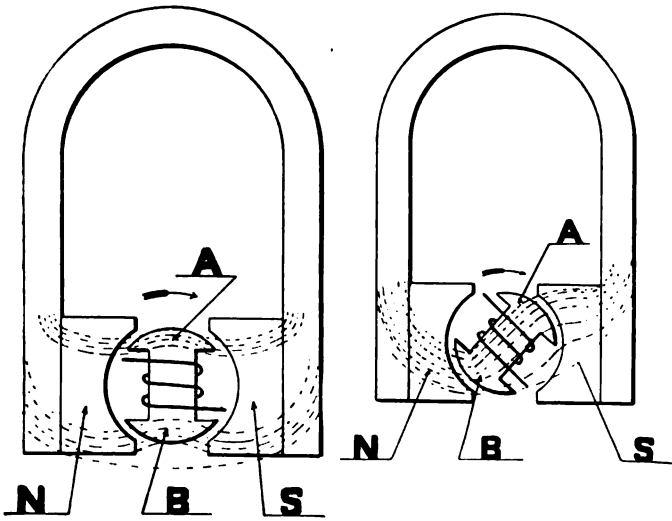


FIG. 29. Showing further changes in magnetic distribution owing to continued angular advance of the armature. FIG. 30.

to each revolution of the armature; this is shown in Fig. 31, the curve above the zero line being +, and that below the line —.

In practice, since we can only produce powerful currents at these two definite positions of the armature, it is necessary to gear the magneto positively (not belt it) to some part of the power plant, generally to the half-time shaft, so that the same angular position of the armature will always correspond to the same definite position of the piston in its cylinders; the ratio of the gear will, of course, depend upon the number of cylinders to be fired—thus, for a two-cylinder car, the armature would revolve at half the motor speed; for a four-cylinder car at the motor speed; for a six-cylinder car at one and one-half times the motor speed, etc.

In the low tension magneto there is but one coil of wire wound on the armature; the contact points within the cylinder are sharply separated at the proper time, exactly as in the battery "make and break" system, and the armature, which is at its critical angle, sends its surge of current across the gap. With the high tension magneto several distinct types are in use; each type has its friends, each does good work, and, as among the types, when judged by their best exponents, there seems but little choice. One type is represented by the Eisemann, in which the single-wound armature supplies current to the primary of a non-trembler outside induction coil, thus being essentially, after all, a low tension magneto operating a "jump spark" coil, but securing the discharge spark by a positive mechanism attached to the magneto, instead of by a vibrator. The matter of getting the maximum current impulse in this particular magneto is unique in that the discharge is the result of a "make" instead of a "break," as usual; the armature winding is normally short-circuited, thus giving it a very low resistance, so that the E. M. F. develops a very large current. Just as the spark is needed in the cylinder the mechanism suddenly opens the short-circuit, thus sending a rush into the primary of the coil and inducing a current in the secondary with consequent production of the desired spark.

Another, and this is the most widely used type, is that in which there are two windings on the armature, one of few turns of rather heavy wire and the other of many turns of fine wire; these windings correspond to the primary and secondary in the ordinary induction coil. When the armature rotates, the primary generates current which, broken at the right time, induces a high E. M. F. discharge in the secondary. The Lacoste and Gianoli magnetos are both of this type, as is also the Bosch; in the last named, however, the armature remains fixed and a rotating sleeve of soft iron having oppositely disposed 90-degree segments cut away, and lying between armature and pole pieces, is used to carry around the lines of force and cause them to cut the conductors.

The usual method of making the discharge spark is, essentially, to have a fixed point attached to the armature shaft strike another point located externally; thus a cam lifting a contact lever is a common device. To time the spark, therefore, it need merely be arranged so that the outside point or arm may be rotated one way or the other according as it is desired to advance or retard the spark; as, however, but little angular rotation would be required to get outside the limit maximum current it is more usual to accompany this movement of the outside contact by an adjustment which will correspondingly alter the angle of the maximum current. This is done, in the Eisemann, Lacoste, and Splitdorf by having the driving shaft and the armature shaft separate, but joined by a pin attached to one shaft moving in a spiral groove attached to the other; the armature can thus be bodily rotated with reference to the driving shaft, while running at full speed. In the Gianoli and Remy magneto the maximum is shifted by having a movable soft iron sheathing cylinder (opposite 90-degree segments cut away) between armature and pole pieces; shifting this sheath angularly amounts to rotating the poles.

The magneto is a positive mechanical device, simple in its essentials, and hence capable of being strongly and durably built; it cannot depreciate any more rapidly than other well-made mechanism. It furnishes current only when it is wanted (when the motor is running), and derives its energy from the motor itself, though taking an insignificant amount of power.

Since the E. M. F. increases directly with the speed it may be asked whether, at high speeds, there may not be risk of "burn out" of the armature? The reply is that the current, being alternating, cannot rise as fast as the E. M. F. on account of the impedance of the circuit, and further, that in any case, the higher the speed the more E. M. F. and current is needed, since the more highly compressed gas requires greater E. M. F. to penetrate it. Impedance is the quality of a circuit by means of which it offers resistance to varying currents; it includes the usual conductive resistance together with other factors, such as rate of variation of the current, amount of magnetic material associated with circuits, etc., etc. In practice "burn outs" are very rare.

A great defect in the magneto is its low E. M. F. on low speeds, thus making it difficult to start up. It is quite common, therefore, to employ a coil vibrator outfit for starting, and then to throw over a switch so as to "cut in" the magneto. Some magnetos are much better than others in this respect, but

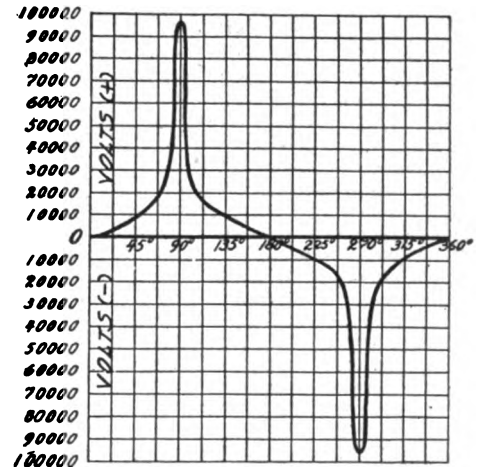


FIG. 31—Showing peaks of voltage (and current) at each revolution of the armature.

the objection obtains to a greater or less extent with all of them. All in all, however, there is no question but that, in the present state of the art, the magneto is the coming standard mode of ignition. It is simple, it is positive, it wastes nothing, it is always ready, and last, but not least, it is efficient. The suddenness and intensity of explosion in the cylinder, and therefore the power, seem to be dependent upon the "hotness" of the spark; with a trembler coil and battery we cannot possibly, except with a much larger coil than is now commonly used, get a spark even approaching that of the magneto in size and temperature. We cannot use a large current because the vibrating mechanism of the coil will only give even reasonable satisfaction when it is run very lightly and delicately.

LETTERS INTERESTING AND INSTRUCTIVE

IN DEFENSE OF MR. FAY ON ALUMINUM.

Editor THE AUTOMOBILE:

[870.]—The title of Mr. Edgecombe's communication, No. 859, is a misnomer, if anything, on the ground that the promised "More light on the subject of aluminum" did not illuminate.

I submit that a one candle-power wax taper lost in infinite darkness would cast a far less sallow flicker than all Mr. Edgecombe has had to say. To begin with, he is wide off the mark when he quotes Mr. Fay, because he failed utterly to grasp the situation as set down by Mr. Fay about aluminum.

I read Mr. Fay's communication about aluminum and fail to find anything therein in any way unfair to the aluminum situation. Mr. Fay gave tests of various mixtures of aluminum as found in castings furnished by various foundries at diverse times, and the results given are worth far more to engineers and automobile builders than any amount of soft talk.

The weakest link in any chain is as the strongest, and it makes no difference at all, if on occasions some castings prove to be of quite high values, for the very reason that all castings cannot be relied upon to hold the higher strength, possible under certain conditions. Moreover, the automobile builder who has had no trouble with aluminum has not as yet completed his first model.

What Mr. Fay advises is along good engineering lines, i. e., take into account the inherent weakness of aluminum and by so doing realize all its advantages without having to suffer the consequences of considering the maximum possible strength; in other words, design on a basis of the aluminum probable strength, just as all engineers do when steel, cast iron, or wood, for illustration, are the materials of construction.

Mr. Edgecombe did not quote Mr. Elwood Haines correctly, because he failed to observe that Mr. Haines pointed out the brittleness of aluminum-zinc alloys. Moreover, Mr. Edgecombe's strictures on Mr. Birdsall's observations lack edge, since he says "it is dangerous to give chemical composition" on the ground that they would not be mixed right. Does Mr. Edgecombe wish to infer that he has a monopoly of brains? Anyway, when the danger of mixing is so great, why not tell not only the composition, but the mode of mixing also?

Mr. Edgecombe says in substance, "put blind faith in the Pittsburgh Reduction Co." What principle of business does he call into play that demands a blind investment? This is the method usual to the purchasers of "gold bricks." Does Mr. Edgecombe wish to infer that aluminum is a gold brick proposition?

Mr. Edgecombe says, "I enjoyed Mr. Blough's article Why? Was it a joke? Certainly Mr. Blough, out of his infinite fund of knowledge, allowed none of it to percolate.

Mr. Fay, unlike others who "essayed" to divulge information, "delivers the goods," and of all whom I have observed was the only true defender of aluminum, because he clearly pointed out its characteristics as well as its advantages, and by so doing rendered it possible to proceed to use aluminum along safe lines. True, Mr. Fay deplored the lack of strength in aluminum castings, but what of it? Who does not? Moreover, who would be so scant in keenness as to accept a mere puff by an engineer in the employ of makers of aluminum as against common knowledge, to say nothing of the definite unbiased information from a well known engineer whose painstaking work in the metallurgical field, especially as regards materials for automobiles, has been a conspicuous feature for several years?

Let us have light by all means, but it may be just as well to say the glimmer from a tallow tip can scarcely serve to drown the electric arc, although a "dip" might be the source of all the illumination that a great number of aluminum castings could stand and not go awry.

JOSEPH SCHAEFFERS.

New York City.

The title which you find misleading was the work of the editor, and not that of Mr. Edgecombe, though, of course, it did not influence nor alter what followed.

FASTEST SPEED ATTAINED ON WATER.

Editor THE AUTOMOBILE:

[871.]—To settle a dispute, should be glad if you would state the fastest speed attained by any motor boat, American or foreign, over a long-distance course.

J. A. THOMPSON.

Providence, R. I.

Panhard-Tellier, a French boat, established the world's record at the Monaco meet this year, when in the Championship of the Sea she covered 200 kilometers at an average speed of 35.01 miles an hour. *Dixie* holds the American record.

TWO AND FOUR-CYCLE DIFFERENCES AGAIN.

Editor THE AUTOMOBILE:

[872.]—Will you please explain through Letters Interesting and Instructive what is meant by "two-cycle" and "four-cycle" in connection with gasoline engines, as I frequently see these terms in print, and would like to have the difference between them explained.

E. B. D.

Walcott, Ind.

Two-cycle, or, technically speaking, two-part cycle, which has been abbreviated by popular usage to the familiar term you mention, refers to an engine in which the two parts of the cycle known as the explosion and the exhaust take place on the down stroke, and the other two of suction and compression occur on the up stroke, so that the motor delivers a power impulse for every revolution of the crankshaft. Four-cycle, or four-part cycle, means that the four parts of the cycle take place independently, each necessitating a stroke of the piston for its completion. Thus down stroke, suction; up stroke, compression; down stroke, explosion; up stroke, exhaust and repeat; these constituting the four parts of the cycle. This matter has been explained at length very frequently in these columns, and you will find these, as well as detailed articles on the subject, in the back numbers of THE AUTOMOBILE.

SPRINGS AND CENTIMETER VALUE.

Editor THE AUTOMOBILE:

[873.]—Will you kindly inform me what is the generally accepted definition of a 100-pound spring; also, can you give me the value of one centimeter into inches in more decimal places than that given in hand-books, namely, 1 centimeter equals 0.3937 inches?

Toledo, Ohio.

CHAS. H. WARING.

In general acceptance a 100-pound spring is one whose safe limit of stress is 100 pounds. All engineering hand-books give tables of the carrying capacity and deflection of various types of springs. To take one example at hazard, a $\frac{3}{8}$ -inch round steel helical spring of 3 inches outside diameter will carry with safety a load of 473 pounds, assuming that it is for intermittent working, as in a steam engine governor or safety valve. Every handbook gives one centimeter as equal to .3937 inches, and for ordinary calculations this is sufficiently exact. Worked out to its full number of decimal places, however, the value of one centimeter is .393707904 inch; this value is used in compiling all comparative tables.

MR. EDGECOMBE "SHEDS" MORE LIGHT.

Editor THE AUTOMOBILE:

[874.]—While I deplore the circumstances that impel me to crave further space to again take up the cudgel in defense of aluminum, I do so, offering but one excuse, i. e., "the enemy presses." If Mr. Edgecombe had succeeded in shedding light all would have been well, but my fear is the "cable tow" he used lacked strength, parted, and the light escaped, perhaps, to the place from whence it came. At all events, I am grieved to think Mr. Edgecombe should so translate my English as to make it a strange tongue to me, and I am bound to say he is cranking a grindstone to the tune of somebody else's axe.

The sense of my aluminum articles may be stated in few words, i. e., the uncertainties of the foundry are such that aluminum castings must be regarded from the point of view of the minimum strength of castings procurable and likely to be realized in the regular course of business. I have repeatedly stated that the desired qualities of aluminum, such as lightness, ability to assume intricate shapes, etc., is a large recompense, but it is a great mistake to make designs on a basis of the high figures of "Lake" or the loud talk of "boomers."

In honestly setting down the facts, I consider I am the defender of aluminum, whereas its greatest enemies are those who talk maximum possible values only, thus leaving it to purchasers of

automobiles to discover at their expense and inconvenience that the real use of aluminum dominates the situation.

Mr. Edgecombe says (of one of my tests) "they are quite correct for an alloy such as he cites, but the chemical analysis tells the story, it is an art alloy, a brittle, crystalline, gray-white metal, which would run very liquid and be fine for casting tin soldiers." Of this statement it may be looked upon in two ways, viz.:

(a) Mr. Edgecombe fell off of his high chair after inspecting one test only, thus missing all others.

(b) The foundry that made the motorcase castings, from which I took the casting specimen, considered it an advantage to use an alloy that would run liquid and be fine for castings.

This phase of the situation does not interest either myself or automobile builders, since the tests were made from castings that "failed in service" and were aluminum castings from representative sources.

Mr. Edgecombe says: "Don't let the foundryman get scared because he thinks this metal—ingots from the Pittsburgh Reduction Company—is too cold to run." The only scare I know of that can be pumped into a foundryman is the reduction company's price scare; it is quite as stable as the aluminum.

I desire to join Mr. Edgecombe in his enjoyment of Mr. Blough's article—it was a good joke—but this does not debar me from observing that Mr. Birdsall had an apt way of "serving out his 'petulance,'" and I doubt that some folks would care for the other six courses.

I cannot take time to mention the fallacies in all of Mr. Edgecombe's three-legged arguments, but I do hope he will come to the defense of aluminum and not try to get poor automobile devils into trouble by inducing them to accept values for the strength of aluminum "not obtainable in practice."

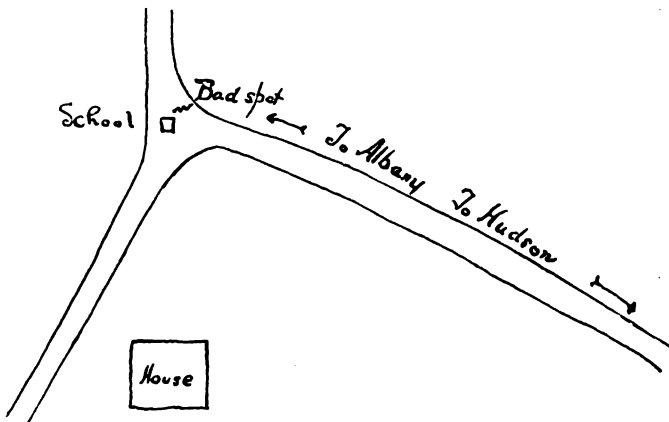
THOS. J. FAY.

New York City.

VIEWES OF A SENSIBLE AUTOIST ON SPEEDING.

Editor THE AUTOMOBILE:

[875.]—As a rule I never like to appear in print, but I see and hear so many things that might be of some interest to the automobile world. For many years I have been coming up here to pass my vacation, as the country is so beautiful and the air refreshing. Also the roads are fine and level, which is what the man with an



DRAWING SHOWING DANGEROUS SPOT IN ROAD NEAR SCHOOL.

auto is looking for. Now my purpose in writing these few lines is to try and caution my friends against driving too fast. I am staying at a house that is surrounded by roads, and I believe that from 75 to 100 autos pass during the day, and if some of them could realize the speed they were going, and the risk, they would be surprised. I have been expecting for the past two weeks to see an accident hourly, and it finally happened on Sunday evening at 5:30 p. m., resulting, perhaps, in the death of two people.

Now, what is the reason for fast driving? I have seen them going at 45 miles per hour most every day, and in this case there is a slight rise in the road about a quarter of a mile from the school-house, and when the autos strike it they seem to bound up in the air and then down. And what is the consequence? Broken springs, or axles, and many other troubles. We people that are of a prudent nature are almost afraid to venture on that one road. In the above accident I found rear left wheel broken, tire burst, front axle broken at knuckle and sagged in center (axle made of bronze). I also ascertained from a thorough examination of the automobile that after its terrible plunge at right angles to the road it was in good condition, and the engine kept running for several minutes.

As there were many sitting around at the house, we rushed to the automobile and righted same, as a minute lost would have meant

instant death. We telephoned for doctors immediately, who arrived in fifteen minutes, had special car provided, and they were taken to Albany to a hospital. I may add that those on the right-hand side of the car did not have a scratch.

As an automobilist and engineer, I take great pleasure in the sport, which is a grand pastime and health restorer. I am one of your old subscribers.

HENRY NICOLL HAMILTON.

Kinderhook, Columbia Co., N. Y.

AMERICAN CARS WITH WATER-COOLED BRAKES.

Editor THE AUTOMOBILE:

[876.]—In the August 8th issue, No. 848 writes for information as to the method of fitting water-cooled brakes, and in your reply to his communication you state that "so far as known, no American cars have been built with water-cooled brakes, although there are several localities in this country that would seem to require them."

We have tried to give as wide publicity as possible to the fact that there is one American-built car which is fitted with water-cooled brakes, and that is the Lozier. Every car which we have turned out this year is fitted with brakes of this kind. The water is carried in a three-gallon tank suspended from the chassis. The brake drums are hollowed to carry water, the water being automatically fed to the drums of the brakes by means of air pressure. When the brake pedal is operated, an air valve is automatically opened and the circulation of water started. When the pressure on the brake pedal is released, the flow of water ceases. In level country, where water-cooling is not necessary, the system can be disconnected by closing an air valve. With this system it is possible to keep the brakes on constantly on a very steep grade for thirty minutes without any danger of overheating or burning.

LOZIER MOTOR COMPANY,

New York City.

C. A. Emise.

Editor THE AUTOMOBILE:

[877.]—In your issue of August 8th I read an inquiry regarding water-cooled brakes on American cars. You state that so far as you know, no American cars have ever been built with water-cooled brakes.

For your and the reader's information I would like to state that the Matheson cars built in 1904, 1905 and 1906 were all equipped with water-cooled brakes located at the sprocket shafts each side of the transmission case, and were of the hollow drum type, water being supplied from copper pipes from a separate tank located under the front seat. In some cases short pipes were used with a funnel, located under the footboard in the tonneau, into which water could be poured very readily, filling the big drums, which held about half a gallon of water each. This was found to be sufficient to descend the steepest hill without completely evaporating the water. Our experience has been that the ordinary automobile user will not take the time to fill this auxiliary water tank, nor fill the tank through the funnel, and we have therefore discarded this system in our 1907 car by compensating for this omission by making the brake surface more liberal. Our present cars are equipped with two transmission brakes 10 inches in diameter 3-inch face; two rear hub brakes 15 inches in diameter by 2-inch face, all brakes and shoes being metal, the brake drums being steel and the shoes of Manganese bronze. With this size of brakes we find it possible to travel all over the mountains of Pennsylvania, known for their extreme gradient, without having brake troubles. In fact, some cars will run a whole season without requiring even an adjustment on the brakes.

MATHESON MOTOR CAR COMPANY,

Wilkesbarre, Pa.

Chas. R. Greuter.

A FLORIDIAN'S WANTS ARE CONCISELY STATED.

Editor THE AUTOMOBILE:

[878.]—I want an automobile—medium priced—one that will have a small repair bill—one that will take our sandy Florida roads—one that will track with our wagon roads, 61 inches—a light touring car for four persons—something that is easily handled and will give satisfaction—not over a \$1,200 car. What would you advise me to buy and where to buy it?

Would you advise me to buy a second-hand car, if in good shape and could be bought at a big discount from regular price?

Arcade, Fla.

J. L. JONES.

MECHANICAL MAN WANTED—NEW FACTORY.

Editor THE AUTOMOBILE:

[879.]—Do you know of a good automobile man who can take charge of the mechanical department of a new automobile factory which is just being started? We have an inquiry for such a man, one who can make good. If you can put me in communication with a reliable and capable man it may result in benefit to him, and I will appreciate the favor.

W. H. MANSS (G.),

Chicago, Ill.

Industrial Commissioner, C. B. & Q. R. R.



PRESIDENT ALEXANDER WINTON AND SALES MANAGER CHARLES B. SHANKS TALKING OVER THE WINTON'S GOOD POINTS.

"SIX-TEEN-SIX" is the title of the latest Winton product, and its uncovering is, moreover, an announcement that its sponsors, the Winton Motor Carriage Company, Cleveland, O., mark one of the most recent accessions to the ranks of the builders of six-cylinder cars. As a foreword in favor of their new production for 1908, the makers preface their introduction to its mechanical features with the following:

"The division of a horsepower into six equal parts as against four equal parts provides evidence that the smaller cylinders do the better work. The six-cylinder motor has six power strokes on each two revolutions of the crankshaft, whereas the four-cylinder motor has but four power strokes. Power strokes in the six-cylinder motor overlap each other, whereas in the four it is impossible to have a fresh power stroke until the power of the previous stroke has been completely negated."

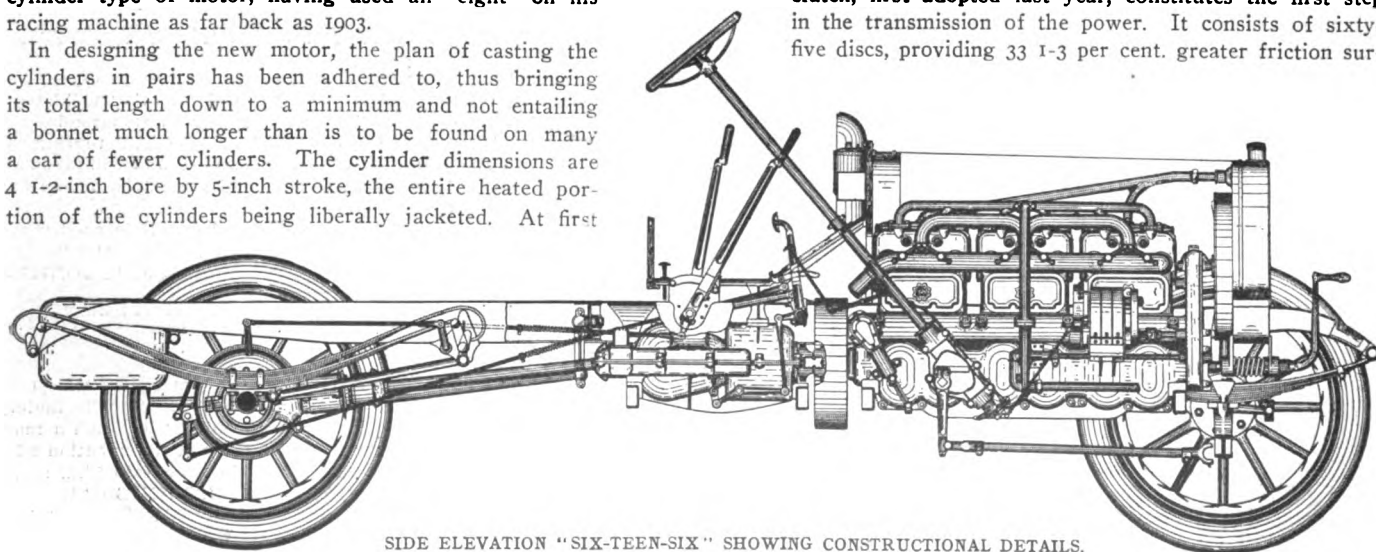
So much for the maker's introduction. As for the car itself it will be noticeable from its portrait, published herewith, that it is a fitting representative of the long line of Wintons that has preceded it into the past of discarded designs, and is well equipped in every respect to maintain the standard achieved by them. But while a car of this number of cylinders is a newcomer in the Winton household, its advent is hardly the result of its creator having just come round to the principle, as it will be recalled that Mr. Winton has long been an advocate of the multi-cylinder type of motor, having used an "eight" on his racing machine as far back as 1903.

In designing the new motor, the plan of casting the cylinders in pairs has been adhered to, thus bringing its total length down to a minimum and not entailing a bonnet much longer than is to be found on many a car of fewer cylinders. The cylinder dimensions are 4 1-2-inch bore by 5-inch stroke, the entire heated portion of the cylinders being liberally jacketed. At first

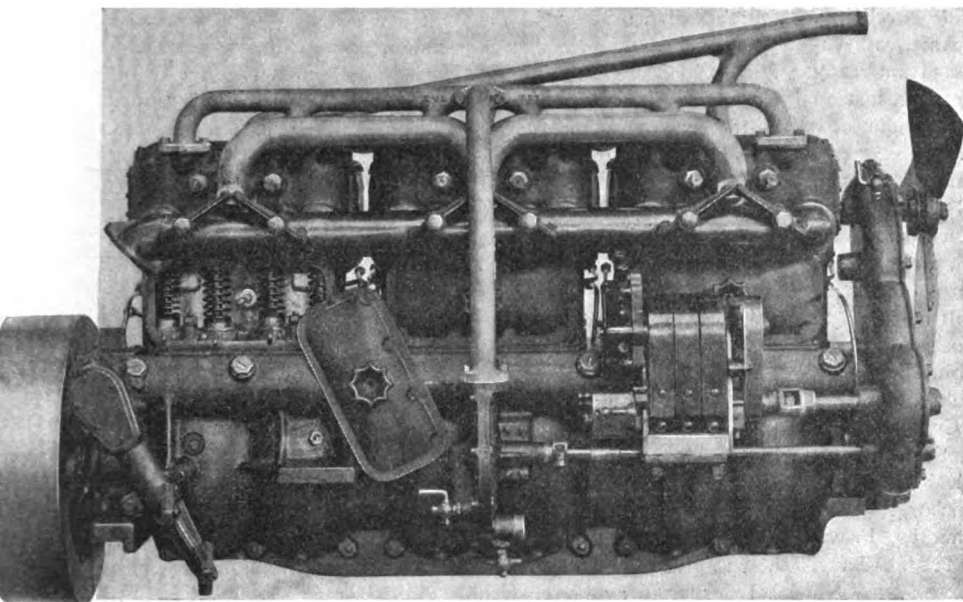
glance it will be seen that the new motor is distinguished by the adoption of a practice that has long been advocated by certain engineers, but which has, so far as known, been confined to one or two cars made on the other side up to the present. This is the provision of a protecting case, or pocket, for the valve rod, plungers and springs, which, while rendering them proof against the action of dirt and grit, does not make them any the less accessible than formerly owing to the liberal sized and easily detached sheet steel covers.

Both the cylinders and the camshaft are offset, this being a feature of the Winton Model M of last year, and the valves are all on one side of the motor. This method of placing the camshaft makes it readily removable as a single piece through the front end of the engine. The motor gears are all placed forward and are of hardened steel, alternating with brass or white fiber. The pinions, as well as all the other working parts, are thoroughly enclosed, this protection even being extended to the plugs over the valves. The aluminum crankcase is split into right and left-hand parts to facilitate access to and removal of the crankshaft or connecting rods and pistons without disturbing the cylinders or their connections, and all bearings are attached to the stationary side so as not to be disturbed by the making of other adjustments.

A refined and enlarged edition of the multiple-disc type of clutch, first adopted last year, constitutes the first step in the transmission of the power. It consists of sixty-five discs, providing 33 1-3 per cent. greater friction sur-



SIDE ELEVATION "SIX-TEEN-SIX" SHOWING CONSTRUCTIONAL DETAILS.



LEFT-HAND VIEW OF MOTOR, SHOWING VALVE SPRING COVERS, ETC.

face than that of its forerunner just mentioned. It is held together by six springs placed at equidistant points round the outer circumference of the clutch, thus distributing the tension to much better effect and also greatly reducing the possibilities of being stranded through the defection of this essential, as is the case where reliance is placed on a single spring.

The clutch is supported on ball bearings and runs in an oil bath, though it is readily accessible and any one of the springs may be easily removed or replaced. By the addition of simple and compact devices, the clutch can be locked in the disengaged position without interfering with the brakes.

That fashion dominates engineering practice is evident from the fact that the next step in the transmission consists of a three-speed gear set, which the makers are frank to state is fitted more to comply with the prevailing demand than because this number of speeds is required.

This gear-set is of the sliding type, works on the selective method of speed changing and gives the direct drive on the third speed. The shafts are mounted on ball bearings throughout, and the special interlocking mechanism is incorporated in the housing, thus protecting every operative part. Final drive is by means of a propeller shaft, and this has been so designed with relation to the remainder of the car as to lie in practically a horizontal plane under a wide range of varying conditions of load. To provide against relative movement, due to inequalities of the road, a flexible coupling is provided between the clutch and the gear-set, with two roller type universal couplings in the driving shaft.

The same attention to providing thorough protection for all working parts has also been extended to the drive. The torsion rods are equipped with ball joints and are of an improved type. The rear axle is of the floating type carrying no load, and the axle shafts, differential gears and pinion shaft are all removable without the use of a jack or pit, the car always being supported by the wheels. The rear axle unit is distinguished by the use of Timken roller bearings throughout.

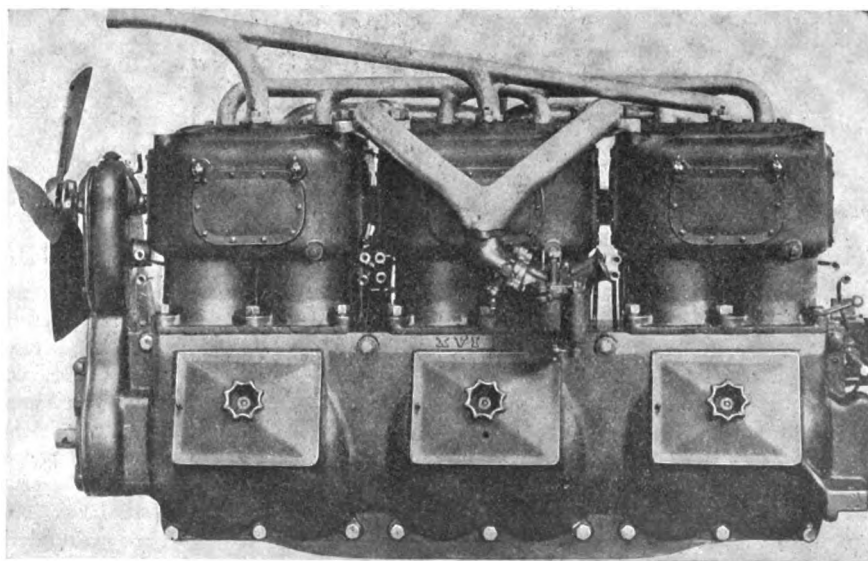
To come back to the motor, there are also several new features of note to be found where its accessories are concerned. The new carbureter is provided with two nozzles and two throttles, both of which operate in conjunction

with one another and progressively, the smaller of each opening first and later picking up the larger as the requirements of the motor increase. Special attention has been paid to the ignition, and while this is in duplicate the systems have been made very compact and simple. An Eisemann high-tension magneto constitutes the chief standby, while current for the second system, which is supplied by accumulators, is led through the distributor on the magneto and the single vibratorless coil of the latter before passing to the plugs. For lubrication a gear-driven Hancock oiler is provided, an independent oil pump forcing the oil from the crankcase to a filter and thence to the oiler, from which it again emerges through twelve separate leads taken to the various important points, so that the same oil is used constantly as long as it is of any value. Cooling is taken care of by a fin tubular radiator supplied by a gear-driven centrifugal pump and supplemented by a fan, also gear-driven and provided with a friction clutch.

Where the remainder of the car is concerned, it may be said to embody practically all those

features that have distinguished its predecessors of the Winton line. This is noticeable in the use of Winton twin springs, the Parsons manganese bronze front axle and other familiar essentials, though there are, of course, many detailed refinements, such as the use of aluminum for the bonnet, the sides of which open by means of spring plungers, the mahogany, steel-hooded dash carrying an auxiliary gasoline tank and the like, which go to show that no pains have been spared and not even the smallest detail has been passed unconsidered. Thirty-six-inch wheels have been adopted.

In discussing present-day tendencies in automobile manufacture and design, Mr. Winton says: "If I were not well convinced that the six-cylinder car is far superior to previous types, I certainly would not have begun the manufacture of six-cylinders exclusively, as our company is now doing. Six-cylinder advantages are so fully acknowledged by automobile engineers that it is impossible to raise an argument. Constant power, absence of vibration, great power in reserve, wonderful flexibility, less weight per horsepower—all that the motorist desires, he finds in the six. And in our own construction we show actual simplicity, all working parts housed and lubricated, combined with almost instantaneous access to all working parts. We have eliminated complication. We use a single coil in company with a magneto.



RIGHT-HAND VIEW, SHOWING MANIFOLD CARRIED ACROSS CYLINDERS.

the price of which alone is a guarantee of superior excellence. This new model of ours will serve to prove American supremacy. That has been my constant aim for years. I am ready now to let the public judge whether it be true or not, and instead of asking them to go to New York to see, I am having our new model brought to their home cities."

In regard to this latter feature of displaying the new models in the leading cities, two exhibition express cars will be used, one traveling east from Cleveland and one west. Each show car will carry two demonstrating models of the Winton, an enameled chassis, a fully equipped exhibition model, and a corps of demonstrators. Upon arrival at each city, the exhibit will be taken to the company's salesroom and there displayed from one to four days. The western itinerary is as follows: Toledo, Detroit, Cincinnati, Louisville, Indianapolis, St. Louis, Chicago, Milwaukee, St. Paul, Minneapolis, Omaha, Lincoln, Denver, Salt Lake City, Los Angeles, San Jose, San Francisco, Portland, Tacoma, Seattle, Vancouver and Winnipeg. The eastern itinerary includes: Pittsburg, Washington, Baltimore, Philadelphia, Newark, Newburg, N. Y., New York City, Brooklyn, Bridgeport, Boston, Taunton, Providence, Middletown, Conn., Hartford, Springfield, Troy, Albany, Syracuse, Rochester, Buffalo and Toronto.

Some Good Winton Money for Careful Drivers.

In connection with a plan formulated by the Winton Motor Carriage Company, which puts a premium on careful driving, there is a chauffeur somewhere in this country who will win \$1,000 in gold for his strong use of common sense, and nine others will divide \$1,500 in cash prizes, graded from \$500 down to \$100. In placing the Winton "Six-teen-Six" on the market, the output of which is limited to 500 cars for 1908, its makers are desirous of securing a complete and authentic record of the performances of each, and are offering \$2,500 in gold as an incentive to the drivers to keep accurate tabulation of mileage and upkeep expenses. The chauffeur who proves the best record will receive \$1,000, the second best record will win \$500, the third \$250, the

fourth will get \$150 and the next six will be given \$100 each. "We offer these prizes as a premium on intelligence and carefulness," says Mr. Winton. "No automobile manufacturer in the world has anything like an accurate record of the work performed by the cars of his make, but we propose to secure such a record. This plan ought to be effective, because it provides ample payment for the man who keeps tab. That the records may be absolutely accurate in detail, each contestant will be required to have his report acknowledged by his employer and sworn to before a notary public. When the contest closes a committee, composed of automobile editors of leading daily papers will be asked to make the awards."

Mr. Winton emphasizes the point that this contest operates to the distinct advantage of the car owner, as follows:

Each competing chauffeur must drive for the same owner throughout the contest, hence the man who stands to win \$1,000 is certain to give his employer the most faithful service and will hesitate before he jumps his job in midseason.

The report is based on average cost of repairs per mile, hence the chauffeur will endeavor to avoid repair bills and will do his best to give his employer maximum mileage at minimum expense.

In order to avoid repair bills the driver will exert himself to handle the car intelligently, to understand its care and repair so that he can keep it in constantly good running condition, and especially to avoid reckless driving, which, more than any other single item, helps to keep repair shops busy.

Under the Winton prize plan the chauffeur who runs up repair bills is virtually paying for them out of his own pocket, inasmuch as each such item of expense puts him farther away from the \$1,000 first prize.

WHY A MOTOR LOSES POWER.

Keeping a car tuned up to its highest point of efficiency should naturally be the effort of every driver, and the following suggestions from J. D. Maxwell are well worth reading:

"I am continually surprised that the majority of cars show up as much power as they do. You meet occasionally men who take a pride in keeping their power up to where it ought to be, but by far the greater class seem to be thoroughly satisfied if the cars run at all.

"There are three great causes for loss of power in a gasoline motor. Probably the most serious offender is the lack of compression. The valves should be carefully ground in and care should be taken that there are no leaks either around the spark plugs or the valve caps.

"The electrical ignition is also usually carelessly taken care of, and it is a fact that the intensity of the electric spark is a most important factor if the motor is to develop its full power. A third and last cause is improper mixture of the gasoline and air; or, in other words, the carbureter should be properly adjusted.

"There are, of course, several factors that enter into each of the above three general causes, but you can take it as an axiom that when the compression, the electric system and the carbureter are all in proper condition the motor will show up its full power."

CHICAGO TO HAVE A PARTS SHOW.

It is announced that Chicago is to have two shows this winter after all. The National Auto Parts Show promoted by A. M. Andrews, which was held for the first time last year early in the fall, was to have been repeated at about the same time this year, but in response to a demand on the part of those dealers who participated in last year's event it has been decided to hold it concurrently with the National Show, which is set for the week of November 29 to December 6. There were 85 exhibitors at last year's show, and it is expected that the number will be increased this year. The show is to be held in Casino Garden, on Wabash avenue.



ALL READY FOR A RIDE IN THE "SIX-TEEN-SIX."

INCREASING EFFICIENCY BY USE OF SURPLUS HEAT

By A PACKARD FACTORY EXPERT.

THE gasoline motors of automobiles being heat engines, thermodynamical considerations, other than those of the general principle and method of power generation, are important in the development of such engines toward the goal of high efficiency. It is obvious, in theory, that any use which may be made of waste heat—after it has reached the point at which, in ordinary practice, it dissipates—will tend to increase, indirectly, the number of heat units that are developed by the engine. In practice this holds true so long as, in the utilization of waste heat, there is not added mechanical complication sufficient to overbalance by its own absorption of power the increased efficiency of the heat salvage device.

It might easily be possible to overload an engine with heat-recovering apparatus that would require more power for operation than it would repay in added efficiency. Also, it is possible to complicate to a point where frequent mechanical trouble would offset the advantage of increased efficiency. All these points were carefully studied by the Packard Company in the adoption of heat-saving elements in its motor. There were adopted two ways of utilizing surplus heat—without the addition of working mechanism that would complicate, require additional operating power or interfere with any of the other motor elements. Carburation and lubrication were the selected mediums of heat recovery.

There are several distinct advantages in the heating of a carbureter which independently tend toward greater efficiency of the engine itself in its ordinary method of power development. Probably the most important is that a heated mixture relieves the engine of part of the work of heating the incoming charge up to a temperature necessary to convert it, as a gas, to an ignitable and expansible power agent. This is a certain amount of work that must be done. If it can be done by an exterior and non-power-consuming agent, such as waste heat, the engine itself is saved just that same amount of work and gains just that much in efficiency.

That the apparent theoretical condition is true in practice is shown by comparative tests of cold and warm charges in an engine equipped with a carbureter that may be used either cold or warmed. It will be noticed that, when run cold, there is much more likelihood of and tendency to misfiring than when run warmed, demonstrating that the heated charge furnishes a more readily combustible fuel, and, hence, a more smoothly and efficiently running engine. The same point is proven also by the difficulty generally experienced in starting a motor with cold cylinders, as in winter.

The area of the opening in the aspirating nozzle may be larger in the heated than in the unheated carbureter. This is a factor in the previous advantage of providing a greater volume of fuel to be drawn into the cylinder upon each intake. Furthermore, heating the mixture allows the use of gasoline of grades that would not be available in engines equipped with unheated carbureters. Of course, gasoline of exactly the proper grade is the best fuel in any engine, but there are occasions in automobiling when this cannot be obtained. There is a distinct advantage in a motor which will run efficiently with any grade of gasoline.

So much for the value of heating the carbureter. There is also to be considered the limit to which the heating should be carried and this is an important point. The mixture must not be warmed to excess. If it becomes too hot, it becomes a gas outside of the cylinders, which would be a condition disastrous to both efficiency and smooth running. Taken into the cylinder as a gas, the volume of fuel charge would not be as great as when taken into it as a mist—that is, finely divided gasoline carried in suspension by air. Hence, the exact opposite effect of heating to the proper degree would occur. Compression would be reduced, there would be likelihood of misfiring and surety of decreased ef-

iciency. In adapting waste heat for warming the fuel mixture it is not desirable to apply the heat to that portion of the mixing chamber immediately around the aspirating nozzle. This would warm the raw gasoline before it had become intimately mixed with air. The gasoline would expand and the volume of fuel reaching the cylinder would be less than otherwise. Hence, in designing the Packard carbureter, the heat jacket was placed above the nozzle, so that heat would not be applied to the mixture until it was well on its way to the engine. The bottom of the jacket is about two inches above the tip of the aspirating nozzle and is about five inches high. The butterfly throttle valve is approximately midway of its length. The gasoline-laden air, in rushing past the butterfly valve, is crowded against the wall of the jacketed passage and thus placed in close contact with the heat.

How the Utilization of Surplus Heat is Effected.

Water shunted from the motor-cooling water system is used as the source of heat. It is taken from the top of a cylinder, where it is warmer than at any other point in its cycle of circulation. Through a $\frac{3}{8}$ -inch copper pipe it is led to the top of the carbureter jacket. From the bottom of the carbureter jacket there is a straight lead to the suction side of the water pump. This direction of flow is adopted to allow the convenient and positive draining of the carbureter jacket, by simply opening the pump drain.

In the pipe between the cylinder and the carbureter there is a valve, placed close to the cylinder, which allows the water to be entirely shut off from the carbureter, permitting the convenient removal of the carbureter for any desired purpose. It also allows the regulation of the volume of water flowing through the carbureter jacket, as for summer and winter. Such regulation in practice, however, has been found to be hardly desirable, the flow being left practically the same at all times and under all conditions. It is obvious that this heating system does not in any way require motor power for its own maintenance. It is strictly a power recovering system which does not add mechanical complication or new source of trouble to the engine.

The application of surplus heat to the lubricating system of a motor has the single object of rendering the flow of oil surer and always reliable, regardless of changes in temperature. It affects motor efficiency indirectly, by increasing effectiveness of lubrication, which is, of course, an important factor in the smooth running of a gasoline motor.

Cold oil is not easily forced through small pipes. The ordinary exhaust pressure systems of lubrication apply from one to two pounds' pressure per square inch. This will not move oil readily through the oil leads in cold weather. Even in some of the mechanical systems in which a greater pressure is applied, difficulty is experienced with oils in the winter.

Warming the oil can do no possible harm and insures a viscosity which makes it flow readily through small pipes, regardless of exterior temperature conditions. In the use of an oil warming system it has been found that the most severe weather changes have not made any appreciable difference in the operation of the oiling apparatus. The Packard company uses and recommends a certain brand of light oil. The heated lubrication system would, however, allow the use of the heaviest oils, even Albany grease, which would, under the application of heat, become a thin liquid. In fact, such greases have been used successfully in that system. The use of a light oil is for an entirely distinct consideration—that it does not tend to interior carbonization, as do heavy oils.

In Packard practice the benefit of waste heat is secured without cost in power or in consumption of otherwise useful heat or

energy. The oil reservoir is a vertical copper cylinder, which is placed above the motor crankcase close to and between the two pairs of cylinders. All of the other elements of the oiling system are ahead of the dash and under the bonnet, in the warm region surrounding the engine, with the exception of the glycerine-filled sight feeds. The oil is fed to the engine by a positive plunger pump. The direction of flow is from the tank to the pump; from the pump to the sight feeds, and from the sights to the motor crankcase, where it lubricates the various bearings and cylinders by splash.

The tank being directly on top of the crankcase, it is combined with the crankcase vent pipes, this combination and disposition being the subject of letters patent. The vent pipes extend upward through the oil tank, with caps above. They thus assist in the heating of the oil tank, by interiorly applying the heat

value of the crankcase gases that arise through them. The construction also tends toward cleanliness, as the high vent pipes allow the escape of the crankcase gases without that dirty overflow of oil and dirt that is common in the case of low vents. The gases, in rising, have a chance to condense and release oil carried by them, allowing it to flow back into the crankcase. The screw-capped oil tank opening being on top and between the two vent caps, the arrangement gives both accessibility and compactness.

The whole system is a simple unit that avoids complication, the only mechanically-operative part being the one plunger pump, which would be required in any kind of mechanical oil feed. The increased efficiency through heat recovery is obtained simply by disposition and the arrangement of parts. Whatever it adds to efficiency and reliability is a gift. It is not creation of energy. It is thrift in the use of energy.

COUZENS TALKS ABOUT EXPORT TRADE CONDITIONS

IN spite of his 38 nights on sleeping cars and local steamers which he took in the course of his dash around the Continent, and from which he returned on the *Kaiser Wilhelm der Grosse* last week, James Couzens, former chairman of the American Motor Car Manufacturers' Association, and manager of the Ford Motor Company, looked hale and hearty when seen at the New York branch, during the extremely brief period that he allowed himself in which to tell of the results of his trip abroad.

"There is a fertile field on the other side for the American car," says Mr. Couzens, "but it needs tilling and tilling in the European way. Our methods may be better, but they are not European methods, and to get the business it must be done in their way. There have been comparatively few American cars sent abroad within the past three or four years, and the chief impression of what the American maker can do comes from the few now antiquated specimens that were exported several years ago. The feeling toward American cars is not unfriendly, but in order to obtain a proper foothold the European situation will have to be carefully studied."

As Mr. Couzens visited practically every important city in Europe and covered every Continental country, barring Turkey and Greece, he may be said to have covered the ground pretty thoroughly, so that his views should carry considerable weight.

"Relative to trade conditions I observed," Mr. Couzens said, in answer to an inquiry, "I might say that the very short time spent in each European country, and I visited them all, I had not an opportunity of investigating as closely as desirable the entire trade situation, as my time was devoted very largely to looking after conditions of the Ford in these various countries, and any remarks I make are apt to be based more or less on the experience of our company in these various places and the prospects for the future of our cars there."

"Speaking generally, the prospects for American manufacturers in Europe would appear to be good if they will meet the conditions and requirements of these various countries, but to attempt to do so on the lines on which business is done in America would make it a fruitless task. The American manufacturers, not only in the automobile industry, but in almost all lines of manufacture, have not catered to European requirements and have not given the European business the care and attention it should have, considering the possibilities. The European public are not unfriendly to American goods in general, but they are somewhat unfriendly to American automobiles, due to the many unsatisfactory and unprofitable experiences they have had in importing American small cars during the early days of the automobile industry. Cars of that time, of course, were not nearly as satisfactory as they are to-day, but nevertheless the bad impression was left and no attempt made to correct it. Consequently, the final and only decision that could be reached was that all American cars are practically at the same state of progress even to-day, and that

American makers have made no advances or improvements in construction. It is consequently a difficult task for American makers to correct this impression and convince European buyers that we have improved our product and that it is now equal to any in the world, besides being cheaper, due to our advanced manufacturing methods.

"As to what car will best meet the popular demand," continued Mr. Couzens, "I might say that, at present, there is no demand for automobiles in Europe, as the majority of the makers are overstocked with cars and are exerting strenuous efforts to create a demand for their product. There is no demand for American cars except as you may cultivate it, and it is up to the American manufacturers, if they want the European business, to create and cultivate a demand for whatever product they believe there is the greatest future for. There does not appear to be any particular section of Europe that offers the best inducements to agents, because, from my casual observation, the European industry is practically in the same condition in every country, with the possible exception that Austria-Hungary and the Scandinavian countries may not be as far advanced in the use of automobiles as such countries as Germany, France, Italy, Holland, Belgium, etc. Whatever business is to be had has to be developed. In other words, there is no fruit over there ready to pick, as it has to be cultivated, nursed, and one must wait until it ripens; and the manufacturer who can and will do this will surely pick the fruit, as it will eventually ripen and without undue delay."

"Not being particularly interested in commercial vehicles, I paid little or no attention to their progress, except to note that Germany was making the greatest strides in the manufacture of these cars and was devoting a great deal of time, effort and money toward their development. It is hard to say whether European manufacturers have reached standardization, although to a large degree it would appear as if they had. In fact, it would appear as if they had probably done as much in this direction as American manufacturers, and as to that there is more or less controversy."

While abroad Mr. Couzens visited London, Amsterdam, The Hague, Rotterdam, Antwerp, Brussels, Paris, Barcelona, Madrid, Nice, Monte Carlo, Genoa, Turin, Milan, Rome, Venice, Vienna, Warsaw, Moscow, St. Petersburg, Budapest, Helsingfors, Stockholm, Christiania, Gothenberg, Copenhagen, Hamburg, Berlin, Cologne, Frankfurt, Heidelberg, Carlsruhe, Strassburg, Zurich, Lucerne, Paris and Cherbourg.

He said in many places where there were about a million people there were only 50 automobiles. He secured a record of the number of automobiles in every town in Europe and the number of people able to buy new machines. Probably no man has gone more deeply into the subject. Mr. Couzens called attention to the fact that the exports of American machines now exceeded the importations.

DOINGS OF ACTIVE AUTOMOBILE CLUBS

A CALL TO THE BIG NEW JERSEY CLUB.

NEWARK, N. J., Aug. 26.—The *Sunday Call* prints the following: "If the New Jersey Automobile and Motor Club wishes to be of real service to motorists it can undertake no better work than the establishing of roads between Jersey City and Newark that would not be a disgrace to the State.

"New Jersey has been called 'foreign territory' by motorists of other States. This has been not so much because of legal conditions, nor yet of any refusal to allow her roads to be torn up by a Vanderbilt cup contest, but for the reason that no good thoroughfares lead from the metropolis of this State to New York, the center of automobile activity in America.

"No motorist who has attempted to drive his car at more than snail's pace across the prehistoric Plank road or the dusty and rutty Turnpike will deny that conditions are disgraceful.

"New Jersey's largest motor club has done much for automobilizing, yet it is doubtful if working on the law or running endurance contests, valuable as are these evidences of activity, ever brought such great benefit as would come through the repairing and oiling of the Turnpike or, better yet, the proper surfacing of the thoroughfare leading from the heart of the city—the Plank road.

"Much is said concerning the poor state of repair of some of our country roads, yet their condition is ideal compared to the trails across the Hackensack meadows. A great opportunity awaits the New Jersey organization."

OUQUAGA CUP TOUR IN SEPTEMBER.

BINGHAMTON, N. Y., Aug. 26.—At the annual meeting of the Binghamton Automobile Club, held last week, the route for the Ouquaga cup tour was decided upon and the date fixed for the third week in September. From this city the tour will extend to Owego, Cortland, Syracuse, Auburn, Geneva, Rochester, Buffalo, Niagara Falls, Bath, Danville, Elmira and back to Binghamton. The distance is about 550 miles.

The annual election of officers resulted in the election of Benjamin F. Welden as president; William G. Faatz, vice-president, and S. M. Frechie, secretary-treasurer. The matter of a clubhouse was informally discussed at a banquet after the meeting, and the project will come up later for official consideration.

MIDDLEBORO CLUB GIVES PUBLIC WARNING.

MIDDLEBORO, MASS., Aug. 26.—With a view of aiding in the enforcement of the local ordinance, recently put in force by the Selectmen and which limits the speed through the town to twelve miles an hour, the club adopted a novel scheme. A number of men were provided with red flags and a supply of cards setting forth the object of the club and giving all the required information. These were handed to the driver of every car entering the city on the main roads, the red flag playing an important part in the proceedings. The work was kept up all day long, and the officers of the club feel that it went a long way toward accomplishing the object desired.

PEORIA, ILL., HAS ANOTHER AUTOMOBILE CLUB.

PEORIA, ILL., Aug. 26.—Twenty-seven owners of Glide automobiles have formed the Glide Automobile Club, with the following officers: President, M. E. Magruder; vice-president, A. C. Berkstresser; secretary, A. Y. Bartholemew; treasurer, E. P. Churchhill. A club run to Mossville, with a chicken supper as an inducement, is scheduled for Saturday next. A fortnight from the same day there will be a run to Lake Senschwine, spending the night at the Under Cliff Hotel and returning the following day, Sunday, September 14.

QUAKERS FIND POSTPONEMENT ADVISABLE.

PHILADELPHIA, Aug. 26.—Members of the Contest Committee of the Quaker City Motor Club, which is promoting a race meet at Point Breeze Track, are up in arms at the promiscuous manner in which the A. A. A. grants conflicting sanctions. Having originally selected Saturday, August 31, that date was abandoned and a sanction secured for the following Saturday, September 7. When the Quakers learned later that Morris Park had been granted a sanction for the same date, and realizing that they could get few New York entries if they held on to the 7th, they reluctantly announced another postponement, this time to the 14th. "Surely," said one of the Quaker Motor Club officials, "those who control racing should see to it that the holder of a sanction should be free from competition, and two permits should not be issued for the same day in cities as close together as are Philadelphia and New York. We count on quite a number of entries from the metropolis, and of course we can't get them with a meeting running there on the same day. There is nothing left for us to do but postpone."

GRAND RAPIDS TO ENTERTAIN CHICAGOANS.

GRAND RAPIDS, MICH., Aug. 26.—Correspondence between the local automobile club and the Chicago Automobile Club has resulted in the decision of the latter club to make Grand Rapids its objective point in its next endurance run, which will come off later this month or early in September. Dr. D. Emmet Welsh, secretary of the Grand Rapids Automobile Club, has sent Assistant Secretary W. W. Crawford, of the Chicago club, revised maps of the route, and the run will be made by way of South Bend, Elkhart, Three Rivers and Kalamazoo to this city. The city is expecting the largest gathering of strange automobiles that has ever been within its limits.

The club has been so successful this year in its new country home at Cascade, and has grown so rapidly, adding fully 200 new members this year, that negotiations are on foot now for the purchase of the Cascade Springs Hotel, to be fitted up for a new abode.

COLORADO CLUB PLANS COUNTY ORGANIZATION.

CANON CITY, COLO., Aug. 23.—With a view to perfecting an organization comprised of all the autoists in the county, a special meeting of the Cañon City Automobile Club was called on Thursday of last week, and was held at Miller's Roof Garden. Unfortunately, threatening weather prevented as large an attendance as had been anticipated, as invitations had been issued to autoists in Florence and Portland, as well as the coal camps, Dr. J. W. Cline, of Florence, being the only one to represent his town. A committee consisting of Dr. Cline, Colonel J. Q. MacDonald and J. J. Armstrong was appointed to lay the matter of a county organization before the automobile owners of Florence, and there is little doubt but that they will unite with the local club in the proposed movement. The principal object sought is the improvement of the county roads.

DETROIT'S CLUB UNUSUALLY PROSPEROUS.

DETROIT, MICH., Aug. 26.—President Harry Skillman and his assistants in the Detroit Automobile Club are indefatigable workers, and under their regime the club is prospering to a gratifying degree, its present membership reaching 300, of whom more than 50 have been added during the past half year. Not the least of the attractions offered by the club is its country home at Pine Lake, about thirty miles from the city. Many improvements have been made, new furnishings installed and facilities provided in other ways to take care of the rapidly increasing membership, so

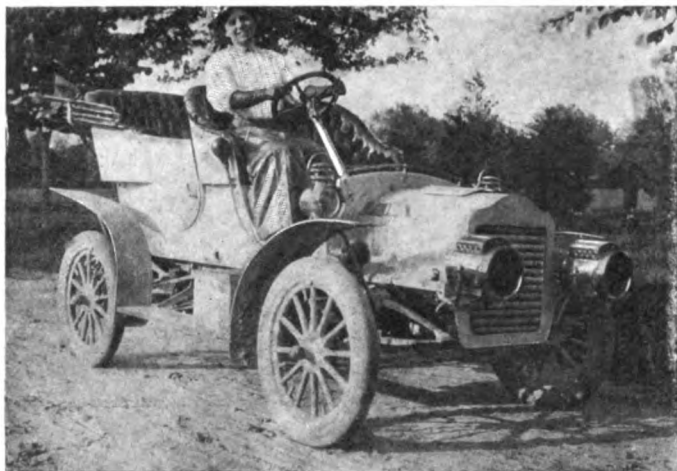
it is doubtful if there is a better equipped club anywhere in the State or, for that matter, a more complete country home of the kind in the United States.

KANSAS AUTO CLUBS GROWING FAST.

SALINA, KAN., Aug. 23.—The number of Kansas automobile clubs was augmented by one with the organization of the Salina Automobile Club here a few days ago, with a charter membership of twenty-four autoists. It is hoped to increase the membership to fifty within a week or two, and an effort will be made to secure the State motor convention for this city in 1908. The officers of the new club are H. D. Lee, president, and Senator Fred A. Quincy, George Werggerbur, Leon Rash and H. L. Center were appointed an executive committee, the nomination and election of the remaining officers being deferred until a little later, when there is every prospect that the new organization will include on its roll all those interested in automobiling in this section.

VIRGINIA VALLEY TO BE SCENE OF TOUR.

NORFOLK, VA., Aug. 26.—One of the most ambitious tours ever undertaken by a Southern automobile club is now under consideration by the Tidewater Automobile Association of this city. It is proposed to leave here the early part of September and



MRS. S. W. M. HARRIS, VIRGINIA'S PIONEER WOMAN AUTOIST.

spend ten days or two weeks on a trip up the Valley of Virginia. A committee is now studying the nature of the country and the accommodations afforded in order to make up the itinerary. "We all propose to keep within hailing distance of each other," says a member of the committee, "and it may be stated there will be no scorching or anything of that sort, calculated to bring us into disfavor with folk along the route."

BUFFALO WILL CELEBRATE OLD HOME WEEK.

BUFFALO, Aug. 25.—Never in the history of automobile parades have so many prizes been offered as will be given for the decorated and illuminated parade under the auspices of the Automobile Club of Buffalo, to be held Tuesday evening, September 3, during Old Home Week, in this city. Secretary Dai H. Lewis has already purchased twenty-three silver cups for the best decorated cars. There is every prospect of making the affair one to be long remembered.

OREGON DEMANDS LEGAL TEST FOR DRIVERS.

PORTLAND, ORE., Aug. 22.—The Portland Automobile Club has put itself on record as favoring rigid examinations for professional chauffeurs before the latter are allowed to follow their vocation. In addition to favoring legislation on this important subject, the club also asks that children under 18 years of age be prohibited from operating automobiles in the streets.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
- Nov. 2-9.....—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
- Nov. 29-Dec. 6.—Chicago, Casino Garden, Second Annual Auto Parts Show. A. M. Andrews, Secretary, 184 La Salle Street.
- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 14-21.....—St. Louis, Mo., New Coliseum, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
- Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.
- April 6-11.....—Buffalo, Convention Hall, Motor Boat and Sportsman's Show. D. H. Lewis, manager.

Races, Hill-Climbs, Etc.

- Sept. 2.....—Wildwood, N. J., Straightaway Race Meet, Motor Club of Wildwood.
- Sept. 5.....—Chicago, Cedar Lake Economy Run, Chicago Motor Club and Chicago Automobile Trade Ass'n.
- Sept. 6-7.....—New York City, Morris Park Track, 24-Hour Race Meet. Morris Park Motordrome Club, office, Times Building.
- Sept. 7.....—Hartford, Conn., Hill Climb, under the auspices of the Automobile Club of Hartford.
- Sept. 7.....—Minneapolis, Minn., State Fair Race Meet of the Minnesota State Automobile Association.
- Sept. 9-10.....—Pittsburg, Pa., Brunot's Island Track, Race Meet, Automobile Club of Pittsburg.
- Sept. 14.....—Philadelphia, Point Breeze Track, Quaker City Motor Club.
- Sept. 14.....—Jamestown (Va.) Exposition, Aeroplane Contest for "Scientific American" Prize.
- Sept. 14.....—Albany, N. Y., 95-mile Road Race, under the auspices of the Albany Automobile Club.
- Sept. 20.....—Milwaukee, Wis., State Fair Grounds Track, Race Meet, Milwaukee Automobile Club and Milwaukee Dealers' Association.
- Sept. 21.....—Harrisburg, Pa., Middletown Track, Race Meet, Motor Club of Harrisburg.
- Oct. 21.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

FOREIGN.

Shows.

- Aug. 1-Sept. 30.—Holland, Amsterdam, International Exhibition of Motors and Machines, Palace of Industry.
- Sept. 28-Oct. 7.—Denmark, Copenhagen International Automobile Show.
- Nov. 11-23.....—London, Olympia Motor Show.
- Nov. 12-Dec. 1.....—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
- Jan. 18-Feb. 2.....—Turin, Italy, Fifth International Automobile Exposition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.

Races, Hill-Climbs, Etc.

- Aug. 23.....—Belgium, Ostend Motor Boat Meeting.
- Sept. 1-2.....—Italy, Brescia Circuit, Florio Cup. A. C. of Italy.
- Sept. 15.....—Austria, Semmering Hill Climb, Austrian Automobile Club.
- Sept. 15.....—France, Chateau-Thierry Hill Climb.
- Oct. 1-15.....—Paris, Electric Vehicle Competition, Automobile Club of France.
- Oct. 20.....—France, Gallion Hill Climb.
- Nov. 1-15.....—France, Voiturette Contest near Paris.
- May 16, 1908.....—Sicily, Targo Florio, Automobile Club of Italy.
- June 20-July 5, 1908.—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
- July 14, 1908.....—Paris to London, Aerial Race.

BAY STATERS OF A. A. A. ACTIVE AND PROGRESSIVE

BOSTON, Aug. 24.—In its sign-board campaign, the Legislative Committee of the Massachusetts State Automobile Association has just made an important step forward. This is the permission which has been secured from the New England Telephone and Telegraph Company for the erection of the cautionary road signs of the association upon the poles of the company throughout the State. The telephone company has heretofore been very conservative about allowing the use of its poles for any purposes except those of the company, but Chairman Lewis R. Speare, of the Legislative Committee, was able to bring to bear upon officers of the company arguments which brought about the desired concession. The committee, through the constituent clubs of the association, will soon begin the erection of these signs, and it is planned to post the principal roads of the commonwealth as rapidly as possible. The signs will be uniform in style and will bear the warning, "Drive Carefully," followed by a notice of the road conditions ahead. The signs will be posted at dangerous curves, cross-roads and the like, and it is thought that drivers will pay more attention to warnings posted by the State association than they do to those of local authorities.

The arrangements for the convention of the State association, to be held September 6 to 9, at Hotel Wentworth, Newcastle, N. H., are making good progress, and the gathering bids fair to be one of the largest of New England automobilists ever brought together. The programme includes club runs on Friday, with an entertainment in the evening; a baseball game between teams representing two of the leading clubs Saturday afternoon, and a general business meeting in the evening, at which the Hon. Samuel L. Powers, formerly a Massachusetts Congressman, will make an address. Sunday there will be a short run and a clam-bake, and for Monday the hotel management has provided a gymkhana tournament for owners of cars.

Besides the pleasure side of the convention, the committee in charge hopes to make the gathering important in a business way. There will be meetings of the officers and committees of the various

clubs, at which current problems in automobiling will be discussed. Proposed legislation will come up, and the policy of the automobilists for the next session of the General Court will undoubtedly be outlined. One subject that has been set for discussion is the so-called "light" bill, to compel all vehicles on the roads at night to carry lights of some sort. This bill has been side-tracked by several legislatures, but the automobilists probably will make a determined effort to have it put through next winter when the legislature reconvenes.

The committee in charge of the convention consists of Lewis R. Speare, of the Bay State Association; Elliot C. Lee, of the Massachusetts club; J. P. Coughlin, of the Worcester club; S. L. Haynes, of the Springfield club; W. H. Chase, of the Wachussetts club; H. R. Burbeck, of the Brockton club, and A. E. Bliss, of the Malden club.

THE CONGRESS ON UNIFORM LAWS.

President William H. Hotchkiss, of the American Automobile Association, and Chairman Charles Thaddeus Terry, of the Legislative Board, were in attendance at the recent Congress on Uniform Laws, held at Portland, Me. The first three days of the session last week were devoted to a consideration of the reports of the various committees, and those accepted or modified were this week considered by the Congress at its joint session with the American Bar Association. The Congress is made up of commissioners appointed by the governors of the different States. Mr. Terry has been one of the three commissioners from New York State for some time past, and recently Mr. Hotchkiss was appointed by Governor Hughes to fill a vacancy.

While not much was done on the subject of automobile laws at the session, it is a certainty that much attention will be paid to uniforming these laws at the next session of the Congress.

FOREIGN IMPRESSIONS OF AN AMERICAN TOURIST

SAN FRANCISCO, CAL., Aug. 20.—G. A. Hensley, a well-known San Francisco autoist, has just returned home from an extended tour in Europe, where he drove his White steamer several thousand miles. Mr. Hensley had some most interesting experiences. The tour started in February of this year at London, from where the tourist went to Havre and then to Paris. "I wish I had crossed the Channel in my auto," jokingly remarked the autoist; "if I had, I wouldn't have been seasick."

From France he traveled through Spain. Speaking of King Alphonso's realm, Mr. Hensley said it was, without excepting the Alps, the coldest, most desolate, God-forsaken and degenerate country he ever saw. "Certain of the peasantry are so ignorant regarding the general appearance of an automobile that, from their actions, it seems they think some fierce animal is upon them. In many cases they run and never look back, and in one instance two peasant women endeavored to climb the same tree. We met with such road experiences all through Spain, and especially along the highway between Burgos and Madrid, known as the Upper Castile road, was traveling very arduous, owing to the roads being congested with mules, oxen and peasantry, most of whom had never seen an auto before. On our appearance they were thrown into indescribable confusion." In Granada, Spain, over half of the population are beggars, according to Mr. Hensley, who is of the belief that some of them really cut off their arms and otherwise disfigure themselves to get money.

From Spain he toured to Marseilles, Nice, to Monte Carlo, and

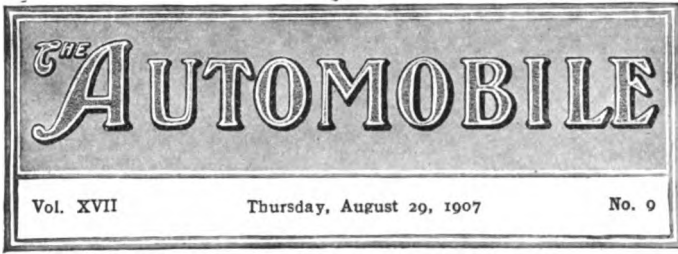
then through Italy to Milan. From Milan he went to Venice. The local autoist crossed the Alps in the teeth of a blinding snowstorm to enter Austria. Driving under these conditions, with snow at times up to the hubs, was very difficult.

Mr. Hensley made two tours in Germany. Perhaps one of his most successful pournes while touring on the Continent was a trip up the Rhine and across Germany, covering a distance of 350 miles in a day's run.

"My one regret in connection with my tour abroad was that I did not take a chauffeur from this country, instead of being obliged to depend upon the European article. I was rather unfortunate in my selection of an English driver, and the one I engaged succeeded in having three accidents in one week with my car.

"With the exception of London, where there are a great many Whites in use, the steam auto attracts unusual attention. Many cannot realize how so large a machine is able to tour the country without restoring, the majority of opinions among those unfamiliar with steamers being that my car was an electric. This impression was created through the noiselessness in the running of the car.

"The general attitude abroad toward American cars (this does not apply to the steamer) is one of contempt. Yet I visited most of the largest automobile factories in Europe and noticed that about one-half of the machinery, like the gear-cutting and other appliances, are of Yankee production."



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
LOUIS R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoiland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00
To subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hiffe & Sons, Limited, 20, Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903, and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905, - - - - -	730,000
“ “ in 1906, - - - - -	791,000
“ “ This Issue - - - - -	16,500
“ “ Since January 1, - - - - -	570,650

Status of the Six-cylinder Car for 1908.

Whatever may be the arguments pro and con where the six-cylinder car is concerned, whether from a strictly technical point of view, or from that of the user who seeks utility alone, there is one thing certain, and that is many of this country's most prominent makers will at least have a go at it for next season. This became evident some time ago, and, in the natural course of events, no other outcome was to be expected. There has been so much talk about the six-cylinder car and its obvious advantages that the automobile-buying public has become infected with the idea. Consequently, it seems reasonably certain that there will be a very greatly increased demand for this type of car during the coming season, and, with that foresight that usually characterizes him in such matters, the American manufacturer is preparing to reap the harvest.

The successful experience of the few pioneer makers in this country who have built cars of this class for the past two years has served to demonstrate that there is a large business to be done in this field. Hence, many manufacturers have made preparations accordingly, and the fact that they regard six cylinders as superior to four, from either a manufacturing or an engineering point of view, has little or no bearing on the matter. There is a demand for an increased number of cylinders, and there is every prospect that it will assume large proportions in the near future, and the average maker is willing to meet it.

Why Special Types of Cars Are Difficult to Market. That it is one thing to evolve a radically different type of automobile and quite another to sell it is something that the average inventor finds hard to realize. Regardless of the numerous meritorious features it may embody from an engineering point of view, it is generally a very difficult matter to find a sufficient number of purchasers for it to warrant its manufacture. But little observation is required to understand the reasons therefor. The autoist who becomes the owner of such a machine finds himself compelled to master it from beginning to end, either without assistance or with what the maker will extend. If he breaks down on the road it is usually useless for him to appeal to drivers of passing cars, for no matter how willing the latter may be to aid him they are frequently helpless.

He must, indeed, be firm to his purpose and unswervingly enthusiastic in his liking of the machine to continue as its advocate, for neither among autoists as a class, nor in the journals devoted to automobiling, does he find any reference to the problems that confront him. In short, he is in a class by himself, and even though converts of his own kind may be comparatively numerous, they are too widely scattered to be of any mutual help to one another. The autoist who will remain faithful under such circumstances is a rarity, usually with some well-set mechanical ideas of his own, so that it is not difficult to understand why revolutionary designs are not enduring.



Why Should Cost of Selling Autos Be So High?

Given machinery of any other nature, whether of a special class or not, and of the same value as the average modern automobile, and it is safe to say that it does not cost a fraction as much to place it in the hands of the purchaser. It is a matter of common knowledge that a certain, and not particularly small, section of the selling end of the automobile industry has been characterized by an amount of profligacy and extravagance that have brought opprobrium on the business as a whole. It goes without saying that the taint has not been general by any means, but, nevertheless, it costs far more to dispose of a \$5,000 automobile than it does to sell \$5,000 worth of machinery, whether for printing, laundry work, or manufacturing of any kind.

All of which merely goes to show that the business of selling automobiles is still on a very artificial basis, and it must be admitted that the immediate future offers no prospect of betterment, which, however, must come sooner or later. It is plain to be seen that things must inevitably tend that way as a natural result of increasing competition. The great cost of marketing automobiles is one of the things that contribute very largely to make the "poor man's automobile" a dream of the future, but the placing of the business on a sound economic basis will bring its realization far nearer.



Awakening of the Agriculturist to Auto's Benefits.

At last is the farmer coming to a realization of the fact that the automobile benefits rather than injures him. In fact, he may be said to have awakened, if the significant action of the Farmers' Union of Floyd County, Ga., may be taken as a criterion. More severely restrictive measures than have ever been seriously countenanced in other States have been pending before the Georgia Legislature, and this body of farmers has gone on record as opposed to any legislation prohibiting automobiles from running on Georgia highways, on the ground that *no factor has been or will be so important in the development of good roads as the automobile.* It has come at last, though a long while on the way. The excellent example thus afforded may well be patterned after by other farming communities.

It may be that there are several American makers who have the idea in mind, but it is known that one has conceived something which will cause the farmer to sit up and take notice when the farm utility car appears.

A. A. A. AND ITS CONDUCT OF AUTO RACING

AUTOMOBILE racing unquestionably is one the most difficult forms of competition to govern in a manner satisfactory to all concerned—in fact, it can never be controlled in such way as to please all participants. It is commercial sport, wherein the winner profits by victory and the defeated sometimes suffers a loss of prestige. Whatever organization looks after automobile racing, it will receive a generous amount of criticism and a sparse quantity of commendation. This is inevitable, and the officers of the American Automobile Association are keenly aware of the fact. Nevertheless, it is the impression of the majority that this national organization is the proper body to look after the sport, in addition to its other important work, and the foisting of it to other control would be looked upon as a confession of weakness and inability to cope with the complicated situation.

No rules will ever be framed, according to a consensus of opinion of the experts, which will be entirely to the liking of all contestants, and it ever must be a case of agreeing upon something acceptable to the majority. In the drafting of these rules the A. A. A. Racing Board has always considered the advice of its technical advisors, who represent the three big bodies of automobile manufacturers in this country, with a fourth member from France. Relying upon these four experts is the policy of Chairman Jefferson de Mont Thompson, and the four selected were named because of their prominence and experience in automobile racing. There can be no objection whatever to a thorough discussion of the racing rules at any time, and there is no reason whatever why the A. A. A. Racing Board should hesitate to formulate regulations meeting the desires of the greatest number of manufacturers. Much has appeared in print of late, and below are given some of the most recent developments in the situation.

RACING BOARD CONTAINS MEMBERS NATIONAL TRADE BODIES

By A. R. PARDINGTON, ACTING CHAIRMAN A. A. A. RACING BOARD.

IN organizing the Racing Board, the idea of representing all interests was carefully considered. The fact that the Vanderbilt Cup race has been conducted for three years past in a manner satisfactory to the international participants speaks for the general efficiency of the Board, which, of course, practically composes the Cup Commission. It is a source of keen disappointment that the commission found its promising efforts for the holding of a 1907 race interfered with by opposition from a most unexpected source. Those occupying official positions in any organization are at times subjected to outbursts of unjust and biased criticism, their acts being purposely distorted, often by interested persons who have axes to grind. But when the entire facts are generally understood in connection with the inability to conduct a 1907 Cup race, there will be a change of sentiment among the few misled by untruthful assertions and insinuations.

The Racing Board contains experienced amateur automobilists and also representatives of all the national automobile manufacturing associations: E. R. Thomas, N. A. A. M.; A. L. Riker, A. L. A. M., and Henry Ford, A. M. C. M. A. In addition France supplies a member, J. J. Mann, of the Automobile Club of France, which is composed for the most part and is controlled by the makers of that country.

The publicity which has been given recently to automobile race meets conducted in several cities under the auspices of the local automobile clubs affiliated with the American Automobile Association has contained much that was not authentic or reliable.

In a score of meets held, only two regular protests have been received by the Racing Board. One of these came from the Automobile Club of St. Paul, Minn., and the other was a complaint of a Brighton Beach entrant that he had not received a prize. The acting chairman has given prompt consideration to these and other minor complaints and has been conducting private investigations of the charges preferred, which, together

with other reports, will be presented at a meeting of the executive committee of the Racing Board, to be held in New York, Thursday, August 29.

The Racing Board received and granted a series of sanctions to the United States Motor Racing Association upon the recommendation of automobile clubs which had entered into agreements with this racing association to promote and conduct endurance contests in their respective localities, including sanctions at Chicago for a meet under the auspices of the Chicago Automobile Club and a meet at Brighton Beach under the direction of the Long Island Automobile Club of Brooklyn.

It is a well known fact that both the Chicago and Long Island Automobile Clubs were among the pioneers in the American Automobile Association, and have in the past conducted many successful contests both on track and road.

It has been the custom of the Racing Board to grant sanctions requested by any club affiliated with the American Automobile Association without the investigation which is always given to a sanction request not coming through the affiliated clubs of the association, the Racing Board believing that the association clubs should be fully able to supply capable officials. If the officers of meets fail to conduct such meets properly, it is a matter for the club to investigate and report to the Racing Board for consideration.

The acting chairman, pending a meeting of the Racing Board, has cancelled all requests for reservations made by the United States Motor Racing Association and other independent promoters. At its meeting to be held Thursday the Board will consider the question of the penalty to be imposed upon the United States Motor Racing Association and other independent promoters for failure to comply with the rules of the association, or for failure to make awards incident to successful competition. This suspension will apply to the individuals of these promoting associations as well as to the organizations themselves.

A. L. A. M. UNABLE TO FORMULATE SATISFACTORY RULES

IN an interview Monday last, E. H. Cutler, general manager of the Association of Licensed Automobile Manufacturers, said he was of the opinion that the present rules for conducting the various events throughout the country were inadequate to get the best results, both for the industry and for the general public. When pressed for a solution, Mr. Cutler admitted that a manufacturers' committee had, after many trials and after working over them three or four months, been unable to form a set

of rules that would meet all the requirements necessary for a thorough and honest tour or race.

Mr. Cutler was of the opinion that the adoption of universal horsepower rating was the remedy for the existing evils, and he advocated that the engineers of the Association of Licensed Automobile Manufacturers, the Society of Automobile Engineers and the American Motor Car Manufacturers' Association unite in recommending the adoption of a universal horsepower rating,

such as was being used, perhaps, by the A. L. A. M. "The adoption of this formula," says an A. L. A. M. press sheet, "would be the first step toward reorganization of competitive rules and would be the basis for all classification of cars in any of the events that will take place. As the situation now stands, it did not seem fair either to the manufacturers or to the public that a 12-horsepower car costing \$1,500 should be required to do the same amount of work as a 60-horsepower sell-

ing for \$5,000. Under the present rules there is no provision made for classification and many instances can be cited where reclassification is absolutely necessary. It is hoped that Mr. Cutler's recommendation to the engineers will meet with ready response from the engineers of the other organizations, for, after all, it is the engineer who really knows the merits of the car and is in a position to arrange for classification in a manner which will give entire satisfaction to all."

WHERE MUCH CRITICISM OF THE A. A. A. COMES FROM

By JOHN C. WETMORE, IN THE NEW YORK EVENING MAIL.

THE American Automobile Association, as the national organization, is, of course, in the nature of things, open to criticism as well as praise. This is a country of free speech and a free press. Individuals have a right to wag tongues just the same as writers are free to wield pens. An organization that represents any one class must stand for criticism as well as praise and take the bitter with the sweet.

There has been a lot of criticism of the A. A. A. of late. It were better, however, did it come from well meaning friends instead of from enemies, whose attacks have no sincere information of conditions in view. Most of the criticism, however, comes from two sources. The reasons behind their attacks are very well known. In one case the attacks have their foundation in disappointed personal ambition and personal prejudice against a trusted A. A. A. leader and adviser, and the other from the failure of the "man behind the gun" to induce the national organization to lend itself to a business advertising scheme.

It was only to be expected that a coterie of importers would readily lend itself to the purposes of the foremost journalistic exponent of foreign as against American cars, especially since that purpose was an attack on a national organization confessedly a backer of the home product. It was, however, a bit surprising that several prominent local exploiters of American cars should have allowed themselves to be quoted as joining any hue and cry having in view the destruction of a national organization which is making honest effort to build up the sport and industry.

As R. H. Johnston put it at the Moore dinner, the A. A. A. needs correction from the inside. Reform, however, should be striven for by men as friends and not as enemies of an organization at last pretty nearly national and trying to become altogether so by the establishment of an individual membership.

Now that we are on the eve of a popular vogue for track racing there is need for new and revised rules. The Importers' salon makes a timely suggestion that a standard formula for rating horsepower be adopted. The criticism that horsepower classification on the mere say-so of makers, dealers and entrants is ridiculous and unfair is just. Sufferers like Roberts should be protected by a rule making clubs responsible for the prizes at meets to which the clubs give the sanction of their names. A lot of other changes, amendments and reforms in the rules and conduct of automobile racing are needed, and can be secured without the disruption of so potent, useful and sincere a body as the present national organization.

The only suggestion for a substitute advanced by those advocating the pulling down of the A. A. A. is the raising of the A. C. A. to that position. The clubs and motorists of the country would never stand for a purely local club, no matter how strong its claims to pioneership, size and wealth, being put at the head of the automobile affairs of the whole country.

The Racing Board has a lot of work ahead of it. It should listen to the suggestions of the friends of the national organization. The criticisms of its enemies need not be considered.

SITUATION HUMOROUSLY BUT SENSIBLY SIZED UP

By HENRY CALDWELL, IN THE NEW YORK EVENING TELEGRAM.

THERE is a lot of absurd talk about a new national association to govern racing. The talk is of combining the Licensed Association, the Independent Makers, the Importers' Association and the A. C. A., with the A. A. A. left out.

"Can you imagine," said a wealthy Flat-Tire to-day, "of a greater lot of pin-head rot than this? Picture the licensed makers and the independents (the Patrick Henrys, as they are called in polite motor circles) coming together in anything unless it was a dark room with drawn cleavers. Also try to figure out how either one of these two, particularly the Patrick Henry Association, which is purely a domestic car promoting body, could ever agree to racing rules which would suit the importing agents. Then just consider the Automobile Club of America harnessed up to three trade associations to promote racing, the very thing

it is trying, and very sensibly, too, to kill. Why, as much as we all criticize the Foolish Three A's, this new proposition looks like a scream to me. The idea of a race promoted by the men who make the cars, every car different and every man's car the best.

"I agree that the A. A. A. should be arrested for obtaining money under false pretenses, but it is far ahead of such a scheme as this new one.

"Let the makers refuse to support it and it will die. But never let the makers try to run races themselves. If there is one thing the wise maker keeps away from to-day it is all manner of racing. The expense is killing to him, and if he meddles in it he kills the sport of it for the amateur. No, the frail young zephyr who conceived this idea needs a vacation in the Frayer-Miller mountains.

MORRIS PARK'S TWENTY-FOUR HOUR RACE.

Entry blanks are out for the opening meet of the Morris Park Motordrome Club, September 6 and 7. Five teams for the 24-hour relay race quickly signified their intention of competing. The 50-mile and other races will also be well filled, according to reports received at the office of the racing secretary, No. 31 West Forty-second street, New York City. Plans are now under way for lighting the track during the night hours with searchlights, as is done at the Brooklands track in England and at the famous two-mile track in Berlin.

The long race will be reported to the public by an enormous blackboard, similar to what has been used at Vanderbilt Cup races.

PLANTIFF REPUDIATES "HERALD" INTERVIEW.

Gaston Plantiff, manager of the New York Ford branch, emphatically denies the interview accredited to him in the New York *Herald* of Sunday last, wherein he is quoted as saying: "As at present conducted, automobile racing and touring events are a disgrace to this country and harmful to the industry." With Henry Ford one of the technical advisers of the A. A. A. Racing Board, it can be easily understood that Mr. Plantiff objects to having the above opinion and other remarks of a similar sort foisted upon him to bolster up an attack on the A. A. A., led by the automobile editor of the *Herald*, who has an old personal grievance.

APPERSONS DISCONTINUE BRANCH HOUSES.

George H. Strout, sales manager of the Apperson Bros. Automobile Company, of Kokomo, Ind., was in New York last Saturday and placed the Apperson line for 1908 with the Sidney B. Bowman Automobile Company, 225 West Forty-ninth street. The New York branch of the Apperson Company will be closed on September 1. This is in accordance with the new policy adopted by the company, which contemplates the closing of all branch houses and the marketing of its product through regularly appointed Apperson dealers.

The Chicago branch will be discontinued October 1 and the Apperson line in that city will be handled by Joseph Gunther, one of the best known men in the trade there and the president of the Chicago Automobile Trade Association.

The Apperson company is bringing out two new models for 1908, and the complete line will include the following cars: 50-55-horsepower touring car, fully equipped, including top, \$4,200; 30-35-horsepower four-passenger runabout, with double ignition system, \$2,750; "Jackrabbit" 50-55-horsepower runabout, guaranteed speed 75 miles an hour, \$5,000; six-cylinder 50-55-horsepower touring car, \$5,000.

FIRESTONE COMPANY RE-ELECTS OFFICERS.

AKRON, O., Aug. 26.—At the annual meeting of the stockholders of the Firestone Tire and Rubber Company, held Wednesday, August 21, the old board of directors was elected as follows: H. S. Firestone, Will Christey, R. J. Firestone and A. C. Miller, of Akron, and L. B. Sisler of Port Huron, Mich. The directors at their meeting chose the following executive board of officers: President and general manager, H. S. Firestone; secretary, S. G. Carkhuff; treasurer, L. B. Sisler; assistant treasurer, Frank R. Talbott. The last is a newly-created office, Mr. Talbott having been cashier of the company for some time past. The annual report of the officers showed an increase in sales of 60 per cent. over the previous year, the statement being the best ever put out by the company.

Arrangements are being made by the company to make a second large addition to the plant, besides the one now half completed. This second addition is to be constructed of brick and to be three stories high.

THE WOLVERINE CAR THAT HAD A BATH.

GRAND RAPIDS, MICH., Aug. 26.—A. C. Menges, who with his gas engine man and a Chicago automobile expert, leaped the gap of the open drawbridge of the Calumet river at Ninety-second street in Chicago, recently, with the new car which he had just built, has returned to the city. In spite of the fact that the Chicago papers said that his car when removed from the river was a mass of scrap iron, he had it ready for use the same night it was taken from the stream and the next day started on the run home. The only damage done to the car was the complete wrecking of the body, and the breaking of the handle of the steering wheel. With an eye to advertising a little the endurance of his car, Mr. Menges decorated it with a sign announcing its unusual experience of leaping fifty feet to the bottom of a river, and has kept the sign on the machine during its later travels. Menges secured a very prompt settlement with the city of Chicago for the damage to his car.

WHEELS TURN IN MAXWELL INDIANA PLANT.

NEW CASTLE, IND., Aug. 24.—At 8:55 A. M., August 13, the wheels of the mammoth factory of the Maxwell-Briscoe Motor Company began to turn. Three short months ago Vice-President Fairbanks officiated at the corner-stone ceremony, but during this short interval the building has been equipped and finished. Last March, J. D. Maxwell prophesied that this plant would be turning out automobiles before the time snow flies. There was little then to justify the promise, but time has shown its fulfillment.

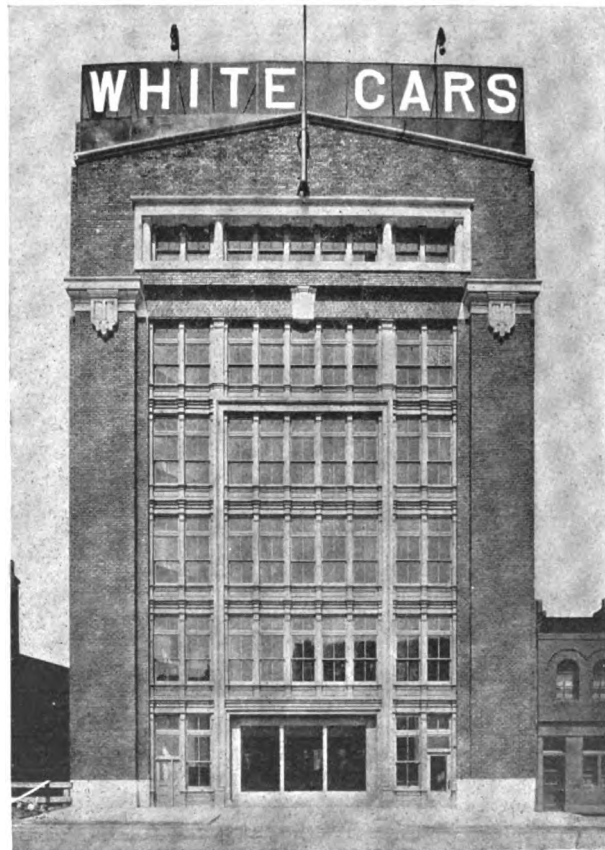
MICHELIN OFFERS FRENCH ROAD BOOK FREE.

Automobilists contemplating a tour through France will find a useful volume in the 700-page Michelin guide to France, published by the well-known firm of tire manufacturers. Copies of this book are kept in stock at the offices of THE AUTOMOBILE, Fuller Building, New York City, for disposal, free of cost, to those of our readers who may have need of them. The volume will be sent to any address in the United States on receipt of 10 cents in stamps to cover cost of mailing. The Guide Michelin, 1907, printed in French, and now in its eighth year, is accepted as one of the most complete automobile guide books to France. Its important features are sketch maps of every town in France, road distances, places of interest, police and customs regulations, about thirty colored road maps of sections of the country, and one complete colored road map of the whole of France.

WHITE OPENS MODEL GARAGE AT BOSTON.

BOSTON, MASS., Aug. 25.—The new \$15,000 six-story fireproof garage just opened here at 341-343 Newbury street by the White Steamer Company of Cleveland gives to that firm one of the finest establishments of its kind to be found in New England. The new premises, which will accommodate 200 White steamers, have a 62-foot frontage and are 100 feet in height. All the floors are given over to storage with the exception of the third, which has been leased to the Boston Y. M. C. A. to be used as an automobile and electrical school.

Fireproof throughout, each floor is without a post and all appointments are of the highest class. Two fast electrically operated elevators run from the basement to the top floor, one taking all ascending and the other all descending cars. The washstands, conveniently located on the first floor, are capable of handling three cars at a time. The appointments of the chauffeurs' room on the second floor comprise individual steel lockers, a pool table, barber service and shower baths. The establishment will be opened September 3, in charge of Manager J. C. Hathaway.



THE WHITE COMPANY'S NEW BOSTON GARAGE.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

The Marvel Automobile Co., one of the lately-organized manufacturers of Detroit, and makers of the small run-about of that name, has been petitioned into bankruptcy upon the petition of several creditors, whose claims aggregate \$2,457.76. The company was capitalized at \$50,000.

Edward Spring, president of the Huber Automobile Co., of Detroit, Mich., has filed a petition in the Circuit Court asking for the appointment of a receiver for the company on the ground of insolvency. The company was incorporated in 1903 with a capital stock of \$100,000 to manufacture automobiles, but of late has been operating autos for hire.

Announcement of the 1908 line of Lozier cars will be made September 1, and it is said will contain much of interest to the automobiling public. The prominent standing which the Lozier product has achieved in the trade, and the fact that Lozier cars embody features distinctly their own, justifies the claim of the makers that the forthcoming announcement will be looked forward to with considerable interest.

Edward B., William J. and John L. Corcoran, who were formerly connected with the Corcoran Lamp Co., of Cincinnati, have withdrawn from that concern and will manufacture automobile lamps under the name of the Victor Lamp Co. A long lease has been secured on the new building, located at 1249 Plum street, Cincinnati, that was built especially for the new house, and a complete new outfit of modern machinery is being installed.

Pittsfield, Mass., is the latest town to change its speed laws as a result of a visit of the giant Warner autometer, and has made the limit fifteen miles per hour. The Warner people have made a hit by their method of showing the public what the exact speed of a car is, with their gigantic autometer, which is placed in the tonneau of a touring car, and is now visiting the cities and towns where ridiculous speed regulations prevail. The outfit was described and illustrated in *THE AUTOMOBILE*, issue of June 6, 1907, page 940, when it was being demonstrated in New York City.

Akron, Ohio, which is noted more for its rubber products than any other city in the country, is this year celebrating the one hundredth anniversary of its founding. Among the city's leading industries mentioned in a centennial edition of one of Akron's daily papers is the Diamond Rubber Co., whose remarkable growth in the past nine years is credited with having been a great factor in advancing the population of the city from 42,000 to 60,000. The increase in the automobile tire and other departments of the Diamond factories has increased the number of employees from 250 nine years ago to 2,750 to-day, and the ground area occupied by the plant from six acres to twenty-four acres. The capitalization of the company has increased from \$50,000 to \$5,000,000.

One of the new features which will be used in connection with the Grand Central Palace Automobile Show, in New York City, in which the members of the

American Motor Car Manufacturers' Association are the chief exhibitors, is a special badge for each demonstrator, and which may be used for the purpose of identifying persons taken out for demonstrations, and no other. When a demonstrator leaves the building with a party he will surrender his badge to the officer in charge of the demonstrators' entrance, and will receive in return a ticket for the number of persons in his party, including himself, available for admission at any time within two hours. On his return and delivery of the ticket the badge will be returned to him. This badge is good for admission only between 10:30 A. M. and 6 P. M.

RECENT TRADE CHANGES.

The Manhattan Storage Company has discontinued its store at 42 Cortlandt street, New York City, and its headquarters are now located at its Forty-ninth street store, known as 1611 Broadway, where all business will be transacted in the future.

The Supreme Court of the State of New York has authorized the Matheson Company, of New York, to change its corporate name to the Palmer & Singer Manufacturing Company, and on and after September 5 it will transact its business under the latter name. The company will retain its present location, 1618-1620 Broadway, New York City.

NEW AGENCIES ESTABLISHED.

Webb Jay, well known in racing circles and formerly manager of the White Company's Chicago branch, has taken the Chicago agency for the Kissel-Kar for 1908, with the Middle West as his territory. In addition the Webb Jay Motor Co. will handle its own steam car, the initial production of which will be ready in about a month's time.

The Autocar Company, of Ardmore, Pa., has discontinued its Philadelphia branch house and transferred its local business in the Quaker City to the General Motor Car Co., which will act as agents for the Autocar in the future. The General Company is composed of W. P. Herbert and W. B. Nicholson, Jr., real estate men, and W. C. MacBride, president of the Haney-White Company, which makes mantels and does general null work. Neither of them has ever been in the automobile trade, but all are prominent owners and clubmen.

PERSONAL TRADE MENTION.

G. G. Bowersox, formerly designer and superintendent of the Springfield Automobile Company, Springfield, Mass., has accepted a position with the Pennsylvania Auto-Motor Company, Bryn Mawr, Pa.

C. Measure has been appointed by the Goodyear Tire & Rubber Company as manager of its New York branch, succeeding K. B. Harwood. Mr. Measure has had ten years' continuous experience in the rubber business.

Henry H. Hower has resigned his position as managing editor of the *Motor Vehicle* to take charge of the publicity department of the F. B. Stearns Co., of

Cleveland, O. Mr. Hower was at one time editor of the automobile department of the *Cleveland Plaindealer*.

Charles Schmidt, designer of the Peerless car, sailed for Europe last week to be gone for some time. Mr. Schmidt, having completed the 1908 Peerless, desired a vacation on the other side, from where he came to this country several years ago. He will visit the Paris Salon and generally investigate the foreign field.

A. E. Schwartz, foreign representative of the American Motor Car Manufacturers' Association, who has been in New York for the past month on a business trip, will sail for Paris August 29 on the French line steamer *La Touraine*. Mr. Schwartz is taking with him several new American accessories, which he will represent abroad.

W. H. Conant, formerly manager of the vehicle battery department of the Gould Storage Battery Company, of New York, has been appointed general manager of the Pittsburg Motor Vehicle Company. The company has its plant and main offices in Pittsburg, and is manufacturing a successful type of commercial electric vehicles. Mr. Conant will open the New York offices of the company in the near future.

Manager Day, of the New York City Elmore branch, is off on a four weeks' vacation ramble, with Mrs. Day and the Misses Thomas, in one of the four-cylinder two-cycle Elmore. His route embraces Portland, Me., thence to Quebec and Montreal, down through the White Mountains, thence to the Adirondacks and westward to Lake Chautauqua, where the party will spend a week before returning to New York.

Joseph F. Gunther, who has been identified with Thomas B. Jeffery & Co. and the Rambler interests, both bicycle and automobile, since 1893, has resigned his position as manager for the Chicago branch of the Jeffery company, to take effect September 7. Mr. Gunther will assume the Chicago agency of the Apperson Bros. Automobile Co. on October 1. He is the president of the Chicago Automobile Trade Association.

H. C. Severance, formerly connected with the main office of the Hartford Rubber Works Co., Hartford, Conn., has been appointed manager of the Detroit branch, at 256 Jefferson avenue, that city. Mr. Severance has been connected with the Hartford Rubber Works Co. from his boyhood, and his recent appointment is another advancement in the line of promotions which have moved him up the ladder to one of, if not the most important branches of the Hartford company.

B. A. Gramm is the new general manager of the Logan Construction Company, Chillicothe, O., and B. E. Stevenson has become sales manager, these two replacing B. W. Twyman, who has severed his official connection with the company, although still maintaining an interest in it. F. C. Lindorfer, who has had a thorough automobile experience in several well known factories, is to be the assistant sales manager. In addition to his duties as sales manager, Mr. Stevenson will attend to the publicity and

advertising department, with which work he has been very successful.

DEATH OF GEO. K. WHEELER.

George K. Wheeler, sales manager of the Columbus Buggy Company, Columbus, O., died suddenly of heart failure at his home in that city, Saturday, August 24, at the early age of thirty-eight. Mr. Wheeler had just completed a trip covering every large town in the United States, calling on the trade, and was at the factory all the morning of the day of his demise. He went to his home at noon, and was stricken and expired in less than two hours.

Mr. Wheeler was one of the best posted men in the country on electric vehicles, and one of the most enthusiastic advocates of their future, and his loss will be severely felt in trade circles and by his personal friends, who are legion. His remains left Columbus on Sunday, accompanied by his widow, for interment at Boston, his former home, and where his sister resides.

THE SCIENCE OF PUBLICITY.

The line of demarcation between available trade news and downright puffery publicity is not as well defined as it should be in what comes from the pens of many auto publicity purveyers. E. Ralph Estep, who has contributed some excellent chapters of Packard publicity, has made a study of the subject, as is made evident by whatever comes from his facile pen. True it is that he calls attention to a particular make of car, but he presents the subject in such an interesting manner that it is readable and interesting to the users of all kinds of cars. Estep is now located in the Auditorium tower, at Chicago, and from his lofty perch in the skies he grinds out a goodly grist of material.

NEW TRADE PUBLICATIONS.

To introduce the Holsman automobile to a wider public, the Holsman Automobile Company, of Chicago, has produced an illustrated 24-page catalogue descriptive of their improved buggyabout. The car, which is specially designed for rough work on western roads, usually more suited to the buggy than the automobile, is thoroughly described in the booklet and its special features well presented.

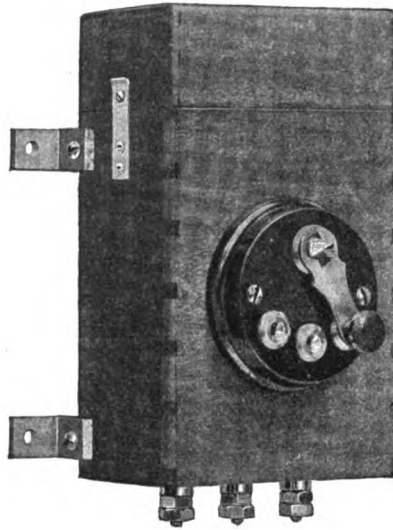
One of the most complete catalogues of automobile mountings, forgings, interior fittings and novelties has been published by C. Cowles & Co., of New Haven, Conn. Comprising about 160 pages, all illustrated, the book includes priced lists of the usual metal fittings for automobiles, in addition to the firm's special novelties and a selection of leather goods for the better class of closed cars.

Recent purchasers and operators generally of the six-cylinder Stevens-Duryea automobile will find useful information in the instruction book issued for their benefit by the Stevens-Duryea Company, of Chicopee Falls, Mass. The method pursued is to take each mechanical part separately and describe it in detail, pointing out the treatment it should receive to obtain best working results. Practical operating instructions are given and there are a number of useful hints which the beginner would do well to take to heart. The booklet is well illustrated.

INFORMATION FOR AUTO USERS.

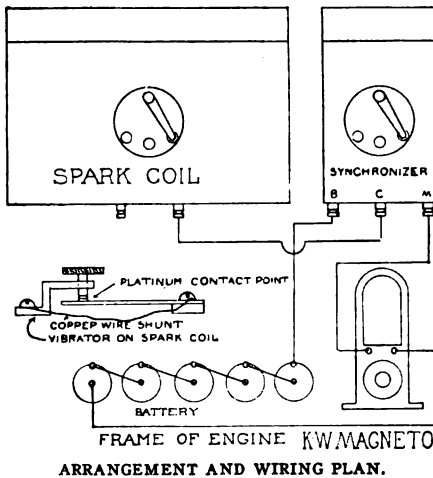
New Master Vibrator or Synchronizer.
—The K.-W. Ignition Co., 34 Power avenue, Cleveland, O., has just brought out a device intended to eliminate difference in adjustment, as well as in the

exist in the timing of the four vibrators, and also compensates for the varying lag of four different vibrators by substituting one, thus giving exact synchronism and causing the charge to be fired in each cylinder at the same relative position of the piston, in the same manner as is accomplished by means of high-tension distributor and single coil. It possesses the advantage, however, of synchronizing the low-tension side of the circuit, thus obviating the high-tension distributor and its attendant evils.



K-W MASTER VIBRATOR.

time element, or lag, of the different vibrators of the coils of multi-cylindered engines. The device consists of a well-made and rapid vibrator, mounted in a neat mahogany case, together with a powerful condenser. It is also equipped

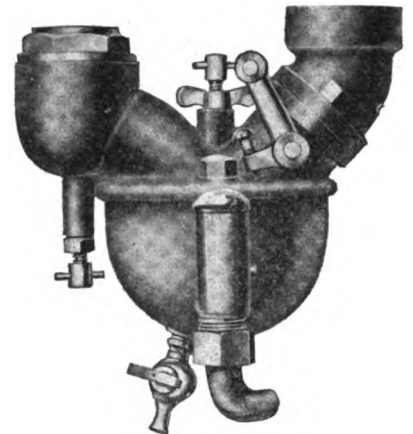


ARRANGEMENT AND WIRING PLAN.

with a switch designed to use either two sets of batteries or a battery and the K.-W. magneto. It is intended to be attached to the dash, and is connected in the circuit as shown by the diagram, Fig. 2, the device itself being illustrated by Fig. 1. From the wiring diagram it will be noted that the connections are run directly from the battery to the master vibrator, while a second lead is taken from the central binding post on the latter to one of the terminals of the coil. This places the synchronizer in series with the battery and coil, or with the magneto and coil. When applied to vibrator coils the tremblers are not allowed to operate, but are short-circuited by a small piece of copper wire, as shown by the small sketch forming part of Fig. 1. Thus the current does not pass through the coil vibrators, but through this short shunt, as indicated.

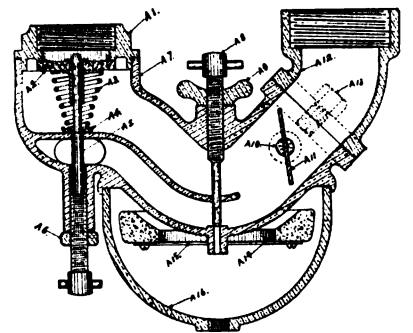
This K.-W. master vibrator thus obviates any lack of synchronism that may

Rutenber Carbureter.—The name Rutenber is well known to the trade throughout the country through its association with the well-known Rutenber motor, and E. A. Rutenber, one of the makers of the latter, located at Logansport, Ind., also manufactures the Rutenber carbureter. These carbureters are made of brass and so constructed that the bowl contains the float, float-valve and all its fastenings, the float being of the concentric or annular type, with the needle valve-adjusting screw on top. The valve is made of steel for greater durability and is controlled by a hinged lever attached to the float, making it positive in its action and preventing any tendency to flood. Gasoline is supplied through a



RUTENBER CARBURETER.

reversible union, allowing the feed-pipe to be run in the most convenient manner. The mixing chamber is semi-circular in form, with the spray nozzle at the bottom and in the center of the

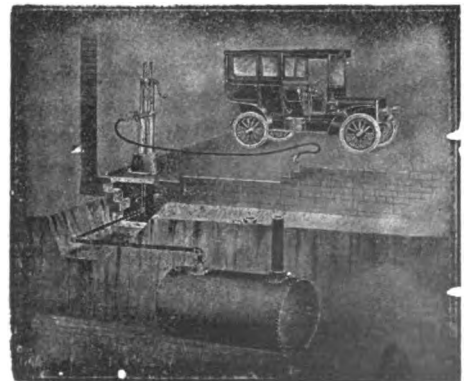


SECTIONAL PLAN RUTENBER CARBURETER.

bowl, thus maintaining the mixture the same, regardless of the grade the car may be on at the time. It is made with vertical or horizontal outlet, and a good idea of its appearance may be obtained from the accompanying illustration.

INDEX TO ADVERTISERS

Acetylene Gas Illuminating Co. 53
Acme Motor Car Co. 102
Adams Co. 56
Add-Wear Tire Sleeve Co. 52
Ajax-Grieb Rubber Co. 73
Allyne Brass Foundry Co. 75
Aluminum Solder & Refining Co. 73
American Ball Bearing Co. 64
American Brass & Aluminum Works 54
American Die Castings Co. 58
American Locomotive Automobile Co. 107
American Motor Parts Co. 52
American Motor Truck Co. 94
Anderson Forge & Machine Co. 84
Apperson Bros. Automobile Co. 54
Appliance Mfg. Co. 72
Arc Toledo Spark Plug Co. 50
Ashtabula Carriage Bow Co. 53
Ashton Valve Co. 53
Atlas Mfg. Co. 50
Auburn Automobile Co. 56
Auto and Power Appliance Co. 50
Auto Improvement Co. 97
Auto Pump Co. 51
Autocar Co. 92
Autocar Equipment Co. 100
Automobile Catechism 66
Automobile Supply Co. 54
Automobile Trade Directory. 72
Autoshine Co. 52
Avery Portable Lighting Co. 67
Badger Brass Mfg. Co. 67
Baird-Banks Mfg. Co. 66
Baldwin Chain Mfg. Co. 54
Barnett-Johnson Auto Sup. Co. 53
Barnett Drop Forging Co. 66
Barrett Mfg. Co. 115
Bay State Auto Co. 56
Beaver Mfg. Co. 67
Beeler & Robb. 71
Bellfuss Motor Co. 67
Bemus, T. Alton. 50
Berkshire Motor Car Co. 56
Bethlehem Steel Co. 67
Billings & Spencer. 49
Blasler Mfg. Co., M. E. 53
Blomstrom Mfg. Co. 93
Blomstrom Motor Co., C. H. 56
Blue Book 52-53
Boker & Co., H. 51
Bosch, Robert. 85
Boston Auto Gage Co. 57
Bowser & Co., S. F. 57
Boyle & Co., John. 58
Bridgeport Vehicle Co. 53
Briscoe Mfg. Co. 98
Brownell-Trebert Co. 64
Buckeye Jack Mfg. Co. 61
Buckeye Mfg. Co. 98
Bullard Automatic Wrench Co. 64
Bullard, J. H. 51
Buob & Scheu. 53
Byrne-Kingston Co. 59
Cadillac Motor Car Co. 101
Carr, F. S. 51
Central Body Co. 53
Chadwick Engineering Works. 81
Champlion Co., A. 55
Chandlee & Chandlee. 51
Charter & Co. 51
Clair, J. C. 55
Clark, E. S. 50
Cianola Co. 56
Cleveland-Canton Spring Co. 66
Coates Clipper Mfg. Co. 61
Colgan Co., J. W. 53
Colt Runabout Co. 53
Columbia Lubricants Co. 66
Connecticut Gauge Co. 5
Conn. Tel. & Elec. Co. 78
Continental Auto. Mfg. Co. 93
Continental Caoutchouc Co. 55
Continental Motor Mfg. Co. 62
Corbett Co., C. J. 48
Corbin Motor Vehicle Corp. 103
Cornish-Friedburg Motor Car. 73
Correspondence School Motor Car Practice 51
Cotta, Chas. 58
Covert Mfg. Co. 52
Cowles & Co., C. 51
Crawford Automobile Co. 56
Crescent Parts Co. 51
Cullman Wheel Co. 52
Daimler Mfg. Co. 56
Darracq Motor Car Co. 56
Dayton Electrical Mfg. Co. 55
Det. & Buffalo Steamboat Co. 61
Diamond Chain & Mfg. Co. 54
Diamond Rubber Co. 79
Dietz Co., R. E. 80
Dixon Crucible Co., Joseph. 83
Dorris Motor Car Co. 95
Dover Co., Geo. W. 49
Dow Portable Electric Co. 71
Duff Mfg. Co. 54
Eclipse Machine Co. 54
Eco Mfg. Co. 52
Edmunds & Jones Mfg. Co. 52
Eldredge Electric Mfg. Co. 52
Electric Vehicle Co. 107
Elmore Mfg. Co. 97
Empire Automobile Tire Co. 65
Ericka Mfg. Co. 50
Excelsior Supply Co. 57
Flisk Rubber Co. 56
Ford Motor Co. 56
Forest City Motor Car Co. 56
Franco-American Auto Supply Co. 50
Franklin Mfg. Co. 56
Fry, T. C. & W. L. 56
Gabriel Horn Mfg. Co. 76
G & J Tire Co. 76
Gearless Transmission Co. 99
Gemmer Mfg. Co. 101
General Accumulator & Battery Co. 101
Gibney & Bros., Jas. L. 51
Gieszler Bros. 50
Gilbert Mfg. Co. 53
Goodrich Co., B. F. 88
Goodyear Tire & Rubber Co. 52
Groat Bros. Auto Co. 56
Gumelastic Tire Co. 71
Ham Mfg. Co. 57
Harburg Tire Co. 57
Hardy Co., The R. E. 50
Harrington Lubricant Co. 50
Hartford Auto Parts Co. 64
Hartford Rubber Wks. Co. 76
Hartford Suspension Co. 96
Hatcher Auto Parts Co. 68
Haynes Automobile Co. 56
Healy Leather Tire Co. 51
Heath Dry Gas Co. 52
Heinze Electric Co. 6
Heltzer Carburetor Co. 54
Hercules Auto Specialty Co. 72
Hercules Electric Mfg. Co. 52
Herschell-Spillman Co. 52
Herz & Co. 50
Hess-Bright Co. 91
Hicks Speed Indicator Co. 91
Hine-Watt Mfg. Co. 55
Hoffecker Co. 89
Hoffman, Geo. W. 50
Holley Bros. Co. 86
Holsman Automobile Co. 93
Hopewell Bros. 53
Hotchkin Mfg. Co. 55
Hotel Garde 51
Hotel Sweetwater 71
Hume Carriage Co. 54
Hydraulic Pressed Steel Co. 54
Idium Metal Co. 64
Jackson Automobile Co. 56
Jamesville Mfg. Co. 66
Jeffery & Co., Thos. B. 113
Jenkins Specialty Co. 94
Jersey Brake Co. 63
Johnson Sporting Goods Co., I. 53
K. W. Ignition Co. 97
Kansas City Motor Car Co. 56
Kellom Co., Chas. F. 59
Kligore Mfg. Co. 69
Kimball Tire Case Co. 62
Kimball & Co., E. P. Cover 54
Kinsey Mfg. Co. 54
Kinsler-Bennett Co. 65
Kirkham Motor Mfg. Co. 52
Konigsow, Otto. 63
Lavalette & Co. 73
Lavigne Mfg. Co. 53
Lear Automobile Co., Oscar. 56
Leather Tire Goods Co. 60
Limousine-Carriage Mfg. Co. 53
Lipman Mfg. Co. 89
Lobe Pump Co. 55
Locke & Co. 71
Locomobile Co. of America. 116
Logan Construction Co. 49
London Auto Supply Co. 53
Long Mfg. Co. 57
Lozler Motor Co. 94
McClellan, Geo. P. 53
McCord & Co. 62
Malone, F. E. 71
Manhattan Electrical Sup. Co. 50
Manhattan Storage Co. 55
Maple City Mfg. Co. 63
Martini Import Co. 66
Mason Motor Car Co. 91
Matheson Motor Car Co. 103
Maxwell-Briscoe Motor Co. 110
Mayo Radiator Co. 54
Merritt & Co. 50
Metzger, C. A. 68
Michigan Crucible Steel Casting Co. 51
Midgley Mfg. Co. 51
Miller Bros. 60
Miller, Chas. E. 79
Mitchell Motor Car Co. 56
Modern Tool Co. 82
Moline Automobile Co. 56
Mora Motor Car Co. Cover 78
Mosler & Wright. 78
Mosler & Co., A. R. 52
Moss Photo Engraving Co. 86
Motor Car Co. 91
Motor Car Equipment Co. 74
Motor Guide Publishing Co. 51
Motz Clinchier Tire & Rubber Co. 50
Muller, Albert. 57
Muttys Co., L. J. 53
Myers Auto Top Co. 53
National Brake & Clutch Co. 59
National Carbon Co. 63
National Construction Co. 96
National Motor Vehicle Co. 99
National Oil Pump & Tank Co. 46
Neustadt Auto & Supply Co. 74
New England Motor Co. 69
New York Gear Works. 58
Niagara Falls Brass Works. 70
Nordyke & Marmon Co. 58
Northern Motor Car Co. 103
Nuttall Co., R. D. 57
Nutting Machine Co. 65
O. K. Connector Co. 50
Ofeldt & Sons. 52
Old Colony Light Co. 55
Olds Motor Works. 56
Ovington Motor Co. 50
Owen & Co., R. M. 105
Pacific Tucking & Mfg. Co. 51
Packard Electric Co. 50
Packard Motor Car Co. 112
Page-Storm Drop Forge Co. 49
Parker, Stearns & Co. 71
Parish & Bingham Co. 64
Pedersen Mfg. Co. 51
Penna. Auto Motor Co. 94
Perfection Spring Co. 54
Pfanstiehl Elec. Laboratory. 64
Phila. Steel & Wire Co. 54
Pierome Hide Co. 52
Pierce Engine Co. 94
Pioneer Brass Works. 54
Pittsfield Spark Coll Co. 60
Pope Motor Car Co. 96
Post & Lester Co. 67, 58, 53
Powell Muffler & Timer Co. 50
Precision Appliance Co. 75
Prest-o-Lite Co. 104
Progressive Mfg. Co. 60
Prosser & Sons, Thos. 59
Quad Mfg. Co. 55
Quinby Co., J. M. 53
Quincy, Manchester, Sargeant Co. 51
Raimes & Co. 50
Rainier Co., The. 56
Rajah Auto Supply Co. 58
Randall-Falchney Co. 64
Reeves Pulley Co. 51
Remington Tool & Machine Co. 64
Remy Electric Co. 52
Renault Freres. 100
Rice Vulcanizing Co., L. E. 91
Richardson Eng. Co. 54
Robert Instrument Co. 50
Roberts Motor Co. 52
Robinson & Sons Co., Wm. C. 89
Ross Gear & Tool Co. 54
Royal Battery Co. 57-58
Royal Equipment Co. 51
Royal Motor Car Co. 95
Rushmore Dynamo Works. 90
Rubay, Leon. Cover
Rutenber, E. A. 80
St. Louis Car Company. 101
Sager Co., J. H. 53
Salisbury Wheel Co. 51
Samson Leather Tire Co. 58
Sanford Mfg. Co., F. C. 52
Saxon Lamp Co. 54
Schraeder Sons, A. 72
Shaler Co., C. A. 59
Shawver Co. 61
Shoemaker Automobile Co. 100
Smith Auto Co. 108
Smith Co., A. O. 69
Smith Mfg. Co., R. H. 53
Speed Changing Pulley Co. 104
Spicer Universal Joint Mfg. Co. 51
Spiltdorff, C. F. 55
Sprague Electric Co. 89
Sprague Umbrella Co. 67
Springfield Metal Body Co. Cover
Stackpole Battery Co. 70
Standard Automobile Lub. Co. 68
Standard Co. 75
Standard Connecting Rod Co. 59
Standard Roller Bearing Co. 52
Stearns Co., F. B. 56
Stevens-Duryea Co. 109
Stewart & Clark Mfg. Co. 111-58
Strelt Machine Co. 58
Success Auto Buggy Co. 56
Supplementary Spiral Spring. 61
Swinhart Clincher Tire Co. 68
Syracuse Alum. & Bronze Co. 68
Syracuse Auto Supply Co. 50
Teel Mfg. Co. 57
Thomas Motor Co., E. R. 98
Thompson, J. P., Sons Co. 51
Timken Roller Bearing Axle. 85
Trident Tire Co. 55
Triumph Engineering Co. 65
Tucker, C. F. 50
Turner Brass Works. 67
Ucaas Specialty Co. 61
Vacuum Oil Co. 74
Veeder Mfg. Co. 79
Vehicle Specialty Co. 62
Walker Carriage Co. 53
Walker Co., E. C. 58
Ward & Leonard Electric Co. 68
Warner Instrument Co. 108
Warner Pole & Top Co. 53
Waukesha Motor Co. 68
Wayne Automobile Co. 96
Weber Co., O. F. 50
Weeber Mfg. Works, C. F. 54
Wed Chain Tire Grip. 76
Welch Motor Car Co. 93
Western Malleable Steel Co. 54
Western Motor Co. 77
Western Tool Works. 91
Weston Elec. Instrument Co. 57
Wheeler & Schebler. 106
White Co., The. 114
Whitlock Coll Pipe Co. 51
Whitney Mfg. Co. 65
Winchester Speedometer Co. 54
Winton Motor Carriage Co. Cover
Witherbee Igniter Co. 91
Wray Pump & Register Co. 91
Wycokoff Lumber & Mfg. Co. 105
Wyman & Gordon Co. 49
York Motor Car Co. 56



The Safest Way to Store Gasoline

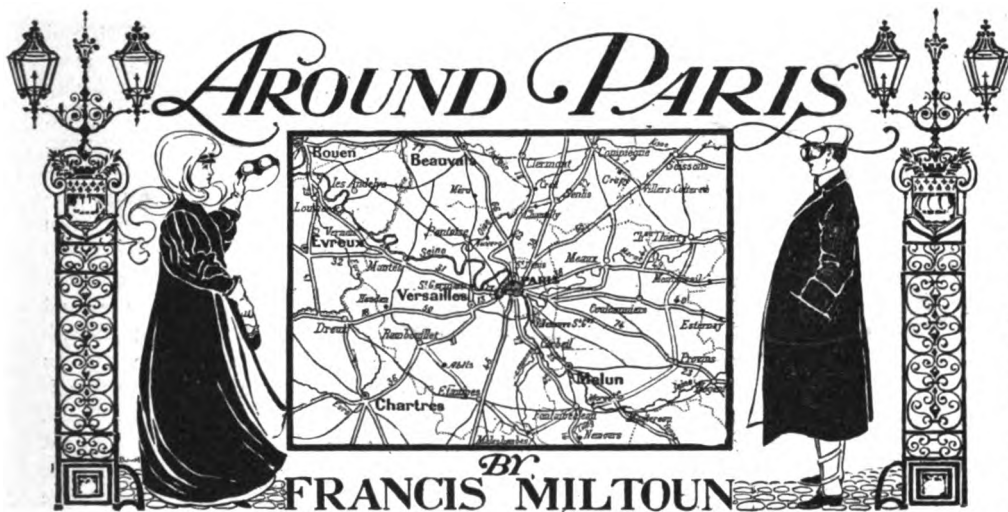
The NATIONAL is the only pump that discharges gasoline at every movement of the crank; it saves one-half the labor and one-half the time to pump gasoline; there is no evaporation or leakage; the tank is buried underground; the pump may be put in the building in a convenient place. It is the safest way because it meets all of the requirements of The National Board of Fire Underwriters.

For a Garage owner the National portable wheel tank will enable you to fill a car quickly by pushing the wheel tank by hand to the car. It is easily handled even in case the car would be at the curb.

The NATIONAL is also adapted to private motorists, also for lubricating oil storage. Ask for catalogue—it will explain all about the National System.

The National Oil Pump and Tank Co., DAYTON, O.

THE AUTOMOBILE



IN the first place, the touring automobilist has no reason whatever for taking his automobile into Paris. It's the most dangerous place for the stranger automobilist to navigate that exists on earth, and if the women folk want to "shop" or drive in the Bois just hire a taximeter—it's cheaper, more convenient, and the responsibility in case of accident is on some one else's shoulders. You may even hire an "auto-taxi" with a chauffeuse instead of a chauffeur, and that will have the element of novelty to it worth paying for.

Probably few foreigners, and perhaps not many Parisians, know the delights and charms of all the cities and towns, and the neighboring countryside, within say a radius of fifty miles from the Place de la Concorde. Within this charmed circle there is a wealth of shrines at which one may worship, and uncounted kilometers of crossing and recrossing historic highways, which most stranger automobilists would like to make acquaintance with if the way were only pointed out. There is, to be sure, a stretch of roadway now and then, even outside what may be called suburban Paris, which is distinctly bad, because of the awful *pavé*. There is such a stretch through St. Germain-en-Laye, another at St. Denis—en route to Chantilly and Compiègne and at Villeneuve-St. Georges—going out to Fontainebleau; and very bad samples of roadway they are.

A Charming Circle 500 Kilometers Round Paris.

A great circle drawn around the "ville lumière," with a circumference of five hundred kilometers, more or less—and often not out of sight of the Tour Eiffel or the Sacré Cœur—will give two or three days (or better a week) of as enjoyable sightseeing touring as can be had in a straightaway run across the better part of France to Aix-les-Bains or Vichy.

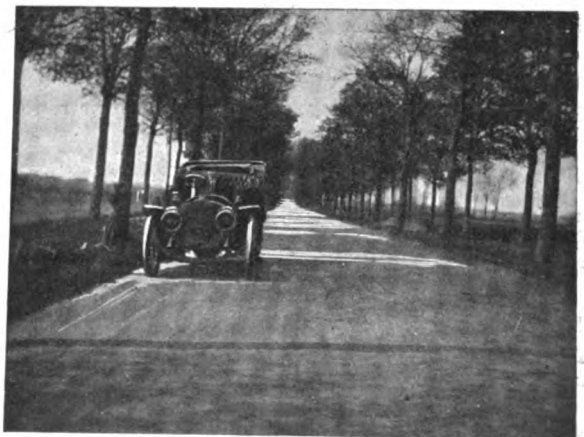
The following outline is only an approximate possible itinerary, and if it is not desired to cover the entire ground portions of it can be combined with the Normandy tour, or taken en route from Paris to Switzerland, to the Rhine, or down into Touraine. It will be time well spent for those who have hitherto thought they already knew France well, and considerable newer ground will

be turned over than that to be found in many regions more remote.

Since the touring automobilist coming from abroad, whether he be American or English, usually arrives via Havre or Dieppe, and via the valley of the Seine, he ultimately comes to St. Germain just before entering Paris—this point has been taken as the commencement of the itinerary. If one actually is in Paris he can go out by any of the *portes*, or gates, as marked on the accompanying sketch map, and take up with the itinerary where he will at any point along its periphery; interest is pretty equally divided.

There are very good reasons for entering France with one's automobile via Havre; there are better facilities for unshipping it than elsewhere; there is a garage proprietor there (Burton) who especially concerns himself with getting you "started right," and will even arrange the preliminaries of your "Certificat de Capacité" and "Recepié de Déclaration"—if you advise him beforehand—and may perhaps be able to save you twenty-four or forty-eight hours hanging around Havre or Rouen trying to accomplish the thing yourself, with only the vaguest notions as to how to go about it. Once one has finally got free of those "formalities" and his port of entry—of which particulars have many times been given in THE AUTOMOBILE—one reaches St. Germain via the great Route Nationale, familiarly known as the "Route de Quarante Sous," because—supposedly—some poor *chemineau* tried once to cover it from Rouen to Paris on less than half a dollar.

The *pavé* of cobble stones through the main streets of St. Germain is about as bad as you will find. There is good garage accommodation at the Hotel du Pavillon Louis XIV., and the eating and sleeping arrangements are equally good and expensive, the hotel being appointed by the Automobile Club de France



and three-starred in the "Guide Michelin." Still this is the place to stop whilst "doing" St. Germain, its Chateau Neuf of Henri Quatre, the remarkable birdseye view from the Terrasse built by Le Notre in 1672, and the great alleys of the Fôret. It is all hallowed and historic ground, and the guide books will enumerate the "sights" more fully.

To Reach Versailles and Avoid the Villainous Pavé.

From St. Germain to Versailles is only twelve kilometers, descending to the level of the Seine and then climbing up again through Marley. The awful *pavé* now disappears, in part, but what there is left is bad enough; it can be entirely avoided by leaving St. Germain by the route through the Fôret de Marley, and entering Versailles by the back door, as it were, and the distance is not perceptibly greater.

Versailles and its chateau and its gardens, its fountain, its Trianons and all its other sepulchral charms, called mistakenly the glory of France, is the beau ideal of the tourist's chateau, albeit it is a theatric, unreal ensemble and has not a whit of the artistic value of many others less well known. For the sightseer Versailles is worth half a day, however; it can hardly be done in less. That makes, with St. Germain, practically a day already, but one can readily enough get on to Rambouillet, another thirty kilometers, for the night and avoid much that will be objectionable in the hotels of Versailles, luxurious though they be. Versailles is fast becoming an American residential suburb for Paris; perhaps this is the reason prices are so elevated.

The road to Rambouillet from Versailles via Trappe through the Fôret de Rambouillet, where were held the royal hunts of other and more picturesque days. Here, too, are still held "Les chasses Nationales," when visiting royalties are invited to go out and kill something by the present figurehead of republican France. The road is a delightful one through its whole length, and in the forest itself it runs through great alleys of pines in a most romantic and truly delightful fashion.

As one comes up with Rambouillet, the town, there is more cobble stone *pavé*, and particularly vile it is. Either the Croix Blanche or the Lion d'Or are good enough hotels, at any time except between Friday and Monday, when they are apt to be filled with week-end trippers out from Paris. The attractions of Rambouillet are its chateau, which since the very earliest times has ever been a royal hunting lodge. François Premier died here, and in Napoleonic days it was a retreat for many of the followers of the little corporal, and he himself—at the end of his first day's journey when going to his exile—slept within its walls. Here, too, at the end of monarchical times under the restoration, Charles X. signed his abdication.

Historic Interest, Good Roads and No Speed-Traps.

Straight on from Rambouillet the route nationale leads to Maintenon and Chartres, but circling Paris one takes the second class road to Etampes, via Ablis, in all forty-three kilometers. It is a second-class road, but does not look it, and, being a byroad, one can let his automobile out for all it is worth, for there is little or no traffic to stop one, and the gendarmes hereabouts are lenient.

Etampes dates from the year 604, and accordingly has a respectable old age to its credit and a history quite as worthy. Various councils of the church were held here when the church practically ruled the state, and the Roi Robert of the second race of kings built a palace here known as the Palais de Quatre Tours,

and François Premier, by making the celebrated Anne de Pis-seleu the Duchesse d'Etampes, did much more for its popular fame. Etampes has left to-day the Tour Guinette, a part of the chateau which existed before the twelfth century, with the churches of St. Giles and St. Martin dating from the same period, but with later Renaissance interpolations, and another church, that of Saint Basil, which owes its foundation to King Robert in the tenth century. Etampes really, take it all in all, is worth seeing, and the Hotel du Grand Monarque is not bad, either; nine francs a day, not more, all found, and the proprietor has been heedful of some recent advice given by the paternal Touring Club de France, with a desirable result with respect to matters sanitary in his grandiloquently-named establishment.

From Etampes to Malesherbes is a run of twenty-six kilometers through the heart of the Gatinais, a region as forest grown and as sylvan as the Adirondacks, but not so grand. It is the most thickly wooded of any of the *petits pays* of France bordering upon the Ile de France, a land of pleasant valleys and rolling hills, and all green or gold, according to the season of the year. The chief product of the Gatinais, and in great repute in the mar-

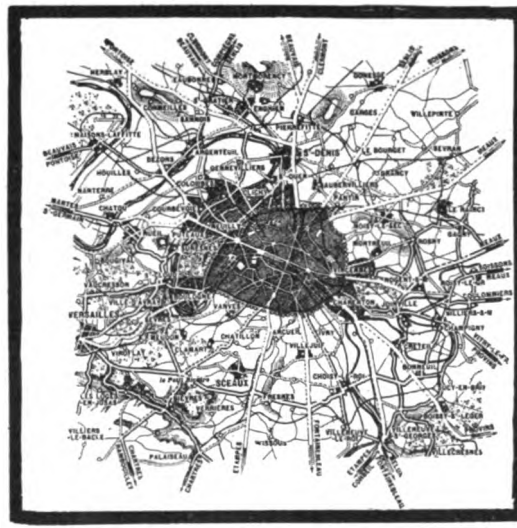
kets of Paris, is honey; not the perfumed kind served up for breakfast in the average six-francs-a-day pension in Switzerland, but the real thing, made by bees, and not fabricated by the hand of man. Malesherbes has a thirteenth century church and a chateau which contains some good furniture of the days of the Louis, and some Gobelin tapestries. There is also the Chateau de Rouville in the suburbs. The town is worth an hour or two, and then the road runs direct—this time a route nationale again—straight through the heart of the Fôret de Fontainebleu, the grandest, perhaps, and certainly the most celebrated, forest in the annals of history and art. Fontainebleu's attractions are many and for all men, and to none more than to automobilists, for the uncounted kilometers of well-kept forest roadway

have a great charm and novelty for one who has driven his capable automobile over hundreds, perhaps thousands, of scrubby roads bordered only by snake rail fences or a railway track. They do things differently in France, verily! Strike right through the forest and enter the ville by the Grande Rue, past the palace gates, and put up at the Candran Bleu for *déjeuner*.

After the Palace, the Forest Retreat of Artists.

As a sight Fontainebleu's palace, the outgrowth of Louis VII *rendezvous de chasse* of the twelfth century, is quite worth the greater part of the afternoon, when there will still be daylight enough left to make the "Grande Ronde" in the forest, including a detour to take in that little artists' village of other days—Barbizon. Have your *apéritif* here at the "Charmettes"—or tea if you affect that sort of thing—look through the closed gates into the gardens of the houses once occupied by Corot, Millet, Diaz and Bayré, buy souvenir picture post cards to your fill (which you will forget to post till you are hundreds of kilometers from Barbizon) and then take the road again across the forest, twenty kilometers southeast, to Moret-sur-Loing. This is an ancient little town, with two fortifying gateways at either end of its main street, situated just over the further edge of the forest. It is an artists' sketching ground as famous to-day as was Barbizon in the past.

"Les Violettes"—not a hotel, a pension or a boarding house—will care for you marvelously for six francs a day, and you will think you never met with anything quite so good for the price,



FORTY MILES ROUNDABOUT PARIS.

nor anything quite so dainty and picturesque as Moret itself, with its gates and towers, its donjon, its church and its flour mills built out over the river in real stage carpenter's fashion. It is astonishing how unreal the real thing can be sometimes! Truly Moret is a paradise for artists!

The next morning, following up the road by the Seine, just over the ridge back of Moret, you will have a delightful fifty kilometers to Provins, via Bray. Provins is one of the most appealingly historic small towns of France (once its population was 60,000, tenth century; to-day it is 8,000). It has a round half dozen architectural monuments which rank supreme in their respective classes, from the famous Tour de Caesar and the city walls to the Renaissance Eglise Ste. Croix. The Hotel Boul d'Or at Provins is bound to keep one for lunch; time will pass quickly in this old mediaeval town; and anyway you might do worse, though there will be no ham and eggs or grilled kidneys on the menu. One doesn't come to France for such gastronomical trifles.

Where France Makes Cheese and Automobile Records.

From Provins to Chateau-Thierry, in the valley of the Marne, is sixty odd kilometers, via la Ferté-Gaucher, with nothing much to detain one en route except the wonderfully diversified landscape through which one passes. This is the Pays de Brie, and is as famous for its cheeses as is the Gatinais for its honey. It is a fact that the only *real* Brie cheese comes from hereabouts; all others are rank imitations and decidedly not so good, either in taste or quality.

At Chateau-Thierry one is in the valley of the Marne, a highly industrious, work-a-day river like the Seine, but if possible more picturesque. Certainly there are no poplar-lined river banks quite so charming as those of the Marne. It would be an ideal river on which to journey in a motor boat, and you could even reach the Rhine by the canal which joins the two rivers in their upper reaches. Here's an idea for some one who would like to make an unconventional voyage by motor boat. Chateau-Thierry has a first class literary shrine in the birthplace of

Lafontaine; a historic one in the ruins of its mediaeval chateau, and a sporting one in the site of the famous hill-climb. The hotels here are curiously named; one is called the Elephant and the other the Swan. You take your choice, according as you prefer large or small game. So much for Chateau-Thierry, and if the afternoon is still young you can easily roll off another forty kilometers to Meaux, by the valley road along the Marne, and still arrive further on for the

night's stopping place. Meaux is worth a good hour; the city of Bishops has a grand old cathedral, a charming and dainty ruined chapter house, an old Episcopal palace, a battery of curious old water mills astraddle the river, and the remains of a chateau built by the Counts of Champagne in the thirteenth century. Such a menu should satisfy the

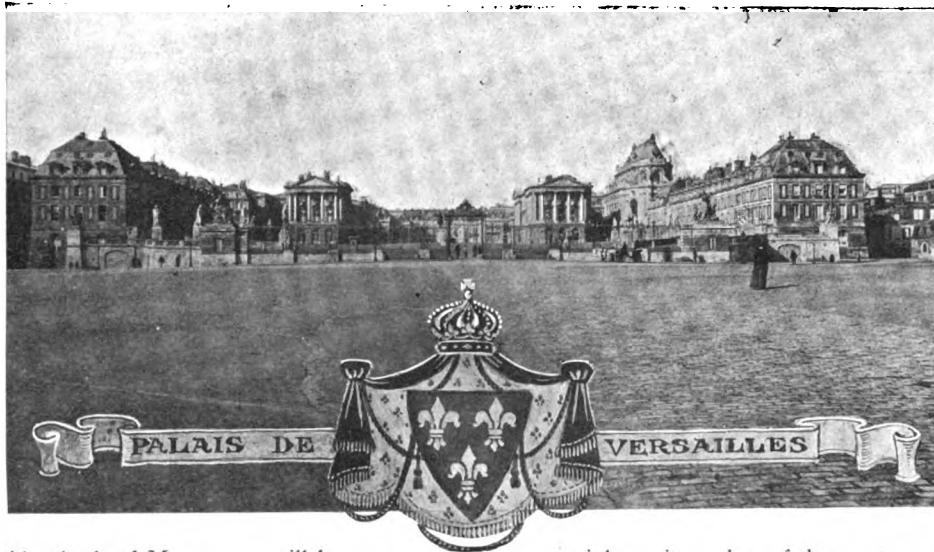
sight-seeing palate of the most exacting American tourist.

In the Home Land of a World-famed Romancer.

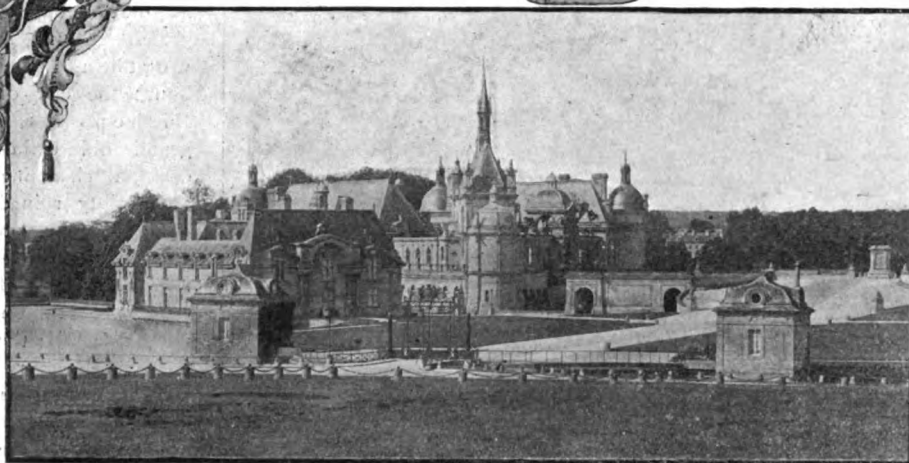
Villers-Cotterets is forty kilometers northwest of Meaux. It can be reached direct from Chateau-Thierry in about the same distance if it is desirable to omit Meaux. It is the birthplace of Alexandre Dumas Père, and the site of an old royal chateau of the Valois, around which still hangs a certain sentimental glamour, in spite of the fact that it has fallen from its high estate and become an almshouse. The Hotel du Dauphin is decidedly the best stopping place for the night in these parts. It is entirely fitted with the famous and deservedly well-thought-of "*chambres hygiéniques*" promulgated, if not invented, by the Touring Club de France, and has got—of all astonishing things—accommodations for thirty automobiles under cover. Dumas Père was born at Villers-Cotterets; the house is pointed out with pride by every resident of the place, and it sits full on the main street. Here, and in the neighboring town of Crepy-en-Valois, Dumas spent the early years of his life, before he went up to Paris to become the greatest romancer of his age.

This Forest of Villers-Cotterets is one of the historic forests of France. It was first set out by François Premier, and beneath its shade have dawdled a whole portrait gallery of historic and gallant figures, the art loving François, his friend Anne de Pisseleu, whom he made the Duchess d'Etampes, his discarded friend, the ageing Diane de Poitiers, who came back again later with the youthful Henri II in her train, and finally there were Henri Quatre and his whilom friend, the fair Gabrielle d'Estrées, who had more than one clandestine meeting here. The forest is not what it once was, the prodigal and selfish Napoleon III having cut it largely down and into firewood, which he sold for a profit to himself. These literary and historic trails stretching all over France are one of the chief charms of travel in this fair land, particularly to one who comes from a country whose literary landmarks do not go back of the era of the "Wayside Inn" or "Rip Van Winkle."

There are two other trails in the immediate neighborhood which are well worth covering if one has the time. One of these is that of the flight of the unhappy Louis and



MORET and the ARTISTS



the Royal Family to Varennes, passing through Meaux and Chateau-Thierry, every league of the way outlined and mapped in the written account of literature and history. The other is in the wake of the gentle R. L. S., on that memorable occasion when he made that delightful "Inland Voyage" down into France from Antwerp and the North Sea, via the canals of Belgium, and finally the river Oise. His trail or rather the wake of his little canoe passed close by, at Compiègne in fact. It was here, it will be recalled by all who know this delightful little book, that Stevenson suddenly terminated his voyage, by reason of his having received news in his letters which he made the fatal mistake of calling for at the *poste restante*. That finished his voyage.

Chantilly Equals Versailles in Real Interest.

Crossing through the forest here the writer recently met a little Oldsmobile, merrily churning away without fuss or feathers, and eating up the straight roadway at a good twenty-five-mile-an-hour clip. One sees these little "horseless carriages" quite frequently in Paris, and the French have adopted our own original name for them and call them *voitures sans cheval*, but they are not often met with in the country. From Compiègne to Chantilly is perhaps forty kilometers, following for the most part the valley of Oise, another of the picture rivers of France, but again a most industrious one. The Chateau de Chantilly shares the honors with the Palace at Fontainebleau in abounding interest for the visitor. Each of them is far and away ahead of Versailles or St. Germain, though thousands visit the two latter to hundreds the former. This is inexplicable, of course, but is a demonstration of one of the inconsistencies of the sightseer.

Chantilly, at any rate, needs a guide book to itself, its attractions cannot be catalogued here. Put up at the Hotel du Grand Condé, which sounds romantic, is good and expensive, and very sporty—for the horse racing at Chantilly is, for many, the chief reason for coming here at all, and horse people demand a showy, luxurious board when they sit down to eat, and much looking-glass in the bar when they drink. All these things are here. At Chantilly let the horse-racing go by the board, and dodge the Irish and American jockeys and stable boys—if you can—and devote yourself to the two Renaissance chateaux, the Ecuries of the Condés and the great collection in the Musée given to the State by the Duc d'Aumale. All this will take half a day—with lunch—but get on to l'Isle-Adam, or Auvers, for the night, unless you insist on those palatial appointments of the hotel at Chantilly with the grandiose name. At Auvers, at the Hostellerie du Nord, you will tumble upon something unique in the hotel line, very simple, very Bohemian—as that term is understood of the people—for the house caters mostly to artist folk, and Parisians at that, and withal the price for everything is very modest. You may dine in the garden courtyard, under a sort of a tent, at a long table, with chickens and pigeons and cats and dogs strolling about and looking for tit-bits, and per-

haps even a stray pet lamb, if the beast hasn't grown into a sheep by this time. If this is a little too much *en famille* and you would have more seclusion you may dine in the paneled *salle à manger* with its walls covered with pictures and croquis by painter folk from Daubigny down to various Montmartre eccentrics.

At last we have swung around the circle, in three days or five, according as to whether we have lingered by the way or made the *vitesse*, as your French chauffeur says, between towns. If one is bound south of Paris, down into the chateau country—Touraine—it is easy to make one's way via Pontoise, St. Germain, Rambouillet and Chartres. If England's leafy lanes are the objective, another en-

joyable three or four days can be put in covering that historic highroad from Paris to Boulogne or Calais. Usually the automobilist from abroad rushes this in a day or less, but this is wrong, of course, for the district is rich in interest.

In outline the itinerary works out something like this: Beauvais (Hotel de France et d'Angleterre), with the most stupendous late Gothic cathedral standing above ground; Amiens (Hotel de Rhin), whose cathedral has been called the Bible of architecture; Abbeville (Hotel de France), where at any rate you should stop long enough to view the Eglise St. Wulfran. After this loaf along easily to Montreuil-sur-Mer, fifty kilometers, and put in the night at the Hotel de France, which bears a date of the sixteenth century over its *porte cochère*. The hotel is a rambling, creaking old structure whose only signs of modernity are in its *salle à manger* and in the electric light wires stretched along its three-century-old beams. When you ring the bell in your bedroom though, you pull a bell-cord, and one of a row of jangling *cloches* rings out down in the courtyard—for any one to answer who happens to hear it. Modernity here hasn't got as far as electric bells.

The passage across to England is best made by automobilists via Boulogne, via Calais automobiles are only carried by cargo-boat. The cost is approximately twenty dollars and the loading, crossing, and unloading will consume half a day. If you are not conversant with the manner of getting in or out of France, and the formalities attendant thereon, you had best get some garage man who looks as though he wouldn't take advantage of you to smooth the way for you, and pay him a dollar or so; it will save you a lot of personal annoyance and perhaps some money. Sergeant, the Michelin agent, would probably do the business as well as any one. The hotels of Boulogne are unlovely and unsatisfying; take the one you best like the looks of, or is most convenient, it will answer as well as any. Finally, you will have as uncomfortable an hour's crossing—in fair weather or in foul—as you will get in these days of usually luxurious travel.



WITHIN SIGHT OF PARIS



Italy Closes its Race Season with a Double Victory

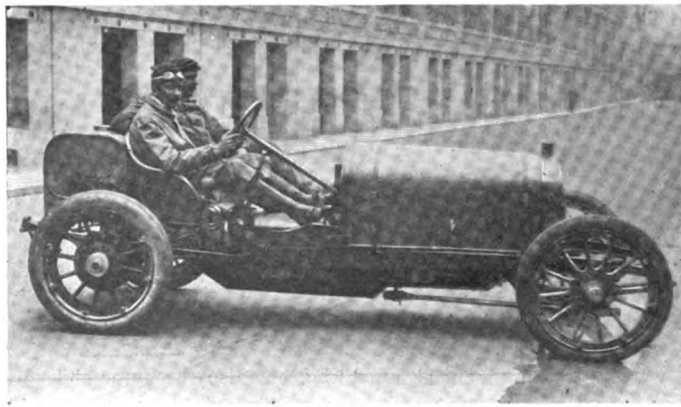
BRESCIA, Sept. 2.—Owing to the multiplicity of European regulations, two distinct races were provided for by the Milan Automobile Club, to be contested on the Brescia circuit. On Sunday forty machines complying with the conditions first formulated for the German Emperor's race, struggled over the 43 miles of winding circuit until Minoia, driving No. 21 Isotta-Fraschini, captured the Florio Cup in 4:39:53, being an average speed of 64.7 miles an hour. Hemery and Hanriot, for a long time team mates at the Darracq factory, came second and third, both on Benz machines built in Germany.

A series of accidents, due in large part to the lack of experience of the drivers in high-speed events, marked the race. Henry Fournier's Itala broke down at about half distance without any injury to driver or mechanic. Later the German Gagneau car, driven by Hieronymus, entered into collision with No. 8 Bianchi, handled by Tommaselli, with the result that both cars had to be withdrawn and Hieronymus suffered a broken nose. Durlacher, with No. 3 Wolsit, an Italian machine built under British Wolsley license, missed one of the turns and shot over a railroad bridge to the track below, being picked up in a rather serious condition. Unfortunately one fatal accident occurred as the result of the breaking of the steering gear of No. 37 Brixia-Zust when traveling at a high rate of speed. Baron de Martino, the driver, was thrown against a tree and instantly killed.

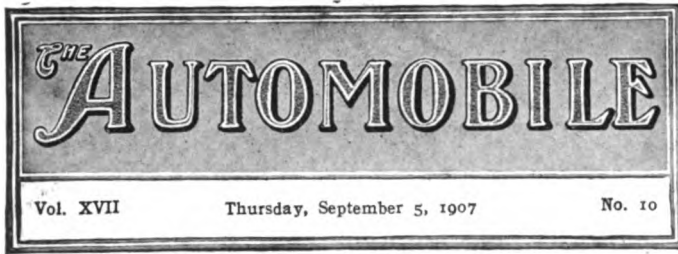
Not more than seven of the drivers, conspicuous among whom were Hemery, Hanriot, Fabry, Fournier and Cagno, had had previous experience in long-distance international races. Practically all the Italian and German drivers were men who had earned their reputation in local races; as several events have proved, a number of such drivers in a big race constitute a source of danger. Nazzaro, who won the first race under German Emperor rules, did not participate, neither did Moore Brabazon, the victor of the Ardennes race under similar conditions. French machines were conspicuously absent, the only representatives being Darracq, Rochet-Schneider and Aries. V. Florio competed for his own cup on a Darracq, with Henry Walker as team-mate.

Cagno, starting fourteenth in a field of 17 competitors, won the handsome trophy "Winged Victory," valued at \$5,000, in 4:37:36 for the 301.9 miles, or an average of 65.2 miles an hour. The machines, ten of which had competed in the French Grand Prix, and were called upon to run in this event under similar conditions, failed to approach the brilliant performance of Nazzaro on the Dieppe circuit, when, with his Fiat racer, he averaged 70.61 miles an hour. Considerable allowance must be made for the differing natures of the circuits, the Dieppe course being one of the fastest in Europe and the Brescia roads somewhat winding. Notwithstanding this, however, it is felt that the ten French and seven Italians did not make the best showing under limited fuel consumption rules. The winner only averaged a mile an hour more than the smaller racers under German Emperor conditions, though the average difference in the horsepower ratings of the two classes was about thirty. Fiat and Renault teams did not compete, consequently Nazzaro and Szisz, who did the fastest work in the Grand Prix, were unable to show their skill on the North Italy circuit. Victor Demogeot, driving the only Darracq machine in the race, came second in 4:40:49, followed at an interval of five minutes by Rougier, driving No. 1 Dietrich.

Starting at 5:30 A.M., and intervals of one minute, the three Bayard-Clément, three Brasier, three Itala, three S. P. A., three Dietrich, Diatto-Clément and Darracq were led on the first round by E. Fitz Shepard driving the Bayard-Clément which he bought when the French factory decided to abandon racing after the death of Albert Clément. On the second round Fabry, on an Itala, got ahead of Shepard, and on the third round the American dropped down to third position. Later he forged ahead of the Itala and regained second position. While running on the fifth round in fifth position the Bayard-Clément car skidded on crossing the bridge over the Montichiari river, broke down the low railings and dropped into the shallow water five feet below. Shepard broke his collar bone and his chauffeur, Ledmann, had his face cut and bruised. Neither of them, however, is in a serious condition. Shepard's racing career has been one series of ill-luck.



E. FITZ SHEPARD, THE UNLUCKY, ON BAYARD-CLEMENT.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
LOUIS R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00
To subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hiffe & Sons, Limited, 20, Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.
The Automobile is a consolidation of The Automobile (monthly) and the
Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October,
1903, and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905,	- - - - -	730,000
" " in 1906,	- - - - -	791,000
" " This Issue	- - - - -	17,000
" " Since January 1,	- - - - -	587,650

Influence of Automobile Durability on Demand. Time was and not so very long ago either when it was popularly considered that the automobile industry was supported mainly by that class of autoists who purchased new models with each recurring season. From 1900 to 1904, models not only followed one another so closely, but differed so radically, that cars became antiquated, both in appearance and design, with the passing of a twelve-month. It was necessary to invest in a new car every year in order to be up to date. This certainty of excessive depreciation deterred many a prospective purchaser in the earlier days, and unfortunately, the idea has not been dispelled altogether by any means. There are still those who regard the automobile as fleeting in this sense of the word.

As a matter of fact things have gone to the opposite extreme. The active life of the modern car has been extended so many years that there is every reason to believe that it will exceed that of the average piece of machinery owing to the superior materials and workmanship employed. Moreover, the fallacy of early day impressions is now evident in the number of old cars that are far from being on the retired list and that will do active duty for some time to come. Then what is to become of the automobile manufacturer? ask a few short-sighted alarmists. With cars built to last indefinitely, where is his market to come from? Were it not for the fact that the recent financial upheaval in the industry appeared to lend color to them, such queries

would scarcely merit comment. As it is, they are absurd, being based on the assumption that autoists as a class comprise a body that is stationary, or at least that never increases in numbers. It goes without saying that there is no longer any need to purchase a new car every season, either to be up to date, or to have one that will operate satisfactorily, but that the industry should immediately wane on that account hardly follows as a logical sequence in view of the tremendous increase in the number of autoists with each passing season, as well as the production of machines to suit a far wider range of purchasing ability.



Deceptiveness of Present Day Engine Ratings. There was much confusion on the part of the man in the street when the automobile manufacturer fell into the habit of bestowing upon his product a hyphenated horsepower rating. It is naturally difficult for the layman to conceive of conditions under which the same motor can produce such varying powers as "24-30" for instance, despite its extreme simplicity to the engineer, and it must be admitted that the explanations forthcoming by garrulous show attendants and others has done far more to add to the confusion than otherwise. Cylinder dimensions have been suggested as an alternative, but of what use are they to the amateur, when in the same breath, the maker informs him that his motor will produce either 40 or 80 horsepower?

So far as the man in the street is concerned, the problem is not of pressing importance, and as a matter of fact, it will work out its own salvation. In the meantime the confusion extant gives rise to some amusing situations. The French makers rate their motors as low as they possibly can because horsepower means taxes in France; ditto in Germany. Hence, a 12 is really a 20; an 18 really a 30-horsepower machine. Here there is no horsepower tax nor anything akin to it, but still there are 30's which are really 50's, also 30's which are 60's. Except for the purposes of racing and hill climbing, what does it matter? The man who owns the machine wants it to pass the other fellow's whether on the level or the hill, and if his be called 30-horsepower and the other man's 50-horsepower, so much more the glory of passing him. It is a strange mixture of meaningless terms that will sooner or later resolve itself without extraneous aid.



Concerning the Show Situation this Year. Automobile manufacturers have found it possible to beat the calendar by half a year in having their models for the following year on the road in the early summer, and have shown that their efforts in this direction have not ceased by any means, so, like the evening editions of the yellow journals that are on sale by 7 A.M., we may be having 1909 models ready before the 1908 open season is on at all. This last is immaterial, or at any rate, beside the question. The fact of the matter is, this general jump on the part of the makers from December to June, has made necessary a corresponding revision in show dates, which, however, could not be made quite as sweeping as have been the advances already referred to. Last year marked the first departure from the custom of holding a show in the year of the models exhibited. This step brought the opening of the show season from January to early December.

Since then it has been pushed back almost two months, so that the first New York show will be opened in the latter part of October; in fact, such has been the change brought about that the opening of last year's show season will practically correspond to the closing of the 1907 season, barring the newly inaugurated importers' event, which continues the time-honored January date for obvious reasons. With this exception the two New York shows and the Chicago show will be condensed into little more than a month. Such an arrangement not alone benefits the makers by minimizing the amount of attention to be devoted to exhibiting, but also the automobile public as well, by concentrating the show season at a most convenient time of the year.

SESSION OF THE A. A. A. RACING BOARD.

Hereafter any club member of the A. A. A. which associates itself in any manner in the conduct of a race meet will be held responsible for the delivery of the prizes and the enforcement of the rules. This action was taken at a meeting of the executive committee of the Racing Board, held at A. A. A. headquarters, 435 Fifth avenue, New York City, Thursday, August 29.

The resolution adopted and recommended for confirmation by the Board of Directors, which will meet in September, is as follows: "Any club of the A. A. A. which associates itself in any way, wholly or partially, with the proposition of a race meet shall become responsible for the delivery of the prizes as stated on the entry blank, and also for the enforcement of the racing rules of the A. A. A."

Approving the recent action of Acting Chairman Pardington, the United States Motor Racing Association, Inc.—Joseph M. Gaites, president; Fred T. Bailey, vice-president; and W. H. Pickens, general manager—was indefinitely suspended, collectively and individually, and all sanctions granted to the said association were cancelled, such action being taken for irregularities in the conduct of the race meet held at Brighton Beach, New York, August 9-10.

Recognizing that the present racing rules require some revision to meet new and changing conditions, the Board requested its technical advisers, within the next thirty days, to prepare for submission to the Board a draft of those changes which in their opinion would bring about a more satisfactory classification and general results in competition. The technical advisers are: E. R. Thomas, N. A. A. M.; A. L. Riker, A. L. A. M.; Henry Ford, A. M. C. M. A.; J. J. Mann, A. C. of France.

It was decided to postpone the consideration of the rules adopted by the Affiliated Automobile Clubs of the World until the return from Europe of Chairman Jefferson de Mont Thompson and William K. Vanderbilt, Jr., who have had conferences while abroad with representatives of the foreign clubs.

In connection with the hill climb held at Wilkesbarre, Pa., May 30, the protest of Walter White, driving a White steamer, against being barred from the free-for-all event was sustained and he was adjudged the winner of same, his time, 1:49 4-5, being the fastest of the climb. The protest of D. Walter Harper against being barred was also sustained, and he was declared winner of events 4 and 7. The Wilkesbarre Automobile Club was requested to deliver the prizes for these events as above decided.

The decision of Referee Duncan Curry rendered at the race meet of the Atlantic City Automobile Club, held at Atlantic City, N. J., August 5-6, disqualifying A. W. Church's Stearns in event No. 3 on the ground that it did not comply with the definition of a touring car, was sustained. To properly determine the exact division between touring cars, touring runabouts, and runabouts, the Board announced the following definitions:

Touring Cars.—A touring car shall be one provided with a tonneau and seats for at least five (5) adults; two (2) in front, and three (3) or more in the tonneau.

Touring Runabouts.—A touring runabout shall be a car provided with two (2) seats in front, and a single permanent seat in the rear.

Runabouts.—A runabout shall be a car provided with two (2) seats side by side.

The Racing Board not having received a report from the special committee of the Chicago Automobile Club, which was requested to investigate and report on the 24-hour race held at the Harlem track in that city, July 12-13, the Board was unable to give consideration to this event.

Owing to the meager amount of evidence submitted in reference to the 24-hour race at Detroit, Mich., July 21-22, no decision could be reached. Interested parties have been called upon to make affidavits supplying the missing parts of the evidence.

The following were present at the session: A. R. Pardington, acting chairman; R. Lincoln Lippitt, Rhode Island A. C.; S. M. Butler, A. C. A.; A. G. Batchelder, N. Y. M. C.; A. L. Riker, technical adviser; F. H. Elliott, secretary.

A. M. C. M. A. MEMBERS DRAW SHOW SPACES.

With applications amounting to 30,000 square feet of floor space, and but a total of 26,000 square feet available, the drawing for spaces at the Palace show, October 24-31, held at the American Motor Car Manufacturers' Association headquarters on Saturday last in the Spalding Building, was an interesting event. The Reo Motor Car Company was fortunate in drawing number one, which gave it first choice. Others who secured center spaces were the Dayton Motor Car Company; Ford Motor Company; Premier Motor Manufacturing Company; National Motor Vehicle Company; Maxwell-Briscoe Motor Company; Mitchell Motor Car Company; Wayne Automobile Company; St. Louis Car Company; Jaskson Automobile Company; Bartholomew Company, and the Mora Motor Car Company. Incidentally, trade conditions came up for discussion and it was the consensus of opinion that the outlook for 1908 could hardly be better, some of those participating being Benjamin Briscoe (Maxwell); A. C. Newby (National); Gaston Plaintiff (Ford); W. H. Vander Voort (Moline); R. B. Crawford (Crawford); C. F. Case (Rapid); H. O. Smith (Premier); Ray Owen (Reo); Wm. Mitchell Lewis (Mitchell); and Frank Weston (Overland).

BALTIMORE HOLDS LABOR DAY RACES.

BALTIMORE, Sept. 2.—Five events comprised the program of the Motor Car Racing Association on Labor Day at the Gentlemen's Driving Park, and attracted a big field of spectators. Interest centered in the 50-mile race for stripped touring cars, the contestants being two Stoddard-Daytons, an Aerocar, a National, and a Pullman. E. F. Dobson on a Stoddard-Dayton took the lead, followed by the Aerocar until the tenth mile, when the Pullman got second place. Later the Pullman had to retire through the loss of a tire, when the Aerocar secured and retained second place, followed by E. L. Leinbach's Stoddard-Dayton and George Norwood's National. An Autocar driven by E. H. Freas and a Pullman driven by E. F. Dobson competed in the final for the five-mile runabout championship, the Autocar winning by two lengths. W. S. Fisher won the five-mile race for motor-cycles against six others, all riding Indians. The summaries follow:

FIVE-MILE RUNABOUT CHAMPIONSHIP.

1. Autocar, 30-horsepower; driver, E. H. Freas.....7:15 2-5
2. Stoddard-Dayton, 30-horsepower; driver, E. F. Dobson..7:15 4-5
3. Pullman, 30-horsepower; driver, Peter Burgard.

FIFTY-MILE RACE FOR STRIPPED TOURING CARS.

1. Stoddard-Dayton, 30-h.p.; driver, T. F. Dobson.....1:12:50 4-5
2. Autocar, 30-horsepower; driver, E. H. Freas.....1:13:36
3. Stoddard-Dayton, 30-horsepower; driver, E. L. Leinbach.
4. National, 50-horsepower; driver, George Norwood.
5. Pullman, 30-horsepower; driver, Peter Burgard.

DISASTER BEFALLS DENVER TRACK MEET.

DENVER, Sept. 2.—In the 50-mile endurance race at the Overland Park, W. B. Walker, a prominent local business man, was killed by being thrown against a post after a tire had exploded on a turn. E. V. Dasey, who was following, tried to avoid the crowd which swarmed on the track and either lost control of his machine or fainted, for he fell from his car and was killed. Brinker, the only other driver on the track, struck a fence and was bruised.

BOSTON MEET POSTPONED BECAUSE OF RAIN.

BOSTON, Sept. 2.—Heavy rain put the track at Readville in such bad shape to-day that it was impossible for the Bay State Automobile Association to run off its program of races. Postponement was made until Saturday, September 14.

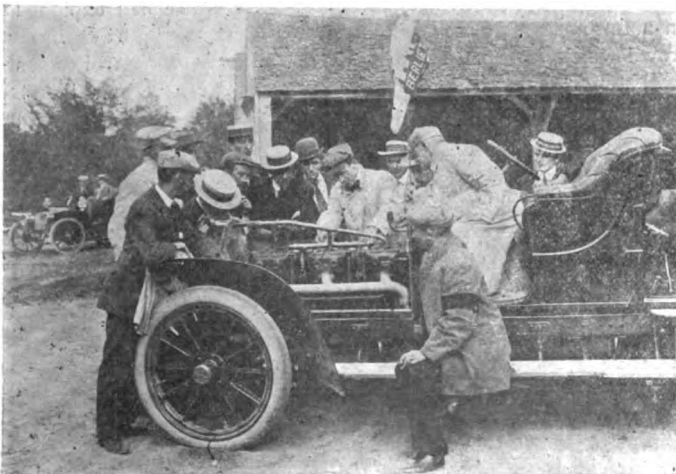
W. K. VANDERBILT DECLINES TO DISCUSS RACE.

W. K. Vanderbilt, Jr., and Mrs. Vanderbilt arrived from Europe on the *Kronprinz Wilhelm* last Tuesday. Before leaving for his cottage at Great Neck, Mr. Vanderbilt said that he had nothing to say concerning the Vanderbilt Cup race.



SIX-CYLINDER Berliet, the latest product of the American Locomotive Company, was charmingly introduced to the members of the press at the Providence, R. I., factory last week, prior to going forth to greet the wide world on its own substantial merits. All the technical journals and representatives of New York's dailies united in response to the company's invitation and spent a few hours wandering through the Berliet factory under the leadership of General Manager James Joyce, Superintendent F. R. Boynton, General Sales Manager F. M. Hoblitt, and Assistant Vice-President R. B. Van Dyke. A 20-mile run to Chepachet Inn, where lunch was served, allowed the party to appreciate the flexibility and smooth running qualities of the new "six." Arthur N. Jervis and Edward F. Korbel planned the visit in an admirable manner.

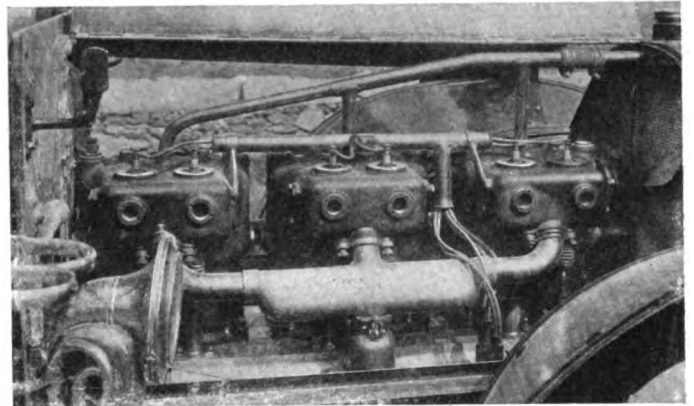
Externally there is practically nothing to distinguish the six-cylinder Berliet from the larger four-cylinder models turned out this year from the Providence factory. Its wheelbase, 126 inches, is identical with that of the 60-horsepower four-cylinder car which it supplants, the bonnet is only about one inch longer, and there is but a very small increase in weight. The new product is in no sense an experiment, well-tried Berliet lines being followed throughout in its construction. Apart from the engine, no radical changes have been made on the new model, the car having four speeds forward and reverse through sliding gear of the selective type, with direct drive on both third and fourth speeds, multiple disk clutch, final drive by side chains, force feed lubrication and four brakes on the differential and rear wheel drums.



MANAGER JOYCE TELLING HIS TECHNICAL STORY.

Naturally a six-cylinder engine differs radically from one with only four cylinders, but in designing the Berliet the differences have been reduced to a minimum. The six cylinders, cast in pairs, have 4.34-inches bore by 5-inches stroke, the same dimensions as the 40-horsepower four-cylinder engine, thus valves and kindred parts are interchangeable between the two models. The crankshaft of a six-cylinder engine is always an interesting organ, as well as one which has caused a considerable amount of careful thought on the part of the designer and constructor. In the Berliet the features are two center throws in one line, with the end throws at an angle of 120 degrees. Ignition, as in the other models, is by high-tension Bosch magneto, the cylinders firing in the order 1, 4, 2, 6, 3, 5. Owing to the diminution of the size of the flywheel, it has been possible to hang the motor a little lower without diminishing the road clearance.

In their methods of production the American Locomotive Company occupies a unique position among American automobile manufacturers. Before Berliet was known on this side of the Atlantic, the parent factory at Lyons, France, produced automobiles which were recognized as fit to stand in the front rank of European machines. At the Providence factory all work follows accurately the plans of the



A PEEP UNDER THE BONNET OF THE BERLIET "SIX."

French designers, work being done entirely to metric system to insure absolute harmony with the designers' blue prints.

Wherever imported material offers any advantage over that obtainable in this country, it is employed, the contracts between the American firm and the house under whose license they build allowing all material to be obtained from the factory or through the firm's European suppliers. It would be erroneous to suppose that the Berliet is an "assembled" car. The frame is imported in lengths, cut to size and joined up at the American works; the crankshaft is imported in the rough, camshafts arrive in the form of a steel bar, transmission gears are received in a similar condition; practically all the machining is done here on best American lines, no parts being received in a completely finished condition. Having had opportunity of observing the work on the parent machine, it is not surprising that such a high standard of excellence is set at the Providence works, the aim apparently being not to equal but to surpass, in this respect, the workmanship of the foreign car. To attain this end, every part of the car passes through the hands of the tester at frequent stages, on a plan which allows the detection of the slightest imperfections.

In addition to the 60-horsepower six-cylinder car, to be fitted with touring or limousine body, as desired, the factory will produce a 40-horsepower four-cylinder car with chain drive, and a 24-horsepower town vehicle with shaft drive, carrying either limousine or landaulet body.

STRUCTURAL BRONZE FOR AUTOMOBILE PARTS*

By THOMAS J. FAY, E.E.

THERE are certain parts of automobiles that cannot be well made of die-forgings or pressed steel and casting must be resorted to. In casting, strength is not so easily attained as would be the result of a die-forging process or if pressed steel parts are taken into account. On the other hand, steel castings are very prone to develop "wasters," while cast gray iron is far from a strong product and cast aluminum is, as a rule, a most uncertain quantity. It follows, therefore, that "steel-bronze" cast is a very attractive product and one to be relied upon for good castings in almost every instance, if the product comes from a foundry accustomed to turning out this class of product. True, this product requires an exercise of skill born of experience, else "wasters" may be the sole reward, but the fact is steel-bronze can be procured readily from reliable sources.

Steel-bronze, otherwise known as manganese bronze, obtains as castings with excellent physical properties, as the tests here given will amply demonstrate, and the performance of this product in service is very praiseworthy, although it is the writer's belief that the use of this product has been carried too far in some cases, as for illustration, a steel-bronze axle costs quite as much as a die-forged, chrome-nickel steel axle, whereas the latter product is far superior for the purpose, involving, as it does, work of a dynamic character. Steel-bronze is used for crankcases, gear-cases, steering gear housings, lever-box housings, thrust-block housings, pedal-shaft supports and such other parts as are not easy to produce by any but a casting process, and, barring the cost of steel-bronze, there can be no fair criticism of its use for such purposes, provided, as before stated, die-forgings of steel or pressed steel cannot be used instead.

Of steel-bronze there are two grades, one of which is for castings, while the other is suitable for die-forgings or rolled sections. As regards the die-forged product, it is not used for automobile parts for the very simple reason it is not as good as die-forgings of steel and it is more costly, and if die-forgings can be made the use of either grade of steel-bronze becomes at once superfluous. In motor boat work the steel-bronze die-forgings should serve a useful purpose, for their oxidization is a factor and electrolysis sets in under certain conditions. It follows, therefore, that, steel-bronze being a product that behaves quite decently in salt water, it is very serviceable for motor boat work in which strength is requisite if the weight is to be kept low, and it must be if speed is a factor.

Having set forth the uses to which steel-bronze can be properly put, it may be well to discuss its production and show its characteristics and its eccentricities, thereby rendering all possible aid to designers. While steel-bronze can be cast into intricate shapes and very thin— $\frac{3}{32}$ inch for motorcase walls—yet even so, care should be exercised to make all walls and connecting parts of an even thickness and radii should be liberal to avoid bunching metal at angles; indeed, the fact that the metal is approximately twenty times as heavy as a mahogany pattern can be compensated for by making the walls thin, the bosses small and the radii enough to obviate large fillets and other accumulations.

It is a little difficult to design for equal weight and equal strength, considering aluminum as an alternative, but it is not difficult to realize

- (a) double the strength as compared with aluminum for
- (b) one-half more weight than aluminum.

Clever designers can do better than this, but it requires the utmost care in designing to keep the weight well within bounds. The test records XVI., XVII., XVIII., XIX. and XX. will afford an excellent idea of just what this metal affords by way of

*Extract from "Part Four." "Materials for Automobile Construction." by Thomas J. Fay. published by the Class Journal Publishing Company. New York.

strength, and the chemical composition for sand casting ingots will there be found. In considering this question of design and strength, it may be well to here interject a warning, as it were. Unscrupulous brass foundries are prone to fill on phosphor or other bronze as a substitute for steel-bronze and for flywheel work this is a very dangerous thing to do.

The author has had a good deal of trouble with what was called manganese bronze—steel-bronze—but generally found such product not to be what was claimed for it, and upon procuring real steel-bronze the trouble disappeared. This product is more troublesome to make and costs more to procure, and it not infrequently happens that foundrymen labor under the impression that users do not know what they want or that they do not know the difference between steel-bronze and phosphor-bronze.

As a rule a flywheel of a good diameter on a motor designed for high speed will locate the difference, but unfortunately a flywheel in disrupting does serious damage. In any case, for this class of work the steel-bronze should be procured from some reliable source of supply. In the sand castings as compared with the die-forging steel-bronze, the difference lies in the fact that for the sand casting product aluminum is present and the zinc content is greater. In the sand casting product the aluminum plays an important part, but the presence of the aluminum defeats die-casting. Aluminum in sand castings imparts soundness, but it must be added cautiously and in small increments. The right amount of aluminum has a quieting influence on the product and enables teeming to be accomplished early and under favorable conditions. An excess of this ingredient would produce what the steel man terms "constitutional segregation," and on the whole a most unruly product.

By tracing the entectic of the product steel-bronze, it will be found that the relation of copper to zinc should be 55 to 45; that is, the best product comes from the use of 55 per cent. copper and 45 per cent. zinc. The analyses given do not show exactly this

CHEMICAL COMPOSITION		
CARBON	TOTAL	
	COMBINED	
	GRAPHITE	
	FERRITE	
	PEARLITE	
	CEMENTITE	
Cr.		Ni.
V.		W.
Mn.		Si.
Al.		Cu.
S.		P.
Sn.		Zn.
Pb.		Sb.
As.		
PHYSICAL PROPERTIES		
T.S.	LBS. PER SQUARE INCH	70410
E.L.		38.97
EX.	PER CENT.	.31
CO.		30.4
PROOF	DIAM. "	1.00
	LENGTH "	2.00
FRACTURE		
RATING	U.	
	H.	
TREATMENT	CASTING	

SUBJECT: STEEL BRONZE
 NUMBER: XVI MARK: THRENS
 FROM: WILLIAM CRAMP & SON
S. B. & E. C. NEW YORK, 4-17-07
 COUPON FROM PROPELLER
 HUB OF MONITOR NO 7

CHEMICAL COMPOSITION			
CARBON	TOTAL		
	COMBINED		
	GRAPHITE		
	FERRITE		
	PEARLITE		
	CEMENTITE		
Cr.		Ni.	
V.		W.	
Mn.		Si.	
Al.		Cu.	
S.		P.	
Sn.		Zn.	
Pb.		Sb.	
As.			
PHYSICAL PROPERTIES			
T.S.	LBS. PER SQUARE INCH	71047	
E.L.		36924	
EX.	PER CENT.	29.5	
CO.		31.4	
PROOF	DIAM. "	1.00	
	LENGTH "	2.00	
FRACTURE			
RATING	U.		
	H.		
TREATMENT <u>CASTING</u>			

SUBJECT: STEEL BRONZE
 NUMBER: XVII MARK: PHR-CONS
 FROM: WILLIAM CRAMP & SON-
S. B. & E. CO. NEW YORK. 4-17-07
 COUPON FROM HUB OF
 PROPELLER OF MONITOR N^o 7

latter name is not very appropriate, because the manganese merely serves as a carrier for the iron and the manganese is not always present excepting perhaps for a mere trace in the finished product. On the other hand, the iron is always present, and it is the iron that imparts the extra qualities, whereas the manganese, once it serves the one purpose of introducing iron to the entectic, passes off and ceases to serve as a factor.

If, on the other hand, manganese is not used at all and iron is introduced, the iron will not alloy with the copper-zinc entectic, and the iron will be found as nodules or shot in the "frozen" castings. True, manganese itself is an intensifier, but as such it is a weakling as compared with iron, and besides, the presence of enough manganese to materially influence the tensile strength would be detrimental in other ways, as, for illustration, the elastic limit would undergo a marked depression, which would be a great misfortune, for that property of steel-bronze is low enough at all events, although it is high as the same phenomenon in Bessemer steel, and that is saying a whole lot for a casting.

Tin in quite small increments has an especial advantage in that it increases and defines the elastic limit, but an excess of tin would defeat its usefulness, since the casting would become brittle and act the same as "cold short steel." The tin, then, must be added carefully as to amount, else the castings will be treacherous, and in automobiles this property must be guarded against at all hazards. The lead found in the composition comes with the zinc as an impurity of the latter. Lead is not wanted and very pure spelter should be selected, else the lead content will amount to enough to make a noticeable depression in the strength of the steel-bronze.

In the production of steel-bronze both for castings and for die-forgings or rolled sections the process is not unlike the process that obtains in the manufacture of steel, in important respects at any rate. In the production of steel, as is well understood, the ores are reduced in a blast furnace and come out as pig. This product is remelted in a converter or a furnace and is poured into ingot moulds. The ingots are then worked up into boss and shapes. Or, in the gray cast iron production, the blast furnace "pigs" are charged in a cupola and the out-pouring is run into moulds to form castings of any desired shape possible to cast. So it is with the steel-bronze, and the steel alloy, so called, which corresponds with the blast furnace "pig," must be evolved by a process, and this product, remelted in crucibles or a converter, is poured into moulds for casting if it be so mixed as to serve for sand casting, or it is poured into ingot moulds for rolling if it be mixed according to the requirements of the work.

The steel alloy, then, must at first be produced, and in this process ferro manganese is a requisite. This product holds:

Ferro Manganese.

Manganese.	Iron.	Carbon.
80 per cent.	14 per cent.	6 per cent.

taking round numbers for it. The impurities in this product are sulphur, phosphorus and silicon, but the percentages are small and it is not definitely known if these impurities do damage as they do in steel, even when present in minute increments.

Besides ferro-manganese, "spiegeleisen" can be used, the composition of which is as follows:

Spiegeleisen.

Iron, 80 per cent.	Manganese, 20 per cent.
--------------------	-------------------------

in round numbers, and neglecting again the impurities as silicon, sulphur, phosphorus and manganese.

The ferro-manganese is the most attractive and can be obtained at low cost in lumps, easily broken, and quite pure. The amount required for the purpose is but slight at all events. The iron used in this work should be pure "cement bars," preferably the Norway iron product, nor should the iron be too small, else the product will oxide away and introduce unnecessary trouble. The bars, say half-inch, cut into short strips, would serve perfectly the main point, being able to pack the crucible with as much of the

CHEMICAL COMPOSITION			
CARBON	TOTAL		
	COMBINED		
	GRAPHITE		
	FERRITE		
	PEARLITE		
	CEMENTITE		
Cr.		Ni.	
V.		W.	
Mn.		Si.	
Al.		Cu.	
S.		P.	
Sn.		Zn.	
Pb.		Sb.	
As.			
PHYSICAL PROPERTIES			
T.S.	LBS. PER SQUARE INCH	71874	
E.L.		37560	
EX.	PER CENT.	27.5	
CO.		28.1	
PROOF	DIAM. "	1.00	
	LENGTH "	2.00	
FRACTURE			
RATING	U.		
	H.		
TREATMENT <u>CASTING</u>			

SUBJECT: STEEL BRONZE
 NUMBER: XVIII MARK: PHR-CONS
 FROM: WILLIAM CRAMP & SON-
S. B. & E. CO. NEW YORK. 4-17-07
 COUPON FROM STARBOARD
 PROPELLER OF MONITOR N^o 7

material as possible, because, however carefully the crucible is packed, the "voids" will foot up to a considerable percentage, and as a result a full charge does not make a full crucible when the charge becomes molten.

The charge in the crucible is recommended as follows:

Crucible Charge.

Iron.	Ferro Manganese.	Tin.
55 parts.	13 parts.	32 parts.

but the mode of procedure should be thus:

In a graphite crucible place the iron and the ferro manganese, cover the products with charcoal and put a lid on the crucible. Then urge the fire to its utmost until the charge is molten.

Find whether all the lumps are melted by using a plumbago stirrer, and when the charge is molten add the tin. Having thus proceeded and when the tin also is liquid, which takes but a moment, stir the charge and "teem" it. The ingot moulds should be quite small and of a shape or section that will render the ingots easy to break up.

With the steel alloy thus produced, the process involved in the production of steel-bronze castings will be simplified and the then procedure will be as follows:

Assuming a graphite crucible will be used, the charge will be:

Copper.	Zinc.	Aluminum.	Steel Alloy.
56	43	1/2	2

The procedure will be as follows:

1. Put one ingot of say 15 pounds of copper into the crucible.
2. Cover with charcoal.
3. Bring the copper to a full red heat.
4. Add the steel alloy.
5. Stir.
6. Urge the heat until the steel alloy melts and alloys with the copper.
7. Add the aluminum.
8. The aluminum will induce extra heat and the mixture should be agitated at this time to help alloy the mass.
9. Add the balance of the copper.
10. Stir.
11. Add the zinc.
12. Stir.
13. Pour into ingots.

If the pouring into ingots is delayed too long, the "over heat" will result in a large loss in zinc and destroy the balance desired for the components. The crucible charge takes into account some loss and the ingots should come out with components, viz:

Ingot Composition.

	Per cent.		Per cent.
Copper.....	56.00	Tin.....	0.75
Zinc.....	42.38	Aluminum.....	0.50
Iron.....	1.25	Manganese.....	0.12

Authorities on this subject point out that a loss of zinc attends each remelt, so that steel-bronze scrap soon becomes useless for "home scrap" in the production of steel-bronze products. The proportions above set down will allow for a double remelt, but no more, excepting at the expense of quality. With the ingots available, and they can be purchased from Krupp or Cramp, in case it is desired not to go into their production, the question of castings becomes the remaining issue, but it is an issue and must be attended to by the most scrupulous care.

The Casting Process.

1. Have the moulds ready.
2. Do not allow the molten charge to soak; hence, to repeat, have the moulds ready.
3. Cover the charge in the crucible with charcoal—a good cover.
4. Melt at the lowest possible heat.
5. Do not allow the metal to "flare," especially if the castings are to be large.
6. For small castings a somewhat higher heat is possible and may be desirable.

SUBJECT: STEEL BRONZE
 NUMBER: XIX MARK: PHR-5085
 FROM: WILLIAM CRAMP & SON-
S. B. & E. CO. NEW YORK, 4-17-07
 TEST OF THE "KRUPP" STEEL
 BRONZE SHOW ABOUT THE
 SAME QUALITIES.

CHEMICAL COMPOSITION		
CARBON	TOTAL	
	COMBINED	
	GRAPHITE	
	FERRITE	
	PEARLITE	
	CEMENTITE	
Cr.	Ni.	
V.	W.	
Mn.	Si.	0.012
Al.	Cu.	0.51 56.25
S.	P.	
Sn.	Zn.	0.68 41.16
Pb.	Sb.	0.019
As.	Fe.	1.41
PHYSICAL PROPERTIES		
T.S.	LBS. PER SQUARE INCH	71429
E.L.		38197
EX.	PER CENT.	24.5
CO.		248
PROOF	DIAM. "	1.00
	LENGTH "	2.00
FRACTURE		
RATING	U.	
	H.	
TREATMENT <u>CASTING</u>		

7. A slight "flaring" of the zinc on the surface will denote this condition.
8. In any case, pour at the dullest possible heat.
9. Moulds should be carefully made and the moulder should use skill and judgment.

The points of advantage in the procedure, as regards the steel-bronze products, are points such as would be observed in all

SUBJECT: STEEL BRONZE
 NUMBER: XX MARK: PHR-5085
 FROM: WM CRAMP & SON-
S. B. & E. CO. NEW YORK, 4-17-07

CHEMICAL COMPOSITION		
CARBON	TOTAL	
	COMBINED	
	GRAPHITE	
	FERRITE	
	PEARLITE	
	CEMENTITE	
Cr.	Ni.	
V.	W.	
Mn.	Si.	0.01
Al.	Cu.	0.47 56.11
S.	P.	
Sn.	Zn.	0.75 41.34
Pb.	Sb.	0.02
As.	Fe.	1.30
PHYSICAL PROPERTIES		
T.S.	LBS. PER SQUARE INCH	
E.L.		
EX.	PER CENT.	
CO.		
PROOF	DIAM. "	
	LENGTH "	
FRACTURE		
RATING	U.	
	H.	
TREATMENT		

CHEMICAL COMPOSITION		
CARBON	TOTAL	
	COMBINED	
	GRAPHITE	
	FERRITE	
	PEARLITE	
	CEMENTITE	
	PHYSICAL PROPERTIES	
T.S.	LBS. PER SQUARE INCH	87000
E.L.		47500
EX. CO.	PER CENT.	17
PROOF	DIAM. "	0.75
	LENGTH "	8.00
FRACTURE		D.
RATING	U.	22.82
	H.	7.9
TREATMENT		ROLLED

SUBJECT: TOBIN BRONZE
 NUMBER: C.1. MARK: TOBIN
 FROM: E.T. HUNGERFORD CO.
NEW YORK 4-17-07
 USED FOR PROPELLER SHAPES
 IN MOTOR BOATS BECAUSE IT
 IS NOT CORRODED BY THE
 ACTION OF SEAWATER
 WEIGHT, 0.291 POUNDS PER
 CUBIC INCH
 BELONGS TO THE STEEL
 BRONZE GENERAL.

be carefully placed, and if possible the design should be such as to render gating easy and avoid branch gates, horseshoe gates and skim gates, although finger gates are fairly good for feeding to several small castings through runners, but "plump gates" are the most desirable, since a plump gate is the most direct gate.

The foundryman is not to blame for much of the bad work, but the "goffer," or foreman, in the average foundry is not averse to shedding all blame. However, patterns are prone to evils and designs do oftentimes foreshadow bad patterns and worse castings. The trouble is that draftsmen, as a rule, do not know a "match" or "oddside," that is, a block of plaster or hard sand, in which a pattern is partly imbedded for giving shape to surfaces of separation between the parts of a mould, and one may say, a set of "monkey knuckles," which are indentations due to irregular ramming.

In other words, draftsmen do not know what to do to aid the "goffer," and as a rule a foundryman cannot draw anything, unless it is to make a "clean lift" when a pattern is drawn from a mould, and even that is only possible if designs permit and patterns have the requisite "draft" and "drawing straps," if they are needed anyway. Moulders know as much about drawings as draftsmen do about moulding, and the sum total of this knowledge would never stop up a "flue."

There is one other point about this matter that should be looked after, i. e., moulders are wont to get as much weight into a casting as they possibly can. Weight is what is paid for, not pieces. They accomplish this by "rapping" in excess of the amount required to clear the pattern, although it will be understood some rapping is necessary to afford a "clean lift." In many cases under-cut patterns, requiring, as they do, a "draw back," lead to complications and wasters, and on the whole, while the foundry has its own set of obstacles, as before stated, the drawing and the pattern can in a large measure account for the failures that beset the foundry.

Having thus, at least, intimated that steel-bronze castings, to be as good as they can be, can also go wrong much easier perhaps than ordinary brass and bronze castings, it may be well to allow space in which to further discuss the remaining steel-bronze product as used for sheets, die-forgings and rolled sections. The mixture for this product, as before stated, holds no aluminum and somewhat less zinc, or "spelter," as it is generally termed. Moreover, the copper is increased a little, so that to sum up, one would say one component is eliminated, one other is diminished and one is increased to make up the difference. The resultant mixture is practically what has long been known as "Muntz" metal, which product is generally understood to hold the components, viz.:

Muntz Metal.

Copper, 60 to 62. Zinc, 38 to 40.
 Parts by weight.

For steel-bronze the steel alloy previously mentioned must be utilized and so the following would hold:

Crucible Charge.

Copper. Zinc. "Steel Alloy."
 60 39 2

The mode of procedure will remain substantially as before, that is:

1. Put one copper ingot of say 15 pounds into the crucible.
2. Cover it with charcoal.
3. Bring the copper to a full red heat.
4. Add the steel alloy.
5. Stir.
6. Urge the heat until the steel alloy melts and alloys with the copper.
7. Add the balance of the copper.
8. Stir.
9. Add the zinc.
10. Stir.
11. Pour in the ingots.

brass and brass-alloying processes. It follows, therefore, that some conditions are so general as to render their application quite general.

It is reasonable to suppose, and in fact quite proper to conclude, that in general "soaking" will be to the detriment of the product. This is amply borne out by the fact that for bronzes in general the metals are melted in the order of their fusion point, i.e., the metal with the highest fusion point comes first, and the remaining components as a rule are added in accordance with their respective fusion points, so that the component with the lowest fusion temperature comes last; indeed, some products are added after the crucible is removed from the heat and just before teeming. Each product has its own especial features, and they should be observed, but the foregoing holds, in the main, and the closer the practice approaches the natural tendencies the less will be the chances of realizing poor results.

Take, for instance, the practice of using "coolers," that is, waster castings, to cool overheated crucible charges before teeming. This use of "coolers," while it cannot be set down as good practice at all, is positively ruinous in so far as steel-bronze casting is concerned. In other words, the remedy for a wrong, while it may be the best thing under the circumstances, does not eliminate all the ills that follow the perpetration of the wrong.

There are one or two other points that should be mentioned here, because steel-bronze is at least one product that will go wrong on very slight provocation. Take, for instance, the question of "deadheads." As before stated, steel-bronze will not do under numerous remelt conditions; in other words, it is not valuable as "home scrap" result. "Deadheads" are not wanted, and the tendency is to limit the sullage piece, or deadhead, as it is called, because it is not delivered to the customer and is not paid for unless the customer pays an extra pound price to compensate it.

The sullage piece, on the other hand, contains the oxides and floatage, or other impurities, and if the "head" is stopped off below the needs of the occasion the result is the oxides and impurities will be found in the casting instead of where they belong, in the sullage piece. And again, the "ingate" or gates should

HELPFUL HINTS FROM MANY SOURCES

THERE is a prevalent idea among automobilists, says a Michelin expert, that a tire which has begun to show signs of weakness can be strengthened by putting a canvas lining over the fibre. Frequently a worn tire is shipped to the factory with instructions to renew the canvas. A moment's thought would show that such an order, which is equivalent to a request to re-make the carcass of the tire, is impossible of execution. It is possible, however, to add an interior lining, but that this would give any greater solidity or give any measure of security is an illusion.

Some years ago a canvas protector was glued to the inside of tires; but it is incorrect to suppose that this lining was added with a view of strengthening the fibre. Its object was quite different. One of the most difficult operations in the construction of a tire was to get such an assemblage of fibres that the interior of the shoe would be so smooth that it would not injure the air chamber. For a long time it was impossible to make this smooth surface, and as a substitute a lining of finely woven canvas was attached to the carcass. Progress has been made in recent years, the protective lining being abandoned as useless, as the canvas surface was given a finer finish.

With modern tires, it should be remembered that less chalk is needed than was formerly the case. The former rougher surface absorbed a large quantity of chalk, a defect which has been remedied in up-to-date automobile shoes. If an excess of French chalk is used, it will agglomerate, form a hard body and be injurious to both the air chamber and the fibre of the shoe. All that is now necessary is to dip a soft cloth in the chalk and rub it over the surface of the air chamber. It is wrong to empty a handful of chalk into the shoe, as many automobilists do, and trust to it spreading over the surface as the wheel is turned around.

Exhaust Gases Are Becoming Purer.

So far as visible exhaust smoke is concerned, many automobilists have attained absolute perfection, said Dugald Clerk in a paper read before the Engineering Section of the British Association. Valuable experiments in this matter were made by the Royal Automobile Club of Great Britain with engines running under different conditions. It was found that though many of the cars burned the mixture given to them in a most complete manner and evolved a minimum of carbonic oxide gas, others showed the presence of carbonic oxide in the exhaust greater than two per cent. The British Club had decided to continue these experiments later, but meantime Dugald Clerk examined the exhaust gases on his own car with the following results:

	Percentages of CO in Exhaust Gases.		
	April 23. Per Cent.	May 7. Per Cent.	July 3. Per Cent.
Engine throttle full open. Car climbing hill	3.6	3.6	2.2
Engine throttle less than half open. Car running on level.	6.9	4.2	2.4
Engine running without load. Car standing	0.5	0.4	1.8

It is highly desirable that the exhaust gases of automobiles should contain a minimum of carbonic oxide, in view of the rapid increase of their use in large cities. In the open road, a little carbonic oxide rapidly diluted by air would do no harm, but in large cities, when horse traction is replaced almost entirely by motor vehicles, it will be necessary to look into this carbonic oxide question with great care.

A Remedy if Your New Driving Chains Are Noisy.

When new driving chains are fitted to an old automobile they are apt to make their presence heard in an unpleasant manner, especially when climbing a hill. The reason is that the pinions on the countershaft, although they may appear to be in good condition when examined superficially, have become worn and

will not quietly accommodate the new chains. Instead of buying new pinions, as might at first suggest itself, perfect conditions can be obtained by merely transposing them, putting the left hand pinion to the right and the right hand one to the left. The forward face of each tooth has become worn through friction, but the opposite side being only occasionally used for reversing will be found to be as good as new. Transposing the pinions presents a practically new face to the new chains and suppresses all noise. The teeth of the road wheels being twice as numerous will not readily show the same defect; when in length of time they become worn also, a new surface can be obtained by changing the wheels to opposite sides of the car.

Where Dismountable Rims Need Special Care.

Dismountable rims—which must not be confounded with the detachable types running them so close for popular favor—require certain attentions which are not necessary with the commoner kind consisting of a metal rim permanently attached to the wood felloe. An automobilist writing to *La Pratique Automobile* relates his experience as follows: A rear tire lost its sustaining air; examined at the garage, no trace could be found of nail or stone or any defect discovered in the valve. The following day another tire fell collapsed in the same way, but left indications of its

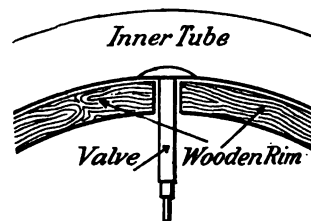


FIG. 1.—Showing valve held in position by wooden rim.

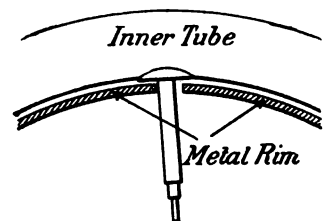


FIG. 2.—Showing necessity for care in adjusting dismountable rim.

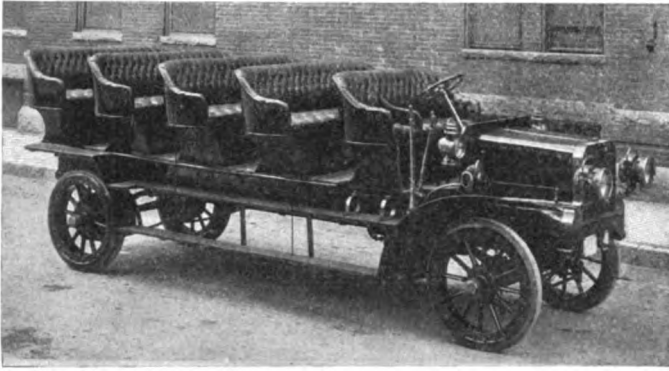
defect. When a tire is mounted on a fixed rim the valve is passed through the hole provided for it, the tube slightly inflated, then straightened out if necessary. The thickness of the wooden rim maintains the valve in its normal position, as will be seen in Fig. 1, until it is held there by the nut provided for that purpose. The dismountable metal rim, owing to its thinness, cannot serve to guide the valve in position, consequently when the lugs are being fixed there is a danger of dragging the tube and throwing the valve out of true, as shown on Fig. 2. It is an experience well known to cyclists. When the dismountable rim is fixed on the wheel the twisted valve stem is forced into an upright position, with the inevitable result that the air chamber is strained and bursts later or is torn immediately.

Four Sources of Light in a Single Lamp.

A quadruple lamp which should prove useful to automobilists is described in *Omnia*. It provides four practical methods of lighting: an ordinary carriage candle, held by a spring; gasoline by means of a Pigeon safety lamp; acetylene, by inserting a burner; electricity by butting in a small bulb. Each of these four can be slipped into position without the use of any tools or any adjustments whatever. The lamp is strongly constructed in brass and guaranteed not to blow out in any wind.

How to Fix That Troublesome Little Nut.

The automobilist who is troubled with nuts that will work loose despite the frequent use of a key need not search far for a remedy. Paint the end of the thread or drop on a little varnish and the small annoyance will be at an end. A single drop of solder will be equally effective. To slacken the nut a little extra force will have to be used, but it is not sufficient to cause any damage to either the nut or the thread.



"PARTY CAR" CONSTRUCTED BY A MASSACHUSETTS DEALER.

NEW SOURCE OF PROFIT FOR GARAGE KEEPERS.

That there are other methods of increasing the income beside that derived from selling and repairing cars does not seem to have occurred to the majority of garage keepers. Most of them do more or less renting business, to be sure, but W. H. Marble, of Brockton, Mass., who handles the Winton, Locomobile, Cadillac and Columbia cars in his district, seems to be one of the first to realize the possibilities of a sightseeing car as a source of profit. He calls it a "party car," which is probably a far more apt designation for it in a small city, and the photograph gives an idea of how successful he has been in building one for himself, as it is his own work. It is provided with a four-cylinder vertical motor, rated at 40 horsepower, and on a recent trial trip made 82 miles at a good rate of speed without a stop for repairs or adjustments.

The transmission consists of a planetary gear and Mr. Marble has introduced an excellent feature by providing a special clutch between the motor and the gear, so that when the motor is running with the car standing, the gear is idle, thus eliminating the noise and attendant wear on the gear. The wheelbase is 13 feet and the length over all 17 feet 6 inches. The ignition is of the high-tension type, while the lubrication is taken care of by a Hill Precision oiler. Five seats are provided, and these, in addition to the driver's seat, give it a capacity of 22 passengers. The car was designed and built for renting, but it has worked so well and come in for so much favorable comment that Mr. Marble will probably build duplicates of it to order.

CONSIDERS WOMEN MOST CAREFUL DRIVERS.

John W. Haynes, well known as a driver of racing cars, and the assistant sales manager of the Dragon Automobile Company, has the following to say about the driving of cars by women:

"I have observed that women who learn to drive cars are as a rule exceptionally capable after they have mastered the mechanical details of the work. It is true that they are not as daring as men in all emergencies, but this, to my mind, is rather a recommendation than a drawback. Most men take too many chances with cars. Judgment may be good with them nine hundred and ninety-nine times, but the thousandth chance taken is apt to be their downfall.

"A woman does not take chances, and she brings her car and its human freight home without damage. None of the accidents which the newspapers "play up" with inch-long headlines occur when women are driving. Someone recalled this fact the other day when a number of experienced drivers were discussing the subject and a veteran of the industry who was there remarked that not only was this true, but it had been his experience that the cars which he had sold for women to drive had been the subject of less repairing than those which were driven by men, particularly by professional chauffeurs. One reason for this, he thought, was that women did not try experiments with cars. When the cars were running well they usually let them alone. This, he thought, was an exceedingly desirable trait."

ONE MAKER ON SEALED BONNET TESTS, ETC.

"I cannot see," says Henry Ford, "what is proved by a contest in which the bonnet is sealed, but the drip pan may be removed so that practically any operation can be performed except actually taking the motor apart and reassembling it. Tests in which no account is taken of adjustments made or parts replaced can have no real value in the eyes of practical men—and any person who has driven a car one season cannot be misled very far in such matters. Seems to me these stunts which are so much in favor just at this time belong to the same category as those fool photographs showing a car submerged in a stream so that the carbureter must be full of water and the ignition system so drenched it will be out of business for several hours. Such pictures fool no one so much as the persons who go to the expense and trouble of taking them—and cleaning the carbureter afterward.

"The only test that tells anything is one in which the rules are such that only one car can win, and where the element of chance is reduced as much as possible. Many cars of indifferent quality run for weeks without adjustment of any kind, and a sealed bonnet would not alter the conditions or the result; while, on the other hand, the best car ever made may call for adjustment at any moment—it's all a matter of 'chance, accident and circumstances,' as Colonel Ingersoll used to say."

THROUGH ACRES OF CORN AND TOBACCO.

WASHINGTON, D. C., Sept. 1.—Within a radius of 50 miles of Washington are many interesting and picturesque one-day tours, but these have become so familiar to Washington automobilists that a new short tour has long been sought. It has remained for Wallace C. Hood, manager of the Motor Car Company, local agents for the Peerless, Thomas, and Stevens-Duryea, to blaze a new tour. It is to Chesapeake Beach, located on the shores of Chesapeake Bay, some 40 miles from the National Capital, and while it is a strenuous trip, the scenic features en route will more than compensate those who may make the trip.

Good roads are encountered until Upper Marlboro, Md., is reached, this point being about half way. From there on to the beach the roads are very sandy and in some places are so narrow that two cars could not pass each other if they happened to meet. The soil is very rich and many acres of corn and tobacco, the staple products of the region, are passed. There is plenty of woodland and a number of streams, together with quaint old colonial houses and rail fences, to add to the picturesqueness of the scenery, which is prevalent in Anne Arundel county, where the old well shown in the photograph is located.

A 45-horsepower Peerless touring car was used in making this trip, and as it was the first automobile that had ever been over the road between Upper Marlboro and the bay, the car and its occupants naturally attracted much attention.



THE PEERLESS HALTS NEAR THE "OLD OAKEN BUCKET."

LETTERS INTERESTING AND INSTRUCTIVE

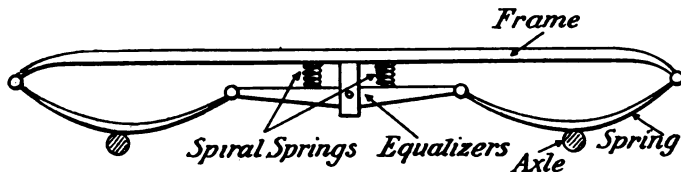
WHY EQUALIZER SPRINGS ARE NOT USED.

Editor THE AUTOMOBILE:

[880.]—Will you kindly advise me the reason why equalizers are not used to absorb road shocks when a car is equipped with semi-elliptic springs? They are in successful use in railroad service on cars that are equipped with only four wheels. A SUBSCRIBER.

Watertown, S. Dak.

Apart from certain structural difficulties in the application of this type of suspension to an automobile, the rear wheels of which have to take the driving effort while the front wheels are steering, there are radical differences in working conditions which make the equalizer unsuitable for other than railroads. Running on a rigid steel bed of unvarying surface, the springs of a railroad carriage are only required to absorb a minimum of vibration and their deflection is kept within well defined limits. The effect of the equalizer is to distribute a vibratory wave over a larger area, thus reducing the disturbing movement communicated to the suspended vehicle. Practically the equalizer



SKETCH OF THE EQUALIZING ARRANGEMENT PROPOSED.

amounts to a three point suspension, and as such gives good results when used under fixed conditions. In the automobile the problem is entirely different, the springs working under much more strenuous conditions, frequently on bad roads and at high speeds being called upon to furnish their maximum deflection. To put it in a simple manner the equalizer would be too good for the rougher work of an automobile; road shocks, which under the standard system of independent springs can be absorbed by the one spring receiving the shock, would be distributed over the entire chassis, causing an excessive oscillation injurious to the driving mechanism and dangerous for the stability of the car. The crux of the matter lies in the differing conditions under which the two classes of vehicles work, the railroad carriage being subject to short vibratory waves and the automobile having to withstand sudden shocks and lateral thrusts communicated not only to the body, but to the driving mechanism. To apply this method of suspension without redesigning the entire automobile would, as can readily be seen, result in considerably shortening the wheelbase for a given length of body, a change which would not be beneficial to the life of the engine or the comfort of the passengers, as everyone is aware who has made comparisons of the ease of riding on a well-centered body and one in which the seats extended far behind the center of the springs.

INFORMATION ON SOLDERING ALUMINUM.

Editor THE AUTOMOBILE:

[881.]—Will you kindly let me know at your earliest convenience in which issue of your Journal I can find your solution for soldering aluminum? And oblige, C. L. SCHAEFER.

378 East 161st street, New York City.

A solder which will work well with aluminum is: Tin, 10 parts; cadmium, 10 parts; zinc, 10 parts; lead, 1 part. The pieces to be soldered must be thoroughly cleansed and then put into a bath of strong solution of hyposulphate of soda for about two hours before soldering. Another solder may be formed with 80 per cent. tin to 20 per cent. zinc, using a flux composed of 80 parts stearic acid, 10 parts chloride of zinc and 10 parts chloride of tin. An announcement of a specially prepared aluminum solder appearing on advertisement page 80 of our issue of August 22 may be of interest to you.

ADVANTAGES OF INCREASING WHEELBASE.

Editor THE AUTOMOBILE:

[882.]—We would be pleased to have you tell us through your columns regarding a long and short wheelbase. Suppose you had two automobiles, each equipped with the same machinery, such as engine, transmission, and so forth, but one was of 100-inch wheelbase and the other was of 96-inch wheel base, the weight of both machines being the same. Now the question arises, which machine pulls the hardest?

In other words, does a long wheelbase require more horsepower than a short one, considering horsepower and weight the same in both cases?

CRESCENT AUTO & SUPPLY CO.

St. Louis, Mo.

Less horsepower is required to move the same weight of car over uneven surfaces when distributed over a long wheelbase than a short one, for obvious reasons. When striking an obstruction, a car with a short wheelbase is usually lifted bodily in the air, which causes it to lose a great deal of its momentum and this lost energy must be made up before the car can attain the same speed as it was running at before striking the obstruction. It is as if the short wheelbase car tried to batter down everything in its way while the long wheelbase car glides over it easily by reason of the interval elapsing between the time the front and rear wheels strike the same point. Such a slight difference as you mention would hardly be appreciable, and it could not properly be stated that one machine *pulled harder* than the other; merely that the long wheelbase machine would be able to make much better speed, particularly over rough roads, with the same amount of power as employed in the shorter car.

"AUTOMOBILE" SIGNIFIES "SELF-MOVABLE."

Editor THE AUTOMOBILE:

[883.]—Kindly advise me in the next number of "The Automobile" the meaning of the word "automobile" and its origin. Does it cover all classes of road vehicles, propelled by a motor or engine?

By answering the above, you will greatly oblige,

New Durham, N. J.

R. DUNCAN HUNTER.

Probably you have searched in vain for the word automobile in a standard dictionary of the English language. To get the word's correct dictionary value one must turn to a French volume, for the word, like the thing it represents, comes to us from across the Atlantic. Primarily the word is an adjective, there never being any record of its use as a noun until the last few years. Its derivation is from the Greek *auto*, meaning self, and the Latin *mobilis*, movable. When the motor vehicle first appeared it was called in France a *voiture automobile*, or an automobile carriage. In time the word *voiture* ceased to be used in connection with automobile, the adjective passing into the French language, and later into the English, as a substantive. Etymologically to speak of a vehicle as an automobile is incorrect; we should say an "automobile vehicle," carriage, wagon, etc. Few of us, however, will be willing to employ the double term of the etymologist when the idea can be so well represented in a single word. "Automobile" may be taken to apply to all classes of self-moving vehicles of a great many different types.

WHY NOT SLEEP IN THE TONNEAU?

Editor THE AUTOMOBILE:

[884.]—Will you satisfy my curiosity and desire for information on the following subject?

Being an enthusiastic believer and user of automobiles and much interested in touring, even under the adverse conditions encountered in many parts of the South in the way of sandy roads, I have often thought why, in the construction of touring cars, couldn't the back of the front seat be securely hinged so as to swing backwards and down, thereby with a few fittings quickly converting one's car into an "Impromptu Pullman sleeper" for the accommodation of at least two persons? Such sleeping facilities while on the road would, in many instances, be far preferable to the best that many country houses, and so-called inns, could furnish. Even in in-

clement weather, with the automobile fully equipped with top and an ample curtain protection, two tourists could spend the night within the curtains of the auto far more comfortably than in many camping tents.

I do not know of any cars thus equipped, nor of any reasons that would prevent a car being built in this manner, so am led to write you as above, under your department "Letters Interesting and Instructive." I would be glad to know whether you consider my idea worthy of comment in your paper, and if you think it practicable.

WALTER SPRUNT.

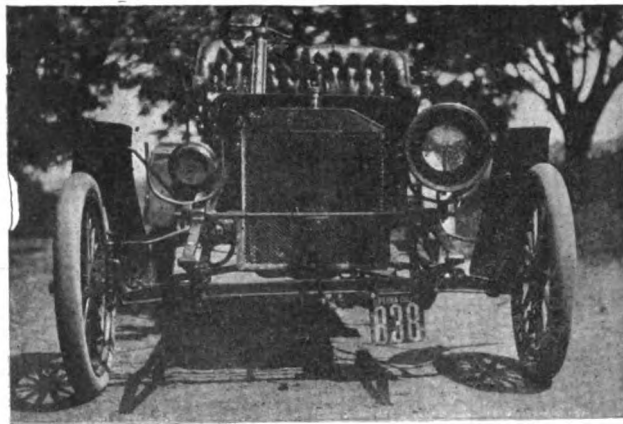
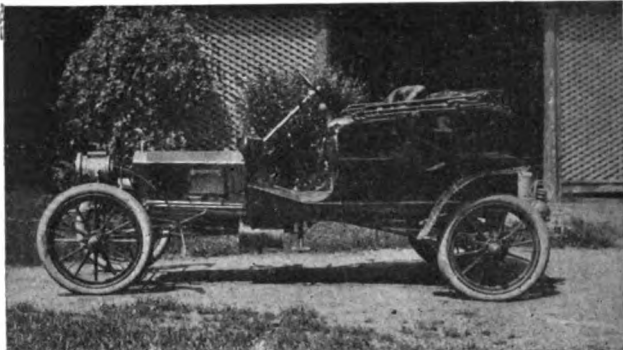
Wilmington, N. C.

This has been done in the case of one or two cars that have been used on long tours, while others have fitted their cars quite elaborately in this respect, one used for a hunting trip having accommodation for four persons. If there were sufficient demand for them, doubtless such bodies would be turned out in quantities, but as it is, recourse must be had to the carriage-maker and the individual ideas of each owner embodied in his creation. The idea is perfectly practical.

ALTERING THE FRONT SPRING SUSPENSION.

Editor THE AUTOMOBILE:

[885.]—The photographs which accompany show how my Ford car looks after I changed the front spring suspension. As a result of the alteration the wheelbase has been increased by fifteen inches, and I can safely assert that the car rides fully fifty per



FRONT AND SIDE VIEWS OF THE SUSPENSION IMPROVEMENT.

cent. easier. Any Philadelphia owners wishing to make a similar change in their cars can write to me, and I will gladly furnish them full particulars, showing them how to improve their cars as I have done.

S. H. CROFT.

Philadelphia, Pa.

SOME QUERIES ON MISCELLANEOUS TOPICS.

Editor THE AUTOMOBILE:

[886.]—Your answers to the following questions will oblige a constant reader:

1. Why could not the spark be advanced automatically; i. e., by a centrifugal governor, and the engine control be by throttle alone? What are designers' objections to this method?
2. What is the cause of the hum in high-class American and foreign cars? I do not mean the noise caused by the chains, but the humming sound which seems to come from the engine.
3. What is meant by "1-8 inch female thread?"

C. M.

Chicago, Ill.

1. This has been done in a number of cases and probably there are still cars built that embody this feature. So far as we know, there is no objection to it, either theoretically or in practice. It is simply one of those superfluities that introduce needless complication, particularly as very few cars nowadays are fitted with a governor of any kind. Moreover, with the magneto, which is daily becoming more and more prevalent as a means of ignition on both American and foreign cars, there is very little need of altering the position of the spark lever, except to start.

2. The high speed at which the flywheel turns is doubtless responsible for the hum you mention, although the fan is also a contributing factor. Any body revolving at a very rapid rate will give rise to it and it is particularly noticeable with electric motors.

3. The dimension, " $\frac{1}{8}$ in.," refers to the diameter of the tube, pipe or other part in question, while "female thread" means that it is threaded internally instead of externally.

THE GREASE THAT TRACY USED IN 1905.

Editor THE AUTOMOBILE:

[887.]—Some time during the fall months of 1905 I purchased a ten-pound can of gear case compound for lubricating sliding gears. I found it very good, and want more of the same stuff. I don't remember where I got it or what the name of it was. Can you help me out? I saw the "ad" for the stuff in "The Automobile," and I remember the "ad" said that the compound had been used by Tracy in the gear case of the Locomobile in the 1905 Vanderbilt race. I want more of this lubricant, and want it bad, and if you can give me any information through your "Letters Interesting and Instructive," you would greatly accommodate,

Lebanon, Pa.

Mr. Tracy advises us that so far as his memory serves him he used Albany grease on his Locomobile racer in the 1905 Vanderbilt Cup race. The address of the makers of this lubricating compound will be found in our advertising pages, though it is probably kept on sale by all supply stores and garages.

BOTH MAGNETO AND CARBURETER AT FAULT.

Editor THE AUTOMOBILE:

[888.]—Probably you will recall my writing of a very annoying form of trouble that I experienced with my car for some time last season, and which I tried in vain to remedy, even to the extent of calling several alleged automobile experts to my aid. These gentlemen are more or less well known, so I will refrain from mentioning any names. They came, saw and looked very wise. One brought an assistant with him and spent two days in tearing the car down and putting it together again, and then departed. The other contented himself with making sundry suggestions, running the car about and looking wise, in the course of which he almost succeeded in making mince meat of a bob-sled full of children who were coasting down a hill. He continued to look wise, but likewise departed without having left anything of definite value behind in the way of a diagnosis, though I will add that neither of these experts has ever sent me a bill of expenses for his valuable services.

Later on I had an old friend who is an automobile engineer come to look at the car, and he determined almost immediately that the ignition was at fault. The four-volt storage battery with the jump spark had never given satisfactory service, as compared with the make and break, and he found that on setting the magneto gear three teeth ahead a very much better spark was obtained. He then devoted considerable time to adjusting the spring on the auxiliary air intake of the carbureter, accomplishing this by running the engine slowly and holding his hand over the inlet, gradually removing it so as to give more or less air; then speeding the engine up and doing the same thing. For instance, if he found the engine ran better with his hand away from the inlet, it indicated that more air was required, and the spring was adjusted accordingly. He finally got the car so that it ran very well except that it "bucked" when the throttle was opened suddenly.

He advised me to try a Schebler carbureter, stating that his company had had excellent results with it, and I finally bought a 1-inch size and put it on. Have had absolutely no trouble since, the car running as well as it ever did. The fault would seem to have lain, therefore, in the fact that the engine did not get a hot enough spark from the make and break; and secondly, that it did not have the proper mixture. My friend examined the valves carefully and found that they were set correctly, so that the only place to look for the trouble lay in the ignition and carbureter, both of which were found to require adjustment.

W. E. I.

Passaic, N. J.



WHERE THE ROAD ACROSS THE "LLANO" RUNS STRAIGHT AS THE PROVERBIAL CHALK LINE.

ROSWELL, N. M., Aug. 22.—Persons living within a radius of 200 miles of great cities, where hard roads, interurban trolley lines, and fast passenger train service are commonplace incidents of everyday life, can scarce appreciate just what the automobile is doing in the upbuilding of the great Southwest country. In the East one is accustomed to associate the auto more often with social life than with business, but how it is answering the call of duty in the sterner and less complex civilization of New Mexico would be an eye-opener to readers of THE AUTOMOBILE, could they but see for themselves.

Away down on the semi-arid, mesquite-covered plains of New Mexico the whirl of the motor startles the antelope and the prairie dog. Its coming, however, is the result of no chance or accident. This is a daily event—the flight of the Roswell motor stage—and you may easily picture the contrast to the days of the overland stage and the pony express. Across this dry, barren stretch of country from Roswell to Torrance, two thriving towns in the irrigated section, is 111 miles. The automobile stage makes the round trip in 11 hours and 30 minutes, actual running time. J. F. Stockard, Mayor of Roswell, was a believer in automobiles: He conceived the idea of establishing the stage line running between the two towns, but he was told that such a thing would be impracticable. How often has that advice proved untrustworthy where the automobile was a factor!

But here was the situation that confronted Mayor Stockard. The main line of the Atchison, Topeka and Santa Fe system goes over the Raton mountain range 150 miles north of Roswell. To go from any point on the main line of the Santa Fe to any point in the Pecos valley of New Mexico one must journey as far east as Trinidad, then cross the plains to Amarillo, Tex., and then go southwest on the Pecos valley line. It is a day's journey from Amarillo to Roswell. Mr. Stockard's motor stage line bisects this big railroad triangle. Its terminus is Torrance, where it connects with the Santa Fe Central line. It reduces the time necessary to make the journey from Roswell to Albuquerque more than twenty-four hours. A corresponding reduction is made in the time required to make the journey to other points in the territory.

"Our line was started in November, 1905," Mayor Stockard said a few days ago. "We made our own roads with the use of a drag—a plow-like arrangement that cut out a path twelve inches wide for the wheels, leaving an unbroken strip of ground in the middle of the road. We are now oper-

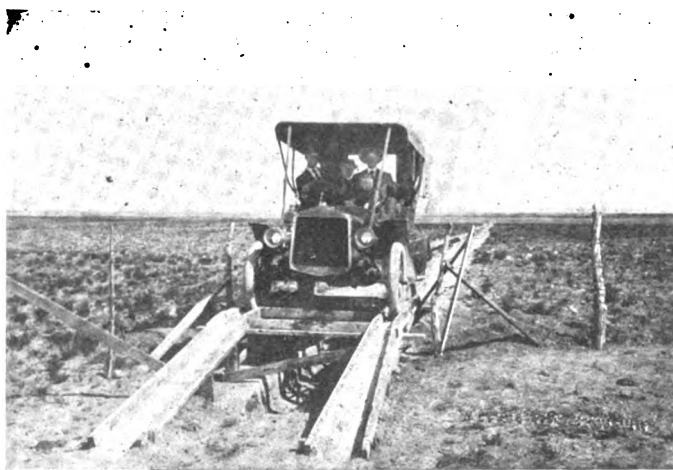
ating six cars—four Buicks, one Winton, and one car we manufactured ourselves. In May this year we handled 247 passengers and in April 184. The average cost of operating a car over the line is \$12 per round trip. The fastest time we have ever made from Roswell to Torrance, a distance of 111 miles, is 3 hours and 45 minutes."

At the suburbs of Roswell the chauffeur turns abruptly from the public road. The big machine goes slowly over a curiously constructed fence-row crossing. It is built on the plans of a railroad cattle-guard, except that where the steel rails are laid on the railroad crossing there are on Mr. Stockard's unique crossing grooved runways, upon which the wheels of the automobile run in making the crossing. Across the sand-swept, mesquite-covered lands, which stretch away for an infinite distance, Mr. Stockard has laid out the road as "straight as the crow flies." There are few curves and but few depressions to bridge. One of the largest is seventy-five feet across. It is spanned by a bridge built by Mr. Stockard. It, too, is something new in the automobile bridge line, and was illustrated and described in THE AUTOMOBILE, August 2, 1906, page 137.

Fifty-four miles from Roswell is the half-way house, where Mr. Stockard maintains a free hotel for his patrons. The ride is for the most part across a desolate, dreary plain, here and there a tract of ground in cultivation, or perhaps a ranch house to relieve the monotony of sand and mesquite brush. It's a cool, invigorating ride, however, except where the sun beats in on unprotected face and hands.

It's only after you've made the trip over the line and seen the country that the significance and the utility of the automobile as a means of transportation come home to you. Comfortably seated in the tonneau of one of the cars, you may figure on the schedule with the same assurance that the passenger on the fast railroad train from New York to Boston enjoys. A car operated in this country seems to catch something of the spirit and atmosphere of semi-desert land—if that were possible. At any rate, these same engines whirl and thump over the trail in an unfaltering manner, day after day, the year around. Ask a denizen of the Pecos valley country about the automobile, and ten to one he'll reply, "Ever ride on the Roswell stage?"

Next time you go auto riding through the park, remember what the automobile is doing 'way down in New Mexico, and rejoice that you are an automobilist.



BRIDGES THAT SPAN THE WIRE FENCE ROWS.



STEAM_RACER'S STARTLING CONCLUSION OF THE 1907 ORMOND-DAYTONA MEET.

TWELVE months after any important automobile race even the most diligent search fails to account for all the machines which aroused the enthusiasm of the public by their mighty bursts of speed. There is always a certain proportion of dead and vanquished, diminishing considerably in recent years, and a number which sneak away to the factory never again to breathe the pure air of the highways. Even those that finish the public test in perfect health and condition are forgotten of the public in a few short weeks, and are frequently strangers to their maker, hard pressed by more modern problems, at the end of a few months. Rich enthusiasts snap up the victors and hie away with them to distant parts of the world; some are dismantled, parts being used for building later machines, and some lie idly around the factory, pointed out to an occasional visitor as the machine which did such and such a record.

The chief French factories could, unitedly, produce a small battalion of discarded racers of every conceivable nature, some of them fit for service, others a mass of junk. Renault Frères, for instance, make a point of not selling their racers, and in one corner of the Billancourt factory can be found the machine with which Szisz captured the Grand Prix, the trio which carried the firm's colors in the Gordon Bennett of the preceding year, and this year's team built specially for the Grand Prix.

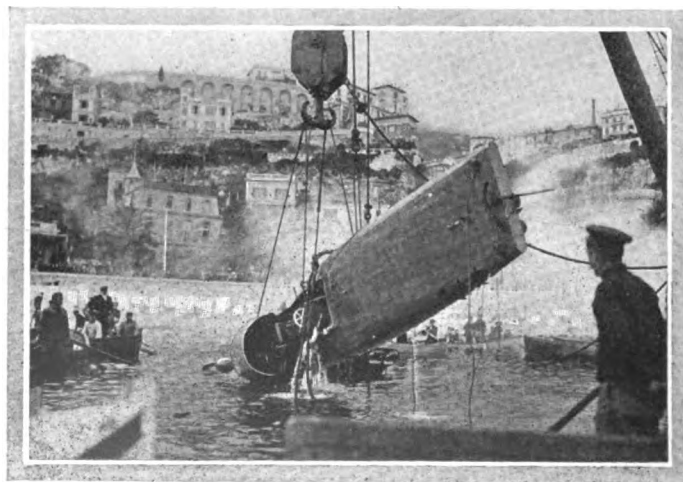
They's Flyer Now Carries a Russian Potentate.

Where is the powerful, regular Richard-Brasier with which Théry astounded the world by winning four successive contests against fearful odds? For a time she was on exhibition in the firm's store on the Avenue de la Grande-Armée. But even a Gordon Bennett winner is only a seven days' wonder, and the blue monster was withdrawn to make place for a more brilliantly-polished specimen. A letter from Rome, under the signature of the Count Soldatenkow of the Russian Embassy, indicates that he is the present owner of the racer, that he has just used it for a long journey from Paris to Lyons and Monte-Carlo, Aix-les-Bains, the crowded Corniche, dusty Genoa, and the still dustier Italian roads to Rome. A crowded bridge and rather too much speed resulted in the demolition of a wall and the Gordon Bennett radiator. The accident did not prevent the journey being continued and a record obtained at the Verona meeting. One of the companion engines is reported to have been used in the

famous *Trefle à Quatre* motor boat, which took fire and sank in Monaco bay in 1905. When brought to the surface the hull was found to be ruined, but the engines were none the worse for their fire and water test. Some time later the motor was sold, but even the Brasier people have lost all trace of it. Barillier's Brasier Grand Prix racer, which figured on the Sarthe circuit last year, can now be found in Harry Payne Whitney's garage on Long Island, or on the neighboring roads, where it is doing service as a runabout. Other Brasier racers are doing daily service in Austria, Russia and France, it always being the policy of the Brasier firm to sell their machines immediately after the race in which they took part.

England Took Darracq's Masterpiece to Its Leafy Highways.

The eight-cylinder Darracq, the fastest gasoline car in the world, is of too recent fame to cause any difficulty in searching for it. After Heméry had driven it in France and Florida, it went back to the factory, and was later sold to Lee Guinness, the British millionaire brewer, who takes it out for an airing in some hill climb or kilometer test from time to time. We believe that it is not true that he uses it as a week-end runabout. British ideas of speed on the national hedged-in highways are somewhat conservative. The Darracq racer with which Heméry secured the Vanderbilt Cup for France for the second time is now doing runabout service with S. B. Stevens, of Rome, N. Y. Wagner's Vanderbilt Cup winner was modified to suit the conditions of the German Emperor's Cup race and has competed in several European races this year. Frequently a prominent racer is called upon to submerge its identity in the new season's product, manu-



RESCUING A BRASIER RACER FROM A WATERY GRAVE.

facturers finding it more profitable to perfect some defective organ or strengthen some weak point than to build an entirely new model.

Some Doings of America's Foreign Legion.

In the last Gordon Bennett race on the Auvergne circuit, America had three representatives, a couple of Pope Toledos and Joe Tracy's Locomobile. Herbert Lytle's machine, which had the honor of being the first to officially finish in any European international contest, was driven by Dingley in the Vanderbilt race of the same year; later it was put on a runabout chassis and is now ending out its days about the factory. Dingley's Pope-Toledo Gordon Bennett racer has had a more varied career. After its return from France it was converted into a track racer, figured in a number of local events, and appeared nightly on the stage of the Broadway Theatre in "The Vanderbilt Cup." Lytle's 1906 six-cylinder Vanderbilt racer has been condemned to the more unemotional work of driving a motor boat in New Jersey. Tracy's 1905 Gordon Bennett Loco is still in existence, though parts of it have been used in the construction of the Locomobile Company's 1906 machines. It is, however, in such a condition that it could be put into shape for running in a very short time. The two 1906 Locomobile Vanderbilt racers have been visiting shows in various parts of the country. One of them was used by Mr. Tracy as a runabout from the time of the race until January last. Their racing days are not yet over, for should there be another Vanderbilt race both machines would be put into commission for the event.

America's Irish Gordon Bennett racers have not had a long life of usefulness. The engine of the Peerless, which E. P. Moore drove on the Emerald Isle, was placed in the Green Dragon No. 1 and driven in a number of track events by Barney Oldfield. At the St. Louis meet of August, 1904, Oldfield, as will be remembered, crashed into the fence with such disastrous results that it was not thought worth while to reconstruct the flyer. The Winton machines driven by Alexander Winton and Percy Owen in the Irish event had an even shorter career, being sent to the factory after the race and never leaving it.

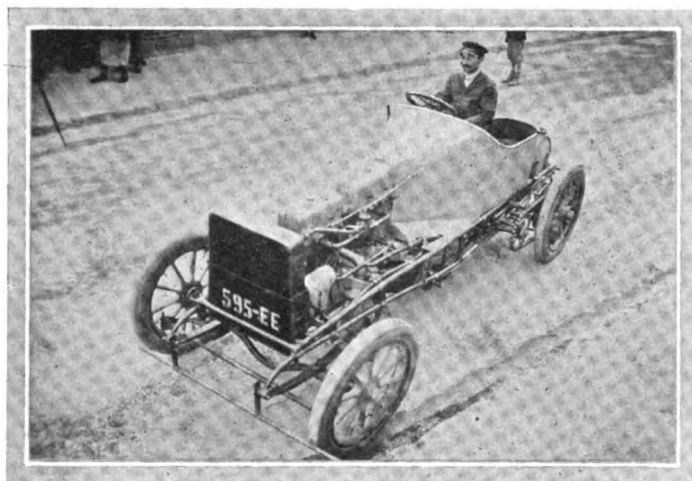
Henry Ford's "999" a Pensioner in California.

"999," which once held a world's record, and often fascinated the public by its remarkable speed, is vegetating in Los Angeles or Santa Barbara, Cal., in the hands of some private owner whose name cannot be found on any records. When Tom Cooper sold "999" it passed entirely out of the hands of the Ford company. "999" was remodeled, but has not been credited with any sensational performances since rebuilding, the reason being, says Mr. Ford, that the weight of the car was nearly doubled in the improving process.

When the Stanley steamer hurled itself to destruction in the closing act of the Ormond-Daytona meet of the present year the grande finale was reached in short-distance automobile sprints. In its own special field the Stanley was king; second after second had been stripped off world's records; gasoline admitting defeat on mile and kilometer courses. Marriott opened out the powerful engine for a final sprint, the fastest the world has ever seen, in the opinion of all eye-witnesses. It proved to be the last, and when the wreckage had been gathered up Stanley declared that there would be no successor.

Marine and Aerial Service for Panhard Engines.

A diligent search fails to record many traces of the big fleet of Panhard racers, which ever since the introduction of automobiling have shown themselves worthy competitors. Panhard-Levassor's of early 1892 are still to be found as cherished relics in certain corners of Paris, but racing models of the machines most famous for their longevity are rare. The world's motor boat record, it is interesting to note, was secured this spring at Monaco by a couple of motors which commenced their road career on two Grand Prix 1907 racing machines. The automobile which won



OLD GOBRON WHICH WILL NOT LEAVE RACING RANKS.

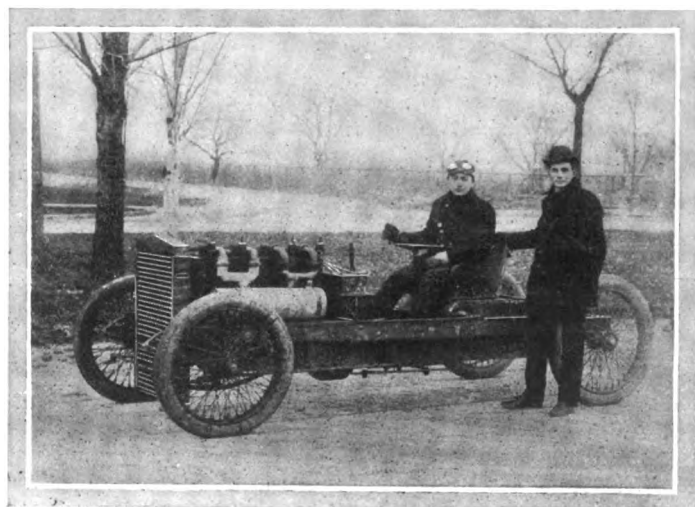
the Paris-Bordeaux-Paris race of June, 1895, is still in existence in Paris. A Panhard "racer" of the middle ages of 1892 is also in the possession of a satisfied Parisian. Its public appearances are now confined to state occasions. But a few days ago France's first military steerable balloon sailed out to Rambouillet to pay an official morning visit to President Fallieres, waiting in the grounds until the return was ordered with the docility of a well-groomed automobile. It was a 70-horsepower Panhard motor, formerly on a racing car, which drove the first unit of the nation's aerial fighting fleet.

Gobron Five-Year-Old Still Running in Public.

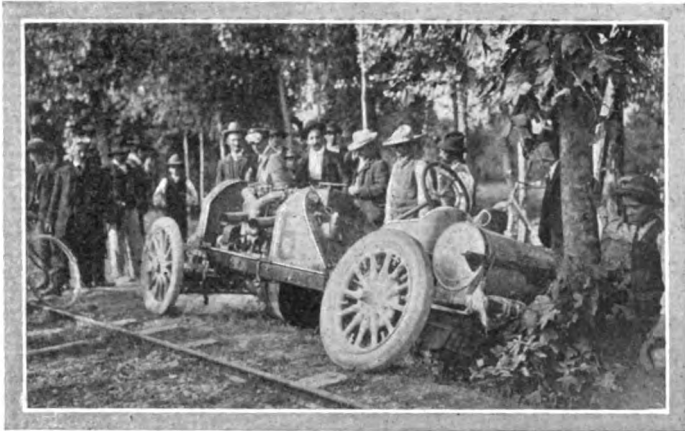
A good example of long racing service is to be found in the Gobron-Brillié which ran in this year's Grand Prix. The machine figured in the Château Thierry hill climb of 1903, took part in the last Gordon Bennett, in the 1906 Grand Prix, and, despite its four years' active service, was considered capable of competing with machines of the present season without any material changes.

The Packard Grey Wolf can equal the French machine for longevity. Produced in 1903, it figured in numerous race meets, sometimes with unrehearsed effects, was sold to E. H. R. Green, of Terrell, Tex., entered in several races, went through a fence and was sold to Seth Miller, of Dallas, Tex., who converted it into a runabout. Latest reports are that it is still in good health and performing regular service.

Mercedes machines, like the successful Brasier racers, have nearly all been sold to private owners. Jenatzy's racer, with which he captured the Gordon Bennett Cup in Ireland in 1903, was destroyed by fire at the Canstatt factory, together with its



VETERAN "999" IN THE HEYDAY OF ITS YOUTH.



A CHECK, BUT NOT FINALITY, IN AN ITALIAN'S CAREER.

team mates. The machine was at that time the property of the late Clarence Gray Dinsmore. One of Mr. Dinsmore's many Mercedes racers was sold to the German Emperor, in whose service it still remains. Probably on a close search many of the earlier racers of the pioneer German firm could be found in private service, a racer of 1900 being a sober tourist of 1907. As the power of racing automobiles has increased it has not been so easy to convert a flyer into a tourist; thus specially built machines for such events as the Grand Prix or Vanderbilt races are obliged to remain in racing ranks.

Fiat racers have not generally done other than speed work. Lancia's Gordon Bennett racer, with which the dashing Italian ran such an exciting contest against Thery's Brasier, finished that memorable day disabled on the brow of a hill in wild Auvergne, while the Frenchmen yelled their victory all night long in the town down in the valley. It was Nazzaro's machine, second in the last Gordon Bennett race, that Chevrolet reduced to a shapeless mass while training on the Vanderbilt course one foggy morning in 1905. The substitute machine which he handled in the race also received rough treatment, but not such as put its life in danger, for it is now in runabout service with Mr. Barron of Boston. All the 1906 Fiats which came here for the Vanderbilt race went back to the factory, among them the one from which Dr. Weillschott took his record flying jump, and have been used to prepare for this year's European races.

Ill Luck Often Shortens Promising Careers.

There is some pathos attached to the C. G. V. which Girardot constructed so carefully and tuned up so conscientiously for the Auvergne race. During the French elimination trials two front tires burst simultaneously on a straight stretch. Girardot was carried off to the hospital apparently a complete wreck, and his machine left by the roadside in no better condition. A strong constitution enabled the man to recover and mechanical skill put the machine in racing trim once more. It was entered for a race; Girardot, on crutches, hobbled up to the starting line to watch his favorite make another rush for glory. The driver was nervous; he raced his engine and threw in his clutch, causing the machine to jump ten yards and fall like a log. Something in the nature of a sob escaped Girardot as he turned around and, with drawn features, shuffled away from the scene of the disaster. The wreck is still at the factory.

No one who saw Christie's front driver after it embraced the telegraph post on Long Island would have imagined that there was any more life in it. But there was. The cylinders were used for the new machine which, after a too brief tuning up on Long Island, was shipped across the Atlantic to join its voice in the international concert on Dieppe's fast circuit. Brighton Beach has since seen a record sprint by the Christie; probably numerous other tracks will be the scene of its wild flights before the 1906 cylinders cease to inhale explosive charges.

THE NEWS FROM TENNESSEE.

CHATTANOOGA, TENN., Aug. 31.—Prospects were never brighter for a flourishing season than they are now for the season of 1908. The roads of Hamilton County have been greatly improved within the last few months, thus giving Chattanooga autoists many miles of perfect roads, in addition to the fine Chickamauga Park and Missionary Ridge boulevards. The livery business is flourishing, as a great many tourists passing through the city desire to see Lookout Mountain, Missionary Ridge and Chickamauga Park.

While the present trouble with the Georgia officers in regard to the strict Catoosa County speed law was at its height many Chattanooga automobile owners did not go into the "Cracker State," but toured north on the beautiful Daisy road, through Daisy, Soddy, Retro, Sail Creek, Graysville and Dayton, a distance of fifty miles, the round trip being a good day's run.

We have six automobile companies in the city at the present writing. The two largest are the Chattanooga Automobile Company, handling the Franklin and Cadillac, and the F. G. Joyce Automobile Company, handling the Buick and Thomas.

The chauffeurs of Chattanooga are organizing the Chattanooga Automobile Chauffeurs' Association, which is expected to benefit the chauffeur and the owner, as it will not admit an unreliable man to the order nor work on a car driven by a man that is not a member of the association. The association will ask garage owners not to allow storage to a car driven by a "scab."

A single-cylinder Cadillac runabout recently surprised Chattanooga autoists by making the ascent of Walden's Ridge, partly a 15 per cent. grade and a distance of nine miles, at noonday with two men, one weighing 200 and the other weighing 140 pounds, in 39 minutes, the best previous time having been made by a large 20-horsepower air-cooled car in 36 minutes. E. W. Forstner, demonstrator for the Chattanooga Automobile Company, agents for the Cadillac, drove the car.

WHAT THE DUST TRIALS BROUGHT OUT.

LONDON, Aug. 29.—A further claim for the public support of Brooklands track has been made by the dust trials held there under the auspices of the Royal Automobile Club. It was only through the possession of a private ground of this nature that such accurate and valuable information could be produced.

With commendable promptitude the judges in the Dust Trials of the R. A. C. have got out their report. In this test a portion of the Brooklands track was covered with a half-inch layer of fine limestone powder and some 150 photographs were taken of the clouds raised when the competing cars ran over this prepared surface at a fixed speed. In the section for makers' cars of standard design the prize of a silver cup has been awarded to F. Coleman's 30-horsepower White. In the second class, for amateurs' cars, a 20-horsepower Stanley steamer was considered least offender. A third section comprised experimental devices, and these will be further examined before the awards are made. Not as much positive data as expected has been obtained from this trial, the only undoubted fact being that high construction with big road clearance effectually lessens the amount of dust raised, a belief supported by the above-mentioned success of the two American cars, which are, of course, much higher built than are British productions.

WHAT THE AUTO MEANS TO A POPULAR RESORT.

As an indication of the influence of the automobile upon the patronage of a well located and popular resort, it is stated that 324 automobiles Sunday last visited the Chateau des Beaux Arts at Huntington, L. I. This ideal resort, conducted by the well-known Bustanoby Brothers, was only opened early in the summer and it is yet to be entirely completed. Other resorts in the vicinity of New York report a gradually increasing number of automobile visitors, but the chateau seems to hold the record.

SEPTEMBER FINDS CLUB LIFE ENERGETIC

A GOOD ROAD AND LEGISLATIVE CONVENTION.

SPRINGFIELD, MASS., Sept. 1.—Arrangements for a convention to be held under the auspices of the Springfield Automobile Club in this city, September 24-25, are being perfected, when good roads and a sane use of them by autoists, and the plan of uniform registration of cars, will be the principal subjects for consideration. Efforts are being made to secure the attendance of delegates from all the automobile clubs in New England, New York, New Jersey and Pennsylvania, and invitations have been sent to the various State highway commissions. Individual owners of automobiles are also invited to attend. The Springfield club hopes to make the convention an annual affair.

The convention will be called together in some large hall to be selected on Tuesday of convention week, when papers will be read by the chairmen of the various State highway commissions, after which there will be open discussion of the papers presented. The matter of uniform legislation will also be considered. Tuesday evening a banquet will be tendered the guests, and on Wednesday the visitors will be shown the city and suburbs in automobiles.

Congressman Gillett has been invited to address the convention on national legislation for automobiles, and other prominent public men will speak on the same subject. Other speakers on special subjects will be William E. McClintock of the Massachusetts State highway commission; Paul D. Sargent, State highway commissioner of Maine; A. W. Dean, State engineer of New Hampshire; J. W. Votey, State highway commissioner of Vermont; John H. Edwards, Rhode Island highway commissioner; John H. MacDonald, State highway commissioner of Connecticut; E. C. Hutchinson, commissioner of public roads of New Jersey; Joseph W. Hunter, State highway commissioner of Pennsylvania; and State Engineer Skene of New York.

The members of the various State highway commissions have all been invited to attend the convention and participate in its deliberations.

ST. LOUIS OWNERS' RELIABILITY RUN.

ST. LOUIS, Sept. 1.—What promises to be the most interesting run of its kind ever attempted in the Mississippi Valley is scheduled for September 21, under the auspices of the Automobile Club of St. Louis, with the title of the First Annual Owners' Reliability Tour. Start will be made at 10 o'clock in the morning on Lindell boulevard in front of the St. Louis club, and the route will be out the boulevard through the most picturesque roads of St. Louis county and over the best highways in a circuit of 86 miles which finishes at the starting point. It is the purpose of the committee to make the run a pleasure tour, so that contestants may be accompanied by members of their families. Professionalism will be eliminated and a commercial contest will be avoided. The prize to the winner will be a beautiful trophy donated by James Hagerman, Jr., who is chairman of the committee of arrangements. Roy F. Britton and Alden H. Little are the other committeemen.

BRIDGEPORT HILL CLIMB POSTPONED TO MAY 30.

BRIDGEPORT, CONN., Aug. 31.—The Automobile Club of Bridgeport has decided to postpone its proposed hill climb scheduled for Labor Day to Decoration Day, May 30, 1908. The reason given for the postponement is that so many of the club members are out of town on their vacations that it will be impossible to handle the matter as satisfactorily as is desired. The last hill climb at Sport Hill on May 30 was a great success, and all energies will be bent in making it a splendid annual event of national import each Decoration Day morning.

ADDITIONAL PRIVILEGES FOR A. C. A. MEMBERS.

NEW YORK, Sept. 2.—The Pequot Casino Association, of New London, Conn., has extended to the members of the Automobile Club of America the privileges of its clubhouse and grounds for the present season. The casino is situated on the west shore of New London harbor, easily accessible by automobile over good roads, is open all the year, with the exception of strictly winter months; has a number of sleeping rooms, a restaurant, and other conveniences. A. C. A. members can avail themselves of the privileges upon the presentation of their club card.

The Long Island Railroad Company has requested that the attention of A. C. A. members be called to the many gates at crossings which have been run into and broken by automobiles, and to the fact that these gates, when down, are always protected at night by a white light hanging thereon.

Owing to the expense of furnishing the jointed staff, A. C. A. members are notified that the price of the small club flag has been increased from \$1.50 to \$2.

Members are warned of additional speed traps at the following places:

New Jersey—Pleasantville, at the western end of the Atlantic City boulevard.

Pennsylvania—On the Trenton to Philadelphia road, on Pennsylvania side, ten miles south of Trenton, in Middletown township, Matamoras; over the Pennsylvania line, near Port Jervis.

New York—Nyack, on main street, in center of town.

Long Island—Amityville, in village limits; Cold Spring Harbor, in village limits.

INDIANAPOLIS CLUBS WILL NOT MERGE.

INDIANAPOLIS, Sept. 1.—The effort made a short time ago to effect a consolidation of the Automobile Club of Indiana with the Indianapolis Motor Club has fallen through, and the proposition to purchase jointly the property at Broad Ripple is off as far as the automobile club is concerned. A joint committee representing the two clubs visited the place recently and while the motor club committee was in favor of purchasing the property, the auto club representatives failed to see the advantages of a club so near the city for drives, yet too far away for a convenient stopping place. The automobile club at present has very desirable rooms in the Denison Hotel, where lunches are served daily. This location will probably be retained until a building is either built or purchased that will satisfy the demands of the organization.

The annual hill climb of the Automobile Club of Indiana will be held some time during the present month, but the date is not yet fixed. There is some talk also of promoting a 24-hour race.

OHIO'S STATE ORGANIZATION IS ACTIVE.

CLEVELAND, Sept. 1.—That energetic body of automobilists, the Ohio State Automobile Association, which has its headquarters in Cleveland, is making strenuous efforts to increase its membership, with the object of becoming an important factor this winter in securing increased appropriations for good roads and more equitable laws for automobilists from the State legislature. Secretary Hower has been personally working in different cities and towns, with the result that a number of clubs are in process of formation. Many unattached owners are also joining.

JERSEYMEN PLAN ANOTHER ENDURANCE RUN.

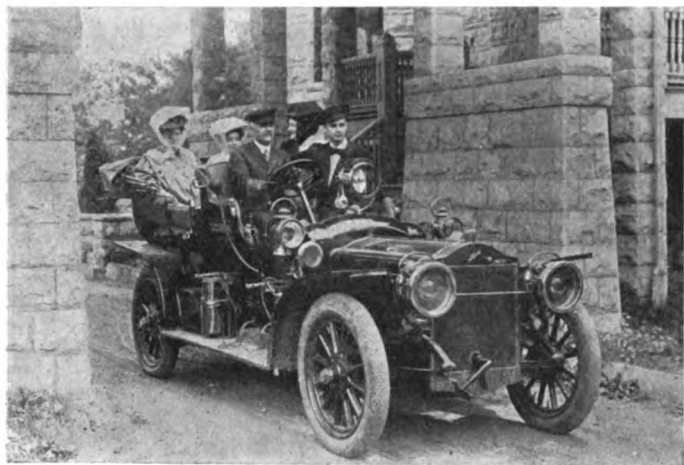
NEWARK, N. J., Sept. 1.—A somewhat similar contest to the three-day endurance run of last spring is contemplated by the New Jersey Automobile and Motor Club for election day, No-

September 5. Although the matter has not come officially before the club, Secretary H. A. Bonnell is sounding the members on the matter. His idea is an eighteen-hour endurance run, not over the best roads of the State, as was the recent three-day contest, but on poor roads, which would serve to test the cars better. The cars can be started the evening previous to the day of the contest and would be compelled to run all night without stop, finally checking in at noon on election day. If the plan finds favor among the local dealers, it will be brought up for consideration at the next directors' meeting, September 9.

Seventy-two new members have been added to the roster of the club since May, 54 of whom are active members and 18 of whom are associate.

ONE OF MISSOURI'S ENERGETIC CLUBMEN.

SPRINGFIELD, MO., Aug. 31.—Southwestern Missouri is making splendid progress in advancing automobile interests, largely through the vigor of the officials of the various clubs in this section of the State. The Automobile Club of Springfield has a president in William H. Horine whose energy is proverbial, and largely through his efforts the club has taken the position of



PRESIDENT HORINE AT THE WHEEL OF HIS THOMAS FLYER.

one of the most progressive organizations west of the Mississippi. Now that Missouri has a fairly equitable automobile law on its statute books, every effort will be put forth by autoists in this section for road improvement at the next legislative session.

MILWAUKEE WILL HAVE ORPHANS' DAY, SEPT. 5.

MILWAUKEE, Wis., Sept. 1.—Next Saturday, September 5, the orphans of the Protestant Orphan Asylum, the Catholic Boys' Home and those from St. Vincent and St. Rose's Asylums will be given their annual outing by the Milwaukee Automobile Club and the Automobile Trade Association. A ride about town will be taken and dinner will be served at Washington Park.

NORRISTOWNERS WILL HAVE NEW CLUBHOUSE.

NORRISTOWN, PA., Sept. 2.—The Norristown Automobile Club has decided to build a \$7,500 clubhouse on a plot of ground recently purchased on DeKalb street, in Norristown township, just outside the borough limits. Plans are being prepared for a brick building one and a half stories in height, with a 40-foot front and large veranda. The lot is 200 by 250 feet.

IOWANS HAVE A MUSK MELON FEAST.

DES MOINES, IA., Aug. 31.—The annual midsummer picnic of the Iowa Automobile Club was held last Sunday at the Prouty farm, a charming spot eight miles from this city. The club members and their friends were the guests of Cheney Prouty, who furnished musk melons galore, fresh from the vines.

THE AUTOMOBILE CALENDAR. AMERICAN.

Shows and Meetings.

- Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
- Nov. 2-9.....—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
- Nov. 29-Dec. 6.—Chicago, Casino Garden, Second Annual Auto Parts Show. A. M. Andrews, secretary, 184 La Salle street.
- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 14-21.....—St. Louis, Mo., New Coliseum, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
- Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.
- April 6-11.....—Buffalo, Convention Hall, Motor Boat and Sportsman's Show. D. H. Lewis, manager.

Races, Hill-Climbs, etc.

- Sept. 6-7.....—New York City, Morris Park Track, 24-hour Race Meet. Morris Park Motordrome Club, office, Times Building.
- Sept. 7.....—Hartford, Conn., Hill Climb, under the auspices of the Automobile Club of Hartford.
- Sept. 7.....—Minneapolis, Minn., State Fair Race Meet of the Minnesota State Automobile Association.
- Sept. 9-10.....—Pittsburg, Pa., Brunot's Island Track, Race Meet, Automobile Club of Pittsburg.
- Sept. 10-12.....—Cleveland, Three-day Utility Run for Pleasure and Commercial Automobiles of Classes, Cleveland Automobile Club.
- Sept. 14.....—Philadelphia, Point Breeze Track, Quaker City Motor Club.
- Sept. 14.....—Jamestown (Va.) Exposition, Aeroplane Contest for "Scientific American" prize.
- Sept. 14.....—Albany, N. Y., 95-mile Road Race, under the auspices of the Albany Automobile Club.
- Sept. 20-21.....—Milwaukee, Wis., State Fair Grounds Track, 24-hour Race, Milwaukee Automobile Club and Milwaukee Dealers' Association.
- Sept. 21.....—Harrisburg, Pa., Middletown Track, Race Meet, Motor Club of Harrisburg.
- Sept. 22-24.....—Newark, N. J., Olympic Park Track, Essex County Fair Automobile Races.
- Sept. 30-Oct. 5.—Trenton, N. J., Inter-State Fair Automobile Races, Includes 24-hour Event.
- Oct. 21.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

FOREIGN.

Shows.

- Aug. 1-Sept. 30.—Holland, Amsterdam, International Exhibition of Motors and Machines, Palace of Industry.
- Sept. 28-Oct. 7.—Denmark, Copenhagen International Auto Show.
- Nov. 11-23.....—London, Olympia Motor Show.
- Nov. 12-Dec. 1.—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
- Dec. 5-22.....—Berlin, Germany, Automobile Show.
- Jan. 18-Feb. 2.—Turin, Italy, Fifth International Automobile Exposition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.

Races, Hill-Climbs, etc.

- Sept. 15.....—Austria, Semmering Hill Climb, Austrian Automobile Club.
- Sept. 15.....—France, Chateau-Thierry Hill Climb.
- Oct. 1-15.....—Paris, Electric Vehicle Competition, Automobile Club of France.
- Oct. 20.....—France, Gaillon Hill Climb.
- Nov. 1-15.....—France, Volturette Contest near Paris.
- May 16, 1908....—Sicily, Targa Florio, Automobile Club of Italy.
- June 20-July 5, 1908.—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
- July 14, 1908....—Paris to London, Aerial Race.

CLEVELAND CONTEST'S INTERESTING RULES

A SEALED bonnet and reliability contest, an electric automobile efficiency contest, and a commercial motor vehicle utility contest are planned by the Cleveland Automobile Club for September 10, 11 and 12. The three competitions will start from the club rooms at the Hollender Hotel, Cleveland, at 8 A.M., Tuesday, September 10, and continue on the two following days. Detailed schedule of the run will be given to each entrant at the start of the test. The Contest Committee in charge of the three events consists of Geo. H. Bowler, Walter C. Baker, H. M. Adams, Chas. Mears, Fred J. Baird. Official regulations for the sealed bonnet and reliability contest are as follows:

CLASSIFICATION.—Entrants will be run in one class and must carry at least three passengers, unless seating capacity of the car is for a less number.

ENTRIES shall be made on special blanks furnished by the Cleveland Automobile Club. Each entry blank shall be accompanied by an entry fee of \$10.00, currency or check; if check, made payable to the Cleveland Automobile Club. The time for receiving entries expires on Saturday, September 7, at 12 P.M. Cars entering after September 7 (midnight) until Monday, September 9 (midnight), must pay an entry fee of \$20.00. A separate entry blank is needed for each car. Entry blanks with entrance fees must be mailed or delivered to Geo. H. Bowler, care of the Cleveland Automobile Club, Cleveland. The contest committee reserves the right to refuse any entry. No entry fee refunded unless entry is rejected. Cars will be started at intervals of two minutes, the order of start being according to the contestant's entry number.

ENTRANTS' CLASSIFICATIONS.—The entrants may or may not drive and a change of drivers will be permitted any place on the course, all drivers being passengers in car continually from start to finish. Cars entered must from start to finish be of standard models, equipped according to catalogue specifications. No advertising sign or other indications of the maker's name, further than the name plate or such lettering as may be painted on each car, shall be displayed from the car any time during the test. Decision on this point to be by starter.

PENALIZATION.—The winner will be that car having the least penalization according to the following schedule: Each stop of motor, except where permitted by instructions on route card, 25 points. Breaking bonnet seal, 50 points each time. For each minute or fraction thereof spent in repair, adjustment, or replacement on car from start to finish, 5 points. Contestants will be allowed without penalization to fill oil tanks and gasoline tanks and to turn on or off the lubricator, but make no lubricator adjustments. Five points per minute or fraction thereof for taking on water.

SEALING OF CARS.—Cars must present themselves at the Cleveland Automobile Club one hour before their scheduled time to start so that seals may be affixed to the bonnet and coil box. Cars with oilers under the bonnet may make provision to fill the oilers without taking off the bonnet. Cars must regularly carry mud aprons and tampering with motors from beneath the frame or through the mud apron or bonnet will mean a penalization equal to that of breaking the bonnet seal. Cars with motors not beneath a forward bonnet must provide themselves with mud aprons of metal or cloth entirely enclosing the underside of the motor so that suitable seals can be attached.

SCHEDULE.—The contest committee will furnish each car a schedule not sooner than thirty minutes before starting each morning. The schedule will fix the exact minute at which each car in each class may pass a checking station without penalization, the schedule for which will not exceed operating the cars at faster than the legal speed. Cars will not be permitted to make up time and penalty will be based upon run between each two checking stations.

RUNNING REGULATIONS.—Each car must carry prominently displayed from sides its official number throughout the test. Entrants must conform to the laws and ordinances of the road. Arrest during tour for violation of speed laws or traffic regulations may, at the discretion of the referee, result in disqualification.

CHECKING STATIONS.—The number and location of checking stations will not be known to contestants until the schedule is received before starting each morning. At each checking station every car must stop, the observer handing his running card to the

checker, who will mark the time upon it and return it to the observer, after which the car must immediately resume its journey. Entrants will not be permitted to enter any checking stations before the time for their arrival upon the running card, and are given ten minutes leeway after the time marked upon running card, penalization occurring only after expiration of said ten minutes leeway.

OBSERVERS.—Each entrant must furnish one man to act as observer, and said observer will be transferred to a different car each day. Observers must remain through the entire day's run with the car to which they are assigned. They will receive a running card and must see to it that the starting time is marked upon it at the start and that the time is marked upon it also at each checking station and also at the finish. Observers must record each incident during the tour that receives penalization, marking the penalization points. At end of run he must sign his card and hand it to a clerk at finishing point.

AWARDS.—No award will be offered further than a certificate showing the record made by the car during the contest.

PROTESTS.—All protests as to entries must be made to the referee before the start. All other protests should be made during the run or before noon next day. All protests must be made in writing to the referee and each accompanied by five dollars, which will be returned in case the protest is sustained. Accompanying a protest must be a written statement of the conditions causing the protest, and protestees must procure witnesses or others possessing knowledge relative to the protest before noon next day before the referee.

ACCIDENT LIABILITY.—Every entrant must become acquainted with these rules and on entering agrees to abide by them; agrees to accept the official records of the contest committee, and authorizes the committee to publish them in any manner that it decides upon. Entrants shall hold the Cleveland Automobile Club harmless and indemnify them against all losses or damage resulting directly or indirectly or growing out of the operation, management or control of the car entered by them from the time of entrance until the completion of the contest. The Cleveland Automobile Club shall not be responsible for any damage that may be done to any car, passenger or contents, during the contest, or for the theft of any car, accessory or content; the car at all times subsequent to the start and until the end of the contest being at the entrant's risk.

REGULATIONS.—All entrants may advertise the performance of their cars in any manner they see fit, but in case any entrant advertises contrary to the findings of the contest committee, they will be barred from future contests conducted by the Cleveland Automobile Club until such time as decided upon by said organization.

The contest committee reserves the right to alter, amend, repeal or add to these rules up to the start of the tour as it may, in its judgment, deem expedient.

For the electric automobile efficiency contest the following special regulations apply, all other matters not herein mentioned being as in the sealed bonnet test:

CLASSIFICATION.—Entrants will be all run in one class.

CONDITIONS OF RUN.—All cars must carry at least two passengers, one to be an observer selected by the committee. Each car must make a run of at least 40 miles on one charge. The batteries must be fully charged at the end of each run, and an accurate record will be kept of the watt-hours necessary for such charge. The running weight (i. e., with passengers), will be used to determine the watt-hours per ton mile at the average speed made during the run, determined from time taken at start and finish. These results will be reduced to a speed of 12 miles per hour, on the basis of the watt-hours being proportional to the square of the speed. Neglecting the weight and under the same proportion the watt-hours per passenger mile will be determined. These results will be used to determine the efficiency. Cars must average at least 10 miles per hour, and must not exceed 15 miles per hour. An average of less or more than above specified will disqualify a car. There will be no restrictions to the number or size of cells. There must be specified on each entry blank for each car the make of battery which the car will use in the contest, capacity of same and cells in same.

CHECKING STATIONS.—The number and location of checking stations will not be known to contestants until the schedule is received before starting each morning. At each checking station

every car must stop, the observer handing his running card to the checker, who will mark the time upon it and return it to the observer, after which the car must immediately resume its journey. Entrants will not be permitted to enter any checking stations before the time for their arrival upon the running card, and are given ten minutes leeway after the time marked upon running card, penalization occurring only after expiration of said ten minutes leeway.

The features in which the regulations of the commercial motor vehicle contest differs from the two others are:

CLASSIFICATION.—Entrants will be divided into two classes, as follows: Class 1—Cars listed to carry loads up to and including one ton. Class 2—Cars carrying more than one ton. This classification will be arranged to practically divide commercial vehicles into delivery wagon and truck classes, and will be subject to such changes as the character of the entries may suggest.

PENALIZATION.—The winner in each class will be that car having the least penalization, according to the following schedule:

Five points for each minute or fraction thereof during which the car is stopped for any adjustments whatsoever. Ten points for each minute or fraction thereof late in reaching a checking station or control. Five points for each caution received from those in authority for infringement against the traffic regulations of the streets of the city of Cleveland. Any car exceeding the city speed limits will be disqualified at once. For each repair part or replacement to the car, a penalty of 5 points for each dollar in value for same will be deducted. This to apply whether done upon the road or during the night storage of the car.

RUNNING REGULATIONS same as in the two previous contests, with the addition that all cars must throughout the run carry such load as the contest committee may authorize, and such load will not be more than the catalogue capacity of the car.

Large users of commercial vehicles, including some of the express companies and the United States Postoffice Department, have signified their intentions of having representatives present to watch the contest.

WHAT DOES IT COST TO OWN AN AUTOMOBILE?

SO much has been said and written regarding the extravagant outlay required to maintain an automobile that doubtless many have been deterred from investing solely on that account, and it is a matter of common knowledge that the prospective purchaser's chief concern is, What is it going to cost to keep the machine? In view of this state of affairs, the following summary of the experiences of a great many owners in all parts of the country will be found of considerable interest:

How long will an automobile last?

What does it cost to operate it?

How many miles will it run on a gallon of gasoline?

How long will the tires wear?

are probably the four important factors in the life of an automobile. In some cases an automobile in the hands of a competent driver will give a great deal more satisfaction, at a minimum cost, as compared to the same car in the hands of a less experienced man.

To determine the average cost of maintaining and operating an automobile, an enterprising manufacturer has just compiled statistics showing that with judicious handling and the ordinary care that should be accorded an automobile the amount to support a machine is not nearly as great as most people believe. The Cadillac Company determined recently to discover the cost. It sent invitations through the newspapers throughout the country and to owners of single-cylinder Cadillacs, asking them for sworn statements as to the total expense incurred in the maintenance of their cars. Of those who responded hundreds were willing to make statements of the approximate cost of running their cars, yet none of these was used. Only the actual cost, sworn before a notary public and witnesses, were accepted. One hundred and sixty-four statements were received, coming from thirty different States, which show records of cars that have been used on all kinds of roads and under all sorts of conditions. From the data received the following statistics were compiled: The mileage gotten out of the cars varied considerably, ranging from 850 to 32,000. Many of the affidavits showed a mileage of over 20,000 and nearly 50 per cent. had gotten over 10,000 miles out of their cars. The total combined made over 1,550,000 miles, or, to be exact, 1,555,427, the average of this being 9,661 miles per car.

The gasoline consumption afforded great interest. One car running as low as 9 2-3 miles per gallon, while another ran as high as 32 miles per gallon. Forty per cent. of the number have claimed to get over 20 miles per gallon, while the average of all is a trifle over 18 1-3 miles per gallon. The cost of repairs: This amount ranges from practically nothing in some cases to several hundreds of dollars in others. The total amount of repairs, not including tires for the 161 cars, was \$6,881.29, or an average for each car of \$42.74. For the average length of time the cars have

been used (1 year, 7 months, 20 days), it means an average of \$2.17 per month, or less than 51 cents per week. Another way to compute the cost would be to total the distance traveled, taking 161 cars totalling 1,555,427 miles and with the total cost for repairs \$6,881.29, it means that the cost of the upkeep averages .004939 per mile, or, in other words, only 44 1-4 cents per 100 miles that is traveled. That certainly is cheaper than walking. In considering these points do not overlook the number of passengers carried. Some were runabouts carrying one or two and sometimes three passengers, while others were four-passenger cars carrying five or six passengers. The average as shown by affidavits was nearly 3 1-2 persons, so it would make this expense less than 13 cents per 100 miles for each passenger.

The next item of expense is that of gasoline. The sworn statements show that the miles obtained per gallon run from as few as 9 2-3 up as high as several who got 23 or more, and one as high as 32 miles per gallon. Take the average of the lot, it shows 18.34, or a trifle over 18 1-3 miles per gallon. The cost of gasoline varies in different parts of the country, but may probably be averaged at 18 cents a gallon. It would then make the average one cent per mile per car for fuel, or less than 1-3 of a cent per mile per passenger.

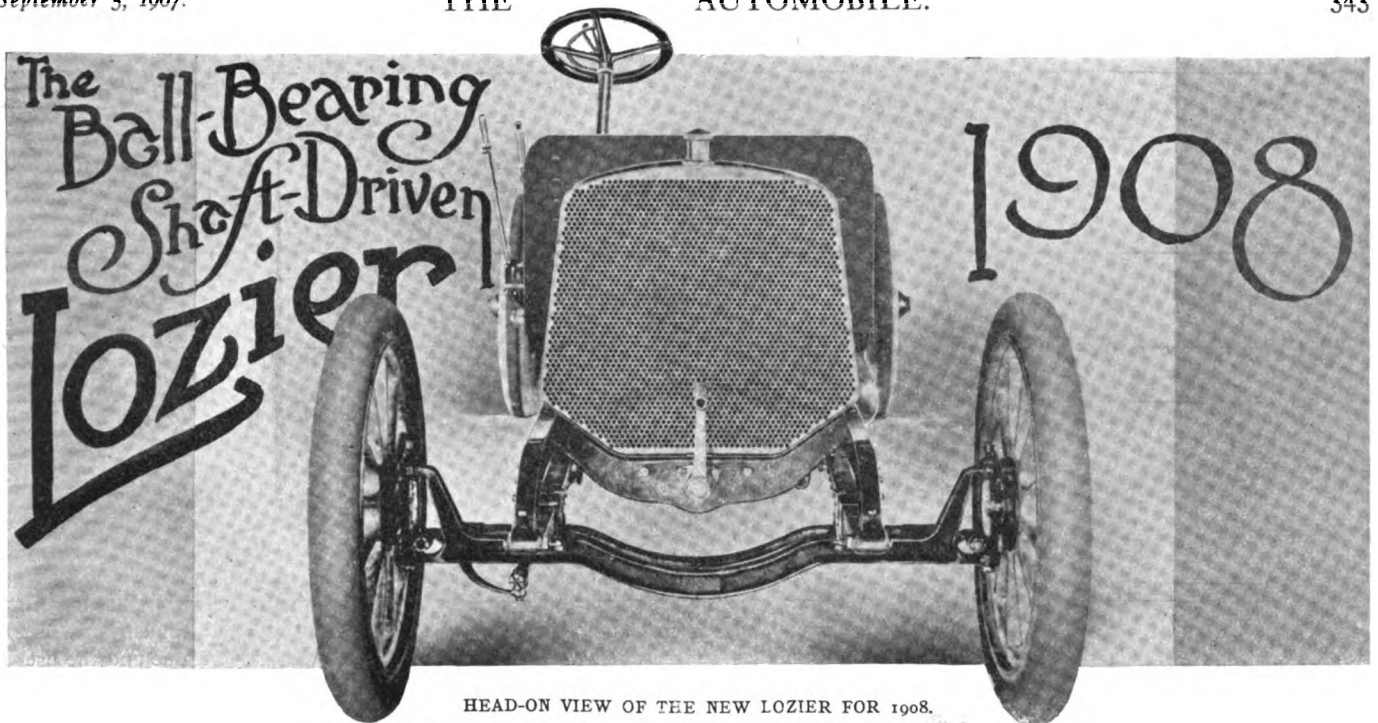
To obtain the amount of expenditures for tires, which in some cases had been included in the repair expenses because many owners do not keep separate expense accounts, 200 dealers throughout the country were asked the following questions:

What is the longest time you have known a set of tires to wear?

What is the greatest number of miles you have known a set of tires to run?

If a customer were to ask you as to about how long or how many miles a set of tires could be expected to last, with proper care, what would you tell him?

The answers to the first question were, in about two years, in some cases less, and in several cases three years, and one answer was four years. To the second question the answers were, all the way from 4,000 to 15,000 miles, but the majority run along from 6,000 to 9,000 miles. Regarding the third question, there was a wide difference of opinion, but they averaged up between one and two years and from 5,000 to 10,000 miles, many replies being qualified by the statement that it would all depend upon the carefulness of the operator and the roads he would have to travel. It certainly is commendatory not only to any one car, but to the whole industry, when, after a careful canvass of over 160 automobile owners, it is authentically estimated that the cost of upkeep of a carefully operated car renders the cost of transportation, per mile, less than any other means of locomotion. The data obtained should dispel popular illusion on this subject.



HEAD-ON VIEW OF THE NEW LOZIER FOR 1908.

“AT certain periods, cumulative experience teaches wherein design and constructive practice may be improved upon, and the year 1908 brings forth, therefore, a Lozier car which is entirely new and different in every detail from its predecessor, the only feature of the car bearing any resemblance to the former models being the cooler. The new car embodies modern and up-to-date features of such a nature that the buyer of one of these cars will probably find little occasion to make any change for several years to come.”

So runs the publicity man's foreword announcing the new Lozier for 1908, and a review of the specifications of the car, bearing in mind those of its predecessor, show that the statement that nothing but the radiator is the same is a brief, but true, summing up of the changes made. In no case, however, have the latter been extended into the field of pure experiment or uncertainty, every feature adopted having already undergone the test of time to an extent that entitles it to rank high in the category of the most approved standard practice. The most revolutionary change, from the point of view of the casual observer, consists of the adoption of the shaft drive, though chain-driven cars will still be found in the Lozier line.

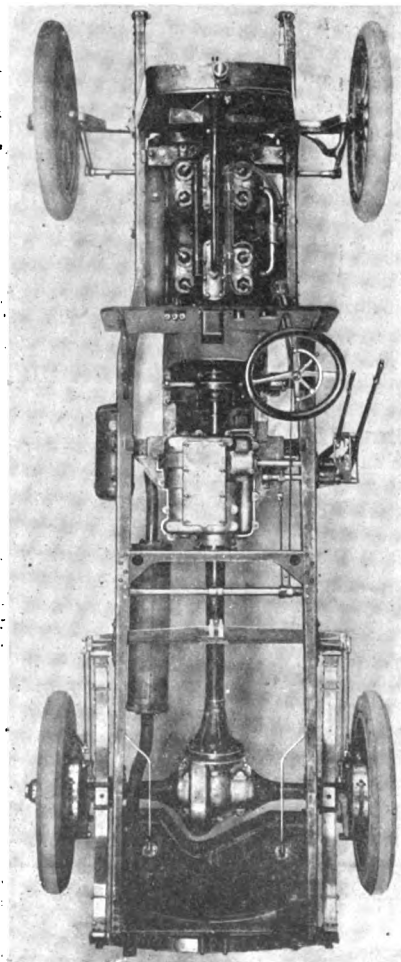
The new car will be officially known as Type H, and to begin with the motor, which fairly bristles with new features, this consists of two two-cylinder units, or twin castings, as previously, and finished in pearl-gray baked enamel. To provide for access to as much of the interior of the motor as possible, without the necessity of dismantling the latter, the cylinder castings have been made with large openings in the heads. These are covered with removable plates to facilitate the inspection of the water jackets, and the lifting of these plates also reveals the presence of two liberal-sized bronze screw plates, the removal of which permits access to the firing chamber of each cylinder. The bore and stroke measure $5\frac{1}{4}$ inches, the

“square” dimensions being best adapted to the high-speed motor. The motor is nominally rated at 45-horsepower, in accordance with the formula recently adopted by the Association of Licensed Automobile Manufacturers, although it will develop 60 actual brake horsepower as compared with the present 40-horsepower rating.

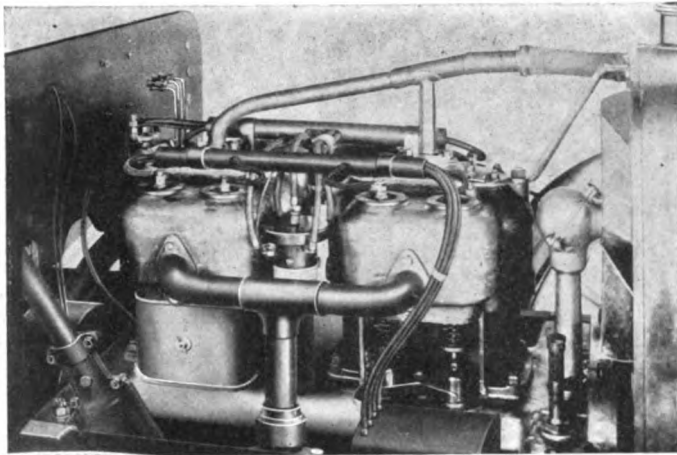
The crankshaft is of unusually liberal dimensions and the same may be said of the annular ball-bearings upon which it is supported, special oil-retaining rings being fitted to each set of bearings.

Lozier practice is adhered to in the valve placing and operation, but the nickel-alloy valves themselves have been enlarged. The one-piece camshafts are also mounted on annular ball-bearings, five to each shaft, and the latter are housed in the engine base so that they be readily withdrawn through the forward end. The valve-lifter housings are held to the sub-base by a yoke, each yoke holding two housings, while each lifter carries springs independent of the valve springs, and the latter, together with the remainder of the valve-operating mechanism, is enclosed by aluminum covers, further reducing the small amount of noise produced as well as protecting them from dirt and giving the outside of the motor an appearance of extreme simplicity and compactness.

The lubricating system is a combination of splash and force feed, and reservoir and oiler being located between the side of the motor and the frame. The oiler is of comparatively small capacity, but is automatically kept replenished from a three-gallon tank on the frame. It is driven by spiral gears direct from the camshaft, while the magneto and pump, located on opposite sides of the motor, are driven by spur gears, the fan being operated by a combination bevel gear and clutch, all these gears being housed and running in oil. The magneto and pump driving shafts are fitted with universal joints, and in the case of the former this takes the form of a notched internal and external gear, providing a simple method



PLAN VIEW OF SHAFT-DRIVEN CHASSIS.



INLET SIDE OF THE 1908 LOZIER MOTOR, SHOWING IGNITION WIRING.

of timing the magneto by remeshing the gears as required; both the shafts in question are ball-bearing.

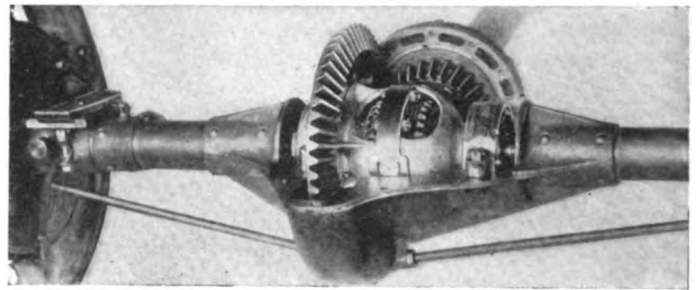
The ignition system is in duplicate throughout, each side consisting of an entirely independent unit, which may be used separately or in conjunction with the other as desired. The system relied upon for the bulk of the work consists of a Bosch high-tension, ball-bearing magneto connected to a set of plugs screwed into the inlet valve covers, while the standby and starting system consists of a set of 60 ampere hour accumulators supplying current to a single vibrator coil and ball-bearing distributor from which it is led to a set of plugs over the exhaust valves. The distributor is mounted on an aluminum standard located between the two pairs of cylinders and is permanently fixed, thus holding the wiring stationary, the necessary movement for advancing or retarding the spark being obtained by moving the shaft, the timing lever on the steering wheel sector operating on the distributor and magneto simultaneously. The carbureter is of the usual automatic type, controlled by a hydraulic governor operated by the water pump, the pressure at varying speeds acting upon a diaphragm linked to the piston throttle.

The clutch is of the multiple disc type employed on former models, but has been increased in size until it now occupies the entire flywheel diameter, so that the gear-set is placed very close to the motor. The clutch consists of 33 alternate steel and bronze discs, the clutch-pedal being interconnected with the gear-shifting lever; both the clutch-pedal shaft and brake-lever rocker arm are mounted on annular ball-bearings, while the clutch thrust is taken up by a ball-bearing plate. The gear-set provides four speeds forward and reverse, the direct drive being on the third when there are no gears working. Speeds of 12 to 50 miles an hour are attainable on the direct drive, the fourth giving an increase to 60 miles an hour. All the shifting forks are inclosed within

the gear case, thus obviating the leakage usual at their points of entrance. Clashing of gears in shifting is prevented by a disc brake on the clutch shaft, while the change-speed lever is also interlocked with the clutch.

All gears and shafts are of specially treated chrome nickel steel mounted on annular ball-bearings, and this material has also been lavishly employed on other parts of the car. This is true of the propeller shaft, which is placed at a very slight angle to the horizontal so that the work of the universal joint is very light. The shaft itself is housed in a nickel-steel tubular casing and the universal at the forward end is also enclosed in dust-proof housing. A floating type of rear axle is employed, the driving shafts being of nickel steel with ample sized differentials of the bevel type, while all pinions are of chrome nickel steel specially hardened and treated. The nickel steel housings of the axle driving shafts are riveted into the cast-steel housing of the bevel drive.

The changes extend to the details of the chassis construction as well, the rear platform spring now being clipped in the center to a large bracket and parallels the cross member of the frame to the rear instead of being placed beneath it as formerly, a change that permits of a longer wheelbase with less overhang than before. Other features of note are the attachment of the 27-gallon gasoline tank to the underside of the frame and the use of a protecting pan of cast aluminum. The steering column has been given slightly more inclination and the dash cleared of everything superfluous, there being but a single vibrator coil,



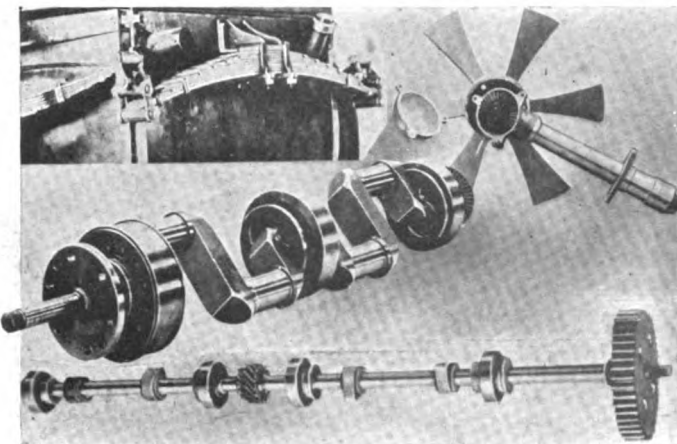
DRIVING UNIT WITH UPPER HALF OF DIFFERENTIAL CASE REMOVED

switch, pressure gauge and two oil-bleeders in sight. The wheels are 36 inches in diameter and shod with 4-inch tires front and 4 1-2-inch rear. The wheelbase is 124 inches and the weight with a 7-passenger touring body, 3,400 pounds. The general style of the body, which is of the familiar straight-line type, has undergone practically no change.

ECONOMICAL PERFORMANCE OF A TRUCK.

Twenty-five hundred miles under load in three months, with a total of but 11 1-2 hours for stops, is a record that any commercial car might well be proud of, particularly under the adverse road conditions to be found in and around western cities. This is the performance of the Phoenix, three-ton truck built by the Kansas City Motor Car Company. The stoppage mentioned was for the execution of repairs of a most trivial nature, as may be realized from the fact that they consisted of replacing a home-made high-tension magneto with a Bosch machine of the same type, and changing the radiator, which had sprung a leak, the remainder of the 11 1-2 hours being consumed in making brake and carbureter adjustments. As a result of the experience with the radiator, a new form of three-point suspension has been adopted, effectively overcoming any further possibility of recurrence of this trouble.

During the period in question, the average cost of hauling a ton per mile has figured out at \$.09 3-4, this including an outlay of \$250 annually for tire maintenance, \$18 per week for the driver, all gasoline and oil consumed, and ten per cent. on the cost of the vehicle for depreciation, which is a remarkable showing in view of the grades prevailing in and about Kansas City.



REAR SUSPENSION, CRANKSHAFT, FAN DRIVE AND CAMSHAFT.

STODDARD-DAYTON AGENTS MEET TO DISCUSS.

DAYTON, O., Aug. 31.—A three-day convention which it is expected will develop into an annual affair, has been held at the Dayton Motor Car Company's headquarters. The program, arranged to combine business with pleasure, opened with a visit to the factory, followed by luncheon, an inspection of 1908 models, and an automobile ride. After the entire second day had been spent in discussing business methods, the full body of agents united in a dinner at the Algonquin Hotel, followed by a smoker. The third day was given up to the further inspection of new models and to personal interviews. During the conference Ed. Leinbach, of Baltimore, was presented with a handsome loving cup by the agents as a recognition of the successful manner in which he drove the Stoddard-Dayton runabout in the recent A. A. A. tour.

Those in attendance at the convention were: Messrs. Whitney and Ferris, Boston; J. A. Cramer, Buffalo; J. H. Ratliff, Cincinnati; H. L. Babcock, H. C. Tillotson and Discher, Chicago; O. G. Roberts, Columbus, O.; H. S. Moore, Cleveland; Sears, Des Moines; B. G. Burrington, Holyoke, Mass.; Fisher & Moore, Indianapolis; C. Ettwein, Kansas City, Mo.; H. S. Haynes, Minneapolis; Guy Hartwell, Mobile; Richard Newton and A. H. Whiting, Des Moines; H. B. Tuttle, New Haven; J. W. Mason, Newark, N. J.; J. P. Parker, Memphis; H. M. Smith, Toronto, Canada; E. Estell, Omaha; Hamilton, Philadelphia; G. B. Moore, Pittsburgh; E. L. Nock, Providence; A. M. Zinbrich, Rochester; Geo. Haff, San Antonio; O. V. Reopell, Springfield, Mass.; J. Lucey, Jr., Troy; Geo. Schollenberger, Wichita, Kansas; Schnure, St. Louis; Garvey, New Orleans.

EXTENSIVE ADDITIONS TO RAMBLER PLANT.

KENOSHA, WIS., Sept. 1.—Liberal increases in the facilities of their already large plant have been found necessary by Thomas B. Jeffery & Company, makers of the Rambler automobiles, and the additions are now under way. They consist both of extensions to old buildings and the construction of new ones. These buildings are entirely of concrete with steel and glass roofs of saw-tooth construction, thus assuring light and sanitary conditions as well as protection against fire. The extensions now in course of construction aggregate 50,000 square feet of floor space, which brings the total in the plant to approximately 16 acres. A recent addition to the plant's facilities is the completion of an artesian well, 1,500 feet deep, which has required a year to sink. The natural pressure is sufficient to carry the water to all the buildings, but a pumping plant has been installed for fire protection. As the lighting and heating plants are a part of the factory equipment, this makes the plant entirely independent of outside service.

HEAVY DEMAND FOR SPACE AT GARDEN SHOW.

At a meeting of the show committee of the Association of Licensed Automobile Manufacturers held on Friday last, it developed that there has been an increase of 25 per cent. in the number of applications for space at the eighth annual show to be held in the Garden, November 2-9. There were over 250 exhibitors last year, while up to date 300 applications have been received, for which allotments have already been made. A feature of the show will be the motor-cycle section in which 31 manufacturers have secured space. The rules regarding the display of advertising matter will be the same as in previous years and the uniform decorative scheme will include the motor-cycle section. Colonel George Pope, Charles Clifton, Marcus I. Brock and M. L. Downs, secretary, were present at the meeting.

Export returns for the month of July, 1907, show an increase to \$796,325 from \$513,179 for the corresponding month last year, this total covering the value of 345 complete cars and \$68,934 worth of parts. For the seven months ending July, 1907, the total is \$4,245,490, representing the value of 2,052 cars.



MORRIS PARK TRACK'S EXCELLENT CONDITION IS SELF-EVIDENT.

ARRANGEMENTS FOR MORRIS PARK RACES.

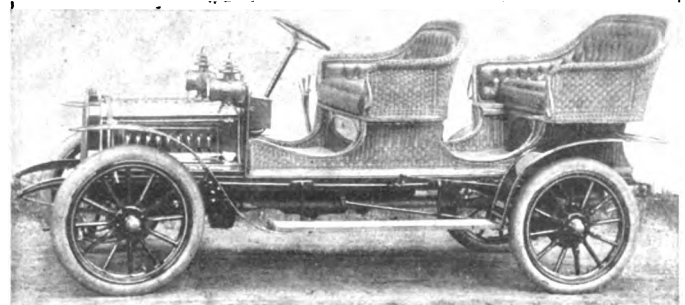
Eighteen thousand gallons of oil have been used in putting the Morris Park track in shape for the 24-hour and other races scheduled for September 9-10, and the course will be brilliantly illuminated at night. The Morris Park Motordrome Club has guaranteed the payment of the \$1,000 purse for the 24-hour race by offering to deposit a certified check for the amount with the A. A. A., and a number of entries from prominent makers is expected. One of the entries made Tuesday in the short-distance events was E. Russell Thomas's 120-horsepower Hotchkiss, driven in last year's Vanderbilt Cup race by E. Fitz Shepard. It will be driven by Wally Owen in the record trials.

DRAGON AUTOMOBILE COMPANY REORGANIZES

PHILADELPHIA, Sept. 3.—While there has been no radical change in the interests involved in the Dragon Automobile Company, the latter has recently been reorganized with John Kane Mills again at its head. It will be recalled that he retired several months ago on account of ill-health. The new list of officers is as follows: President, John Kane Mills; vice-president and treasurer, Henry Rawle; second vice-president and sales manager, A. L. Kull; general manager, J. H. O'Brien. The directors are J. F. Grimes, Pittsburg; Francis Rawle, Philadelphia; John Kane Mills, New York; Henry Rawle, Philadelphia; A. L. Kull, New York.

NOVEL LIGHT-WEIGHT BODIES OF RATTAN.

Suitable materials for the building of automobile bodies are not as numerous as might appear at first sight, so that the choice of rattan for this purpose carries with it many advantages. Chief among these naturally is lightness, it being claimed by the makers of the novel body shown in the accompanying illustration, the Amesbury Reed & Rattan Company, Amesbury, Mass., that it weighs one-third less than a similar construction of wood. The rattan is rubber lined, making it dust and water-proof, while the leather upholstery is all kept in place by patent fasteners, thus rendering it easily removable for washing. These bodies are made in runabout styles also, and are designed to fit any type or make of chassis.



NEW WATERPROOF AND DUSTPROOF RATTAN AUTO BODY

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

The Shoemaker Automobile Co., of Freeport, Ill., is considering a flattering offer from Elkhart, Ind., to locate its manufacturing plant in that city.

The collection department of the New York Automobile Trade Association which was recently established, is proving a very successful feature. The association now has a membership of 61 local dealers and garage owners, making it the largest association of its kind in existence.

According to the Electric Vehicle Co., of Hartford, Conn., the season of 1908 will be a good one for electrics. The present season has marked an increased use of this type of vehicle, and many light electric victoria phaetons have been sold, most of them to women.

Three more concerns have been admitted to membership in the American Motor Car Manufacturers' Association, bringing the total up to 49. The new members are the Reliance Motor Truck Company, Detroit; Gaeth Automobile Works, Cleveland, and the Imperial Motor Car Company, Williamsport, Pa.

In the recent Coupe de la Presse race in France the Continental Caoutchouc Tire Company had the honor of fitting the winning car with Continental tires that covered the entire distance of 400 kilometers without changing. The tires were reported to be in excellent condition at the finish.

The new Rainier factory at Saginaw, Mich., is now in full operation, turning out the 1908 product under the supervision of James G. Heaslet, who has designed the Rainier cars for the past three years. Ezra E. Kirk, general western sales manager for the company, left Saginaw, September 2, for the Pacific coast on an extended trip for the purpose of placing agencies.

One exhibitor that will be distinctly missed from all the New York shows this year is the American Locomotive Automobile Company. This company maintains a neutral attitude and is not a member of either of the rival manufacturers' associations. For this reason it could not obtain preferred space, and therefore it decided last week not to be a part of any show, but to hold a two-week show of Berliet cars independently in the reception of the Waldorf-Astoria near the Thirty-third street entrance, from October 24 to November 9.

NEW AGENCIES ESTABLISHED.

The Maxwell-Briscoe Motor Company has established new branch houses at Dallas, Tex.; Pittsburgh, Pa.; Atlanta, Ga., and Kansas City, Mo. The company expect to have 15 branch houses throughout the country by the time its 1908 selling force is thoroughly organized.

President P. C. Avery, of the Avery Portable Lighting Company, of Milwaukee, Wis., while in New York last week opened a metropolitan distributing house at 51 West Sixty-third street, adjacent to Broadway. A full stock of recharged tanks of all makes will be carried. The new branch will supply agents in the Eastern States and will be in charge of A. W. Kaestner, who has been connected with the factory at Albany, N. Y., for some time.

The J. W. Bowman Company has been appointed Boston selling agent for the

Stevens-Duryea for 1908, succeeding the estate of the late F. E. Randall, who handled the agency successfully in Boston for a number of years. Permanent warerooms will be opened in a few days at 911 Boylston street, and a repair department has been established at 57-61 Stanhope street. Mr. Bowman, the head of the new concern, was formerly New York manager for the Fisk tire branch.

RECENT TRADE CHANGES.

On September 1 the Butler Auto Supply Company succeeded the Angier Auto Supply Company, 222 Park Square Motor Mart, Boston. H. M. Butler, president of the company, having purchased the interest of O. M. Angier, the former treasurer. The new company will continue to carry complete lines of auto supplies for which it is the agent.

Owing to the demand for Continental and Firestone tires, for which they are the Philadelphia agents, James L. Gibney & Brother have found it necessary to remove the offices to the second floor of their establishment, devoting the entire first floor to selling purposes, which will give them one of the finest salesrooms on Broad street.

PERSONAL TRADE MENTION.

A. A. Kelsey, of Washington, of the Good Roads Bureau, Department of Agriculture, is now on a month's tour through Pennsylvania and New York in his Franklin.

Tony Nichols, chief demonstrator of the Boyer Motor Car Company, San Francisco, Cal., recently made a trip through the East of several weeks' duration, and visited the plants of the H. H. Franklin Mfg. Co., of Syracuse, N. Y.

Percy Owen, president of the New York Automobile Trade Association and United States importer of the Bianchi car, will return this week from Maine, where he has been enjoying a well deserved vacation.

G. N. Bliss has been appointed manager of the Chicago branch of Thos. B. Jeffery & Co., to succeed Joseph Gunther. Mr. Bliss comes from the Rambler factory, at Kenosha, Wis., where he has been located for some time past.

Fred P. Brandt, formerly sales manager of the Autocar Company, has been made vice-president and general manager of the Imperial Motor Car Company, of Williamsport, Pa., the new automobile manufacturing enterprise in which State Senator Cochran, of that city, is interested.

Harold J. Ellsworth, formerly connected with the sales department of the Maxwell-Briscoe Motor Company, has been appointed general sales manager of the Colt Runabout Company, of Yonkers, N. Y., and C. B. Kraske has been appointed purchasing agent for the same concern.

R. G. Howell has resigned as manager of the Franklin department of Wyckoff, Church & Partridge, New York City, and will establish an exclusive agency in New York for an old-established manufacturing house. Mr. Howell expects to announce his plans about the middle of the month.

G. G. Luthy, secretary of the Bartholomew Company, Peoria, Ill., makers of Glide automobiles, has started for an extended

trip through the West. He will visit Denver, Salt Lake City, Butte, Spokane, Seattle, Tacoma, Portland, San Francisco, and Los Angeles, calling on established agencies and placing new ones.

E. A. Crosser, for the past two years with the Haynes Automobile Company, Minneapolis, Minn., has severed his connection with that house, returning to the employ of the White Company, with which he was formerly connected. He will look after the White interests in the Texas territory.

Robert J. Firestone, sales manager of the Firestone Tire & Rubber Company, will leave September 9 on a month's trip to Mexico and the Pacific Coast points. While in the City of Mexico he will establish a Firestone branch house there, and afterwards proceed on a tour of inspection of the Pacific Coast agencies. John D. Hodgkins, for several years manager of the St. Louis Firestone branch, will hereafter represent the company at Atlanta, Ga. O. O. Petty has been appointed to his former position as manager of the St. Louis office.

George W. Bennett, formerly identified with the Rambler interests and more recently general manager of the Knox Automobile Company, has accepted the appointment of manager of the metropolitan branch of the White Company, of Cleveland, with headquarters at Broadway and Sixty-second street, New York City, to take effect October 1, succeeding Carl H. Page, resigned. Mr. Bennett was for many years identified with Thomas B. Jeffery & Company, in fact since the period of extensive bicycle manufacture, and the Knox people were desirous of retaining his services for their reorganization. He, however, preferred to return to New York City, where he had made his early success. His predecessor, Mr. Page, who has successfully conducted the White branch for several years, has not yet announced his plans.

AJAX-GRIEB CO. MEETING.

Final approval of the plans for the new factory buildings of the Ajax-Grieb Rubber Company was given by the stockholders at the annual meeting of the company in Trenton, N. J., on Tuesday of this week. The plans call for three buildings of brick, with a total floor space of 75,000 square feet on the west side of Olden street in Trenton, where about six acres of ground is owned by the corporation. The present factory is located on the east side of the street.

New officers for the ensuing year were elected, viz: President, Horace DeLisser; vice-president, Wm. G. Grieb; secretary and treasurer, Harry Grieb. Satisfactory dividends were declared on both the preferred and common stocks.

For the 1908 automobile tires the company has decided to devote its plant almost exclusively to those of the wrapped tread type in all sizes, and will be in fine shape to meet the increasing demands of its business when the new plant is completed. Thousands of this make of tires are used as regular equipment on Ford runabouts, Maxwells, Mitchells, and other well-known cars.

To-day (Thursday) President DeLisser will leave for a trip to the coast, his schedule calling for visits to agencies in seventeen different cities en route.

THE AUTOMOBILE



AUTOTRACTOR LEAVING THE MILES OF PLOWED LAND BEHIND IT ON THE KANSAS PLAINS.

SINCE the earliest days of the automobile, those who have looked beyond its purely pleasure side have been prophesying its vast possibilities in a commercial way, and in none so much as an aid to the farmer. The traction engine and its capacity for hauling whole gangs of plows, harrows, or other agricultural machinery has made the vast farms of the western portion of this country possible. But the traction engine is a ponderous machine, due to its boiler, while its requirements in the way of fuel have made its use increasingly expensive, as both coal and wood are extremely scarce and high-priced commodities on the western plains.

What One Kansas Farmer Has Done.

It is a matter of common knowledge that experiments looking to the perfection of a commercially practical machine which can be marketed at a low figure have been under way in this country for some time past, but the investigators have been more or less chary of making public what they have learned up to the present. In the meantime a Kansas farmer has undertaken to solve the problem for himself, and, to judge from the reports of the working of his invention, appears to have succeeded in doing so to such an extent that a company is to be incorporated to place his machine on the market. He is Ansel S. Wysong, whose ranch is near Meade, Kan., and he calls his substitute for equine plow-pullers an *autotractor*. Considered as a whole, his machine does not differ a great deal from the ordinary traction engine, except that it is far lighter, much more powerful, and can get over the ground at a rate of speed that makes a tractor look like a selling plater.

He has mounted a 30-horsepower gasoline engine on a rigid frame carried on iron wheels with four-inch steel tires, so that

neither spring nor tire troubles will come his way, while the drive is also designed to be troubleless, as it consists of a heavy chain. The weight of the autotractor is but 4,100 pounds—a figure that is not much in excess of what many a heavily loaded limousine will tip the scales at. Two speeds are provided, one for plowing and similar heavy work, and the other, or high speed, for hauling a train of grain-laden wagons along the road at the rate of six miles an hour. Even on the low speed in the field, the machine travels much faster than horses and turns six furrows at a time.

This does not complete its round of usefulness, however, as by uncoupling the engine and running it as a stationary it is made to operate a pump, saw, thresher, or other farm machinery. Furthermore, it is never at a loss for fuel, as it will burn gasoline, kerosene, or alcohol with equal ease. This machine has been built by a practical farmer, familiar with the requirements of the service to be performed, and it would appear as if he had considered every phase of the subject in designing it. The inventor says he has plowed thirty acres of land a day on a fuel consumption of fifty gallons of gasoline, and the machine has proved so successful as a whole that it is intended to build duplicates of it in a factory to be established at Topeka, Kan.

A Californian Has Evolved a Farmobile.

One of the difficulties of adapting the automobile motor to farm work has been this very lack of weight, which is such a great advantage in other ways, and another investigator, R. D. Vercler, of Los Angeles, Cal., has solved the problem in rather a unique manner. Without a great deal of weight it was hardly possible to obtain sufficient traction even with ribbed wheels and often the driving wheels simply gouged a hole in the ground



HENRY FORD AT THE WHEEL OF A FARMOBILE.

without moving ahead. To overcome these difficulties a system of propulsion consisting of a stationary cable anchored at opposite ends of the field to be worked was devised, together with a machine to run on the cable, and the latter has been christened the *Farmobile*. The car is equipped with a pair of drums operated by a four-cylinder air-cooled gasoline engine, as will be plain upon the reference to the photographs.

The car stands directly over the cable, a few turns of which pass round the drums, so that as the latter revolve they wind up the cable, moving the car along at a speed proportionate to the rate at which they turn. At each end of the car is a tension device, consisting of a pair of positively driven rolls, between which the cable passes, the rolls pressing against the cable and keeping it taut between the tension devices and the drums, so that the cable cannot become uncoiled on the drums. As there are several coils on the latter and the coils cannot possibly slip, the drums being positively driven, it will readily be evident that as long as the engine is connected to the driving mechanism the car is bound to travel ahead and haul its load, provided the latter be within its capacity to move. In use the cable takes care of itself and shifts to accommodate itself to the path in which the machine is steered. Each end of the cable is fastened to a pulley and the pulley rides along a cable arranged transversely to the propelling cable. The machine is provided with a steering wheel, the operating gear being somewhat similar to that regularly employed on automobiles.

When the machine is steered so that it rides along the propelling cable in a line at right angles to the end cable, the pulley lies still on the end cable; but when the machine is steered to the right or left to avoid an obstruction, the machine will

draw the propelling cable into an angle with the end cable, whereupon the pulley naturally rolls along, carrying its end of the main cable to a point directly opposite the machine. In traveling back and forth across the field, the cable is shifted in this manner. This shifting action does not actually occur until the machine has approached somewhat close to the pulley, for when there is a long amount of the main cable on the tension side the weight of the cable and friction of moving it sideways on the ground prevents such movement. At all times, however, a short amount of cable immediately in front of the machine always swings to the right or left, when necessary, to suit the steering of the machine.

The machine is equipped with gearing for reversing the drums to propel the machine backward along the cable, but the steering is difficult in such method of backward travel and in use the machine is turned around at each end of the field, so that it travels forward each time it traverses the field. To accommodate this, and to obviate the necessity of disengaging the cable from the drums, or of swinging the whole cable end for end, the main cable near each end has a section which is separable from the cable and forms a detachable link.

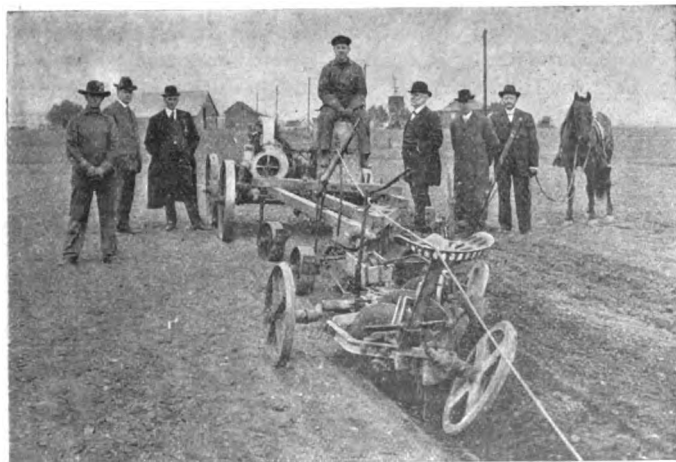
The machine when at either end of the main cable stands over the separable section or link, the latter then being wound around the drums and extending at each end somewhat beyond the machine. Then by unhooking both ends of the short section from the main cable, the machine is turned around, taking the section with it, and the section thus reversed by the machine is hooked into position again in the main cable, whereupon the machine can proceed forward. It may also be driven by its own wheels.

Two sizes of these machines are being made, the smaller of which is equipped with a 24-horsepower Frayer-Miller air-cooled engine, while the larger size has a 50-horsepower engine of the same make, the weights being 2,000 and 3,000 pounds, respectively.

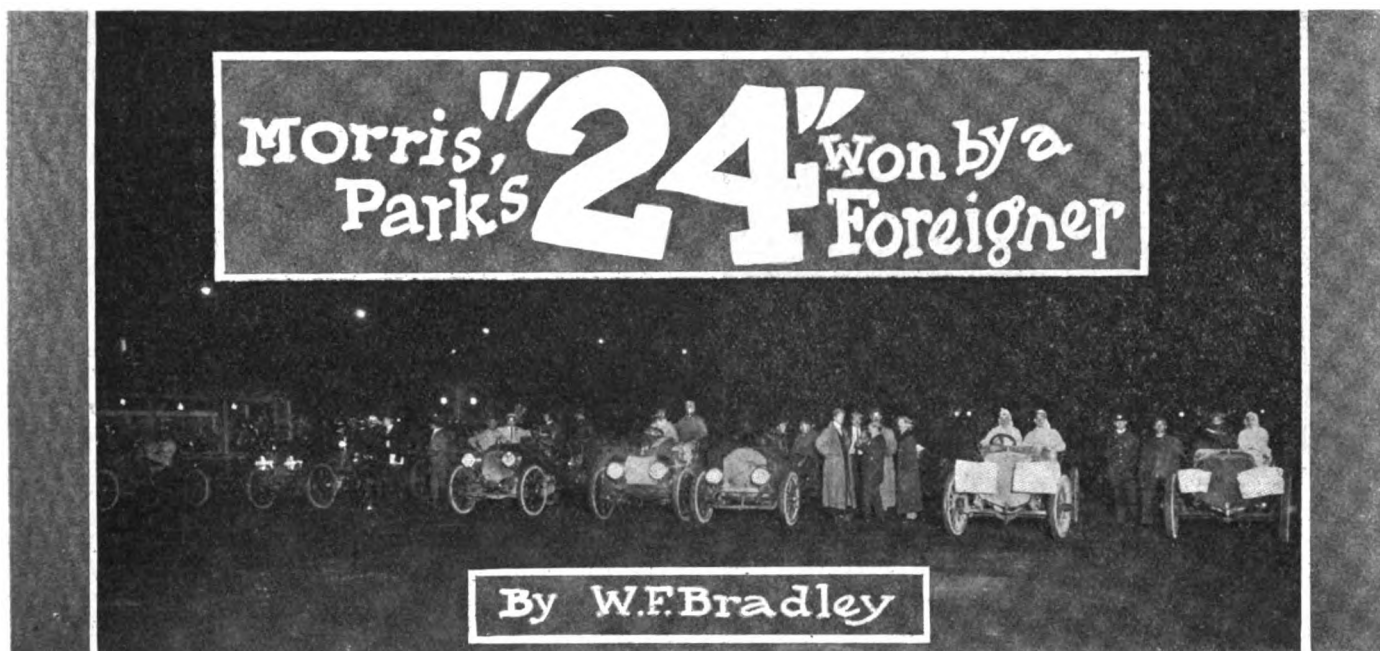
Tests have shown that the capacity of the "24" is twenty-four acres a day of ten hours, the operations of plowing, harrowing and seeding being carried on simultaneously. For this work the cost of fuel has been figured at \$1.50, with \$2.50 for a man to run the machine and \$1.50 for a helper, or a total of \$5.50, which figures out at 25 cents an acre.

The daily capacity of the larger machine is 36 hours and the expense figures out at about \$6. A pulley is installed on the front end of the machine directly over the forward axle, so that it can be used for threshing, pumping, or any of the many operations for which power is necessary on a farm. It can also be used for hauling and can pull a number of loaded wagons according to their weight and the nature of the roads. The capacities mentioned above are based on an average speed of three miles an hour, the small machine working a swath 8 feet wide, while the larger one works 10 feet, or if the ground has been broken previously, 16 feet. Four speed changes and reverse are provided on the drums, and the same is true of the traction and belt pulley, giving the vehicle speeds of from one to eight miles an hour.

The posts at each end of the field are placed 200 feet apart. It takes a man as long to change this end cable as it does to walk 400 feet, as it is simply unhooked from one, hooked over on the other, and then it is ready for another day's work. If at any time it is desired to run the machine out of the field, it is run up to the end and the small section unhooked, run out of the field on the traction power, only carrying enough cable to string through the machine, and after doing this the machine can come back and hook on to the cable and go right back to work where it left off. The cable used is 7-16 inch in diameter, with a breaking strain of 6,800 pounds, and the machine will pull all the cable will stand. Some of its other uses are in rooting out stumps and as power for housemoving. The photographs were taken on a bean ranch near Los Angeles.



REAR VIEW SHOWING CABLE AND MACHINERY IN TOW.



START OF THE 24-HOUR AT MORRIS PARK, THE WINNER BEING A RENAULT FROM FRANCE, DRIVEN BY LA CROIX AND BERNIN.

THE most remarkable feature of the 24-hour race at Morris Park track, New York City, last Friday and Saturday, was the ease with which Paul Lacroix and Meurice Bernin, driving a 35-45-horsepower Renault, rolled up their score of 1,079 miles, beating the Brighton Beach track record by 82 miles. At the extremity of the "24-hour camp" the Renault tent contained the usual equipment—tools lined up with military precision, tires, jacks and oil and gasoline cans—but they were never brought into use. Taking one of the turns at speed a rear tire blew out; it was replaced in two minutes, for Michelin dismantlable rims were used. The only other visits to the tent were to replenish the gasoline and oil supply, the broad leather strap holding down the racing hood never being unfastened, and three of the tires which started on the machine being there at the finish with their steel-studded surface in good condition.

One hundred and seven miles behind the victor came No. 21 Lozier, driven by Smelser and Linkroum, with a score of 972. No. 6 Hotchkiss, delayed two hours by a fire caused by a smoker in the paddock, secured third place with 892 miles; fourth position fell to the Allen-Kingston, a newcomer to the automobile world, with 681 miles to its credit. The others—a Packard, a Matheson, and two Dietrichs—had retired from the grind.

Owing to some delay in lighting the track, the nine competitors were not sent away on their night and day struggle until 9 o'clock, or one hour later than the advertised time. The teams were:

No. 1.—60-horsepower Dietrich, Frank Fuller and Chas. Barton.

No. 2.—60-horsepower Dietrich, George Mack and Thomas McMahon.

No. 3.—60-horsepower Matheson, J. B. Ryall and Charles Riffenberg.

No. 4.—30-horsepower Packard, Wallace Owen and Clarence Doty.

No. 5.—45-horsepower Renault, Paul Lacroix and Meurice Bernin.

No. 6.—35-horsepower Hotchkiss, H. J. Kilpatrick and Harry Harkness.

No. 8.—60-horsepower Lozier, H. Michener and Ralph Mulford.

No. 9.—35-horsepower Allen-Kingston, A. L. Campbell and E. H. Belder.

No. 21.—40-horsepower Lozier, L. W. Smelser and William Linkroum.

Fuller's Dietrich set the pace, leading at the end of the first lap, with No. 8 Lozier second and Bernin on the Renault third. When one hour had elapsed Michener's Lozier had the lead with 48 miles, the Renault was second with 45 miles, the Packard third with 43, and Dietrich and Matheson tied with 40.

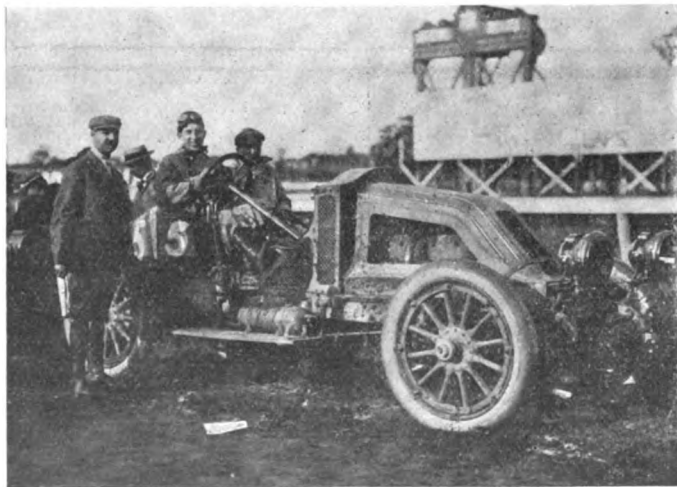
The additional length of the track, 1.39 miles, compared with the even mile at Brighton Beach, favored the racers, but complicated the scoring. The surface, too, though not in perfect condition, was slightly better than that of the race track four weeks ago, and there was not so much soft loose earth on the turns to bother the drivers at those points.

At the end of the second hour No. 8 Lozier had made the creditable performance of 100 miles, with Packard and Renault behind it, each with 92 miles. When the third hour had elapsed Michener's Lozier had added 43 miles more to its score, and Packard had got ahead of the Renault by one mile, their

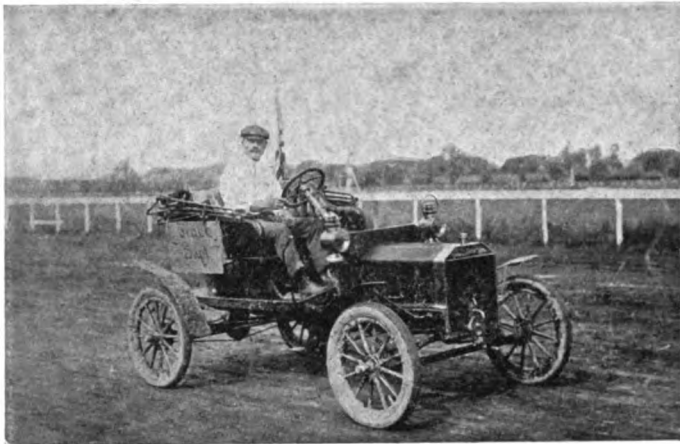
respective scores being 139 and 138. Fuller's Dietrich faltered early, its mileage for this hour being but six.

Ryall's Matheson was the first to abandon the game, for during the second hour a connecting rod stud bolt broke, causing such damage to the motor that a repair on the track was out of the question. About one hour later the Packard, after doing some fast work, went out of the game with a broken rear axle, leaving but seven competitors on the field.

Bernin got his lead during the fourth hour, when he ran up 179 miles and



OWNER LA CROIX AND PILOT BERNIN BESIDE THE RENAULT WINNER.



TRACK SUPT. CAMACHO UTILIZED A FORD RUNABOUT.

left the Lozier seven miles in his rear. From this point to the end the Renault was never harassed by any competitor. During the night Bernin handled his machine cautiously, yet kept it going at such a regular even gait that, though slightly throttled down, he gradually drew away from the field.

Paul Lacroix relieved Bernin at 6 A. M., when the Renault was four miles ahead of the Jackson record made at the Brighton Beach track. With daylight it was possible to appreciate the masterly handling of the machine, Lacroix refusing to be hustled by machines which occasionally did faster sprints, and rolling off lap after lap with the regularity of a chronometer. As he neared the end of the straight opposite the grandstand, the engine was

of screwing down the cap when the machine became enveloped in flames. Some one among the large number of idlers about the paddocks struck a match within a few feet of the machine. In all probability this was sufficient to ignite the gasoline vapors around the car and communicate the fire to the machine. Though little damage was done to the mechanical parts, nearly an hour was lost in getting the machine on the track again. Later the gasoline tank supports showed weakness as the result of the fire, causing another delay of one hour. But for this the Hotchkiss mileage would have been considerably increased.

Lozier had a series of ill-luck; No. 8 lost 35 minutes through the breaking of a front wheel and two hours as the result of a leaky gasoline tank, which had finally to be replaced by one taken from a touring car on the grounds. Soon after 9 o'clock on Saturday morning No. 8 Lozier broke a steering knuckle and went through the fence. Some of the spokes of the left front wheel had loosened shortly before one of the turns, and their weakness brought about the defect in the steering gear which put an end to the car's career in the race.

About the same time No. 21 Lozier, then being driven by Linkroum, skidded seriously on the upper turn and dropped down a six-foot embankment. Although apparently in good condition, and able to run down the course, the Lozier had to leave the track for repairs to be made to its frame, the forward cross member having been cracked. The radiator, too, was damaged.

Stopped to Put Turns Into Condition.

Nothing further of interest marked Saturday's run until 2 o'clock, when the race was called off for a couple of hours to allow the turns to be put into better condition. Five cars, the Renault, Lozier, Hotchkiss, Allen-Kingston, and Dietrich lined

POSITING HOUR BY HOUR IN 24-HOUR RACE FOR STOCK CARS.

Car and H.P.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.
Renault, 35	45	92	138	179	226	271	314	360	406	453	503	552	597	646	695	736	787	826	871	909	951	995	1,032	1,079
Lozier, 40	37	85	133	180	219	267	313	359	399	440	474	517	552	597	629	668	707	724	771	807	852	892	927	972
Hotchkiss, 35	39	80	123	153	172	215	243	282	322	347	393	433	478	517	563	604	649	691	723	750	782	826	862	892
Allen-K'get'n, 35	29	47	47	63	100	133	154	198	236	265	296	333	353	362	401	431	456	456	456	579	617	642	681	
De Dietrich, 60	40	85	128	154	194	240	249	249	249	280	319	320	320	320	343	390	431	482	500	540	Disabled timing gears			
De Dietrich, 60	37	69	75	107	150	186	212	244	275	293	293	324	387	364	401	414	414	425	447	464	495	Water jacket		
Lozier, 60	48	100	143	172	176	215	240	240	286	328	376	422	426	Broke steering knuckle.										
Packard, 30	43	92	Broke axle.																					
Matheson 60	40	54	Broke connecting rod.																					

always cut out for the turn, and at exactly the same spot on each round the driver's foot was seen to press down the accelerator pedal. At times one of the Dietrichs or the Loziers would rush around the turn and cut in ahead of the Renault to the excited cheers of the crowd; but Lacroix refused to be moved, and though having power in reserve maintained his uniform average from beginning to end.

One of the few exciting incidents of the race occurred during the fourth hour when the Hotchkiss took fire. The gasoline tank had been filled and one of the helpers was in the act

up opposite the grandstand, the Renault in the lead with 779 miles to its credit, being 79 more than the Lozier, No. 1 Dietrich, though announced as still in the contest, remained in the paddock during the two hours, undergoing repairs.

At the end of the twentieth hour No. 2 Dietrich retired in a disabled condition, the driver declaring that a pin had dropped out of the timing gears. No attempt was made to repair the car and before the end of the contest it was hitched to another machine and towed home. Before 10 o'clock Fuller's Dietrich No. 1 ran into the paddock, with the driver shouting excitedly for a light. A large hole had been blown in the right hand side of the water jacket of the two rear cylinders. This was the end of a series of accidents; one road wheel had broken, the clutch had been changed, the radiator had sprung a leak, and the engine had been overheating for the last two or three hours. Only a quarter of an hour before the accident the car had run into the paddock to cool off the radiator and take in more water. Fortunately the driver and mechanic escaped injury when the portions of metal flew into the air.

On starting the race after the afternoon interval the Hotchkiss car accidentally backed into the Allen-Kingston, injuring the radiator and cracking the side frame. On a protest being filed the committee allowed the car to be repaired, granting it 98 miles, based on its average running prior to the mishap.

Less than an hour from the finish, the Renault, then driven by Bernin, was signaled to stop at the grandstand and was informed that there were but 62 miles to cover to equal the non-competitive track record established by Clemens at Indianapolis



PARDINGTON AND WEBB OBSERVE FROM AN ELEVATED PERCH.

two years ago. Had he known his position earlier Bernin might have broken both the competitive and the non-competitive records, for since his lead was assured he had been driving at an easy gait, or as he expressed it in his native tongue, *à la papa*. The car's average for the twenty-four hours was 44.95 miles. At the end of six hours its average was 45.1 miles; at the end of the twelfth hour it was exactly 46 miles an hour.

The winning machine was a 35-45-horsepower runabout, 1907 model, having all the external features of the 120-horsepower racing car with which Szisz was first and second in the last two Grand Prix races. The motor and transmission were of standard type. Michelin steel studded anti-skid tires mounted on Michelin dismountable rims were employed.

With the exception of the Renault all the cars in the twenty-four-hour race were fitted with Diamond tires. The Matheson and Dietrich No. 1 used in addition Crescent rims. There was a general absence of tire trouble and a decided improvement in the manner in which changes were made. Work generally was done in a much more systematic manner in the paddock than was the case at Brighton Beach. Unfortunately, however, there were still too many idle sightseers around.

No doubt was allowed to arise as to the intention of the organizers of the meet to give the announced prizes, the silver cups being on exhibition near the judges' stand, and a certified check for \$1,000 being displayed at the start by A. R. Pardington, acting chairman of the A. A. A. Racing Board. Credit is due to A. F. Camacho, track superintendent; A. B. Tucker, racing secretary; Alfred Reeves, chairman of the racing committee, and Engineer William B. Spencer for the very successful handling of the event. Announcement was made that another twenty-four-hour race will be held in three weeks, when all the minor defects of an initial meeting will be removed.

Results in the Other Events.

In the Friday afternoon race of 36 laps, or about fifty miles, there were seven starters, as follows: Frank O. Fuller, Dietrich; George Mack, Dietrich; Meurice Bernin, Renault; A. L. Campbell, Allen-Kingston; Arthur Warren, Stearns; George Robertson, Dietrich; and William Swan, Stearns. Mack led for the first three laps, with Warren second and Robertson third. In the seventh lap Robertson took second place from Mack and held it until the sixteenth lap, when a leaky tank put him down and allowed Mack to get second place again, Bernin on the Renault being third. Mack's Dietrich won the race in 56:49.4, Bernin's Renault being second in 1:00:35 and Campbell's Allen-Kingston third in 1:13:6.4.

George Mack won the four-lap invitation handicap for Dietrich cars in 6:56.2, Arthur Reppingill, starting scratch, was second, and Arthur Rowley was third.

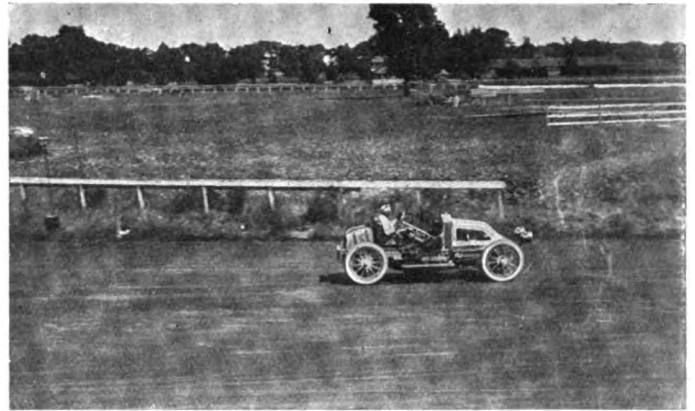
J. B. Ryall on a Matheson defeated Wallace Owen in a Haynes by about three-quarters of a mile in a four-lap match race, time 6:17.2.

For the flexibility test there were five starters. The B. L. M. and Hotchkiss were disqualified for stopping in their slow mile. Result was: Phil Hines, Pope-Hartford, 378 points; William Swan, Stearns, 273 4-5 points; A. L. Campbell, Allen-Kingston, 98 4-5 points.

George Robertson made an attempt to lower the mile record with the Hotchkiss Vanderbilt Cup racer. His time was :59 1-5.

During Saturday afternoon's interval Arthur Rawley on a Dietrich, won the obstacle race, run off in two heats and a final. In the auto polo match the same Dietrich was victor.

An unsuccessful attempt was made to lower the Christie and Chevrolet mile track record. George Robertson in the 1906 Vanderbilt Cup racer scored 54 2-5 seconds; Montague Roberts in the Thomas Vanderbilt racer was clocked in 60 1-5 seconds; Hemery's Vanderbilt Cup winner, driven by William McCulla, burned out its clutch leather on the trial run and was unable to do better than 1:34.



RENAULT WINNER IN FULL CRY AFTER ROUNDING UPPER TURN.



THE MINIATURE TENT VILLAGE OF THE CONTESTANTS.



THE LOZIER WHICH TOOK SECOND DESPITE MUCH HARD LUCK.



THE SIGN WHICH EXPLAINS WHY THE MEET WAS HELD.

STOCK CAR RACE ON LONG ISLAND.

The Metropolitan Automobile Association, through its president, T. F. Moore, on Monday last applied to the Board of Supervisors of Nassau county, in session at Mineola, Long Island, for the use of the Vanderbilt Cup course of 1906, such permission to include the holding of a two days' race for American stock touring cars, dates to be October 16 and 17, between the hours of daylight and noon, with 250 miles contested each day. The Supervisors took the application under advisement and asked the petitioner to supply more details concerning the management. A definite decision will be given in the near future.

The Metropolitan Automobile Association is the same organization which conducted the Fort George hill climb, August 3, in New York City. Mr. Moore, in his statement to the Nassau Supervisors, said that the association would bear all expenses in policing the course and guarantee the safety of the citizens. It is understood that Mr. Moore's plan would embrace the employing of 500 Pinkerton detectives.

The tentative conditions call for an entrance fee of \$500 for each car, with a manufacturer limited to three cars. The trophy is to be offered by a "prominent sportsman" not named, and according to one daily paper "will be competed for by American stock cars only." Another daily announces that foreign stock cars will also be admitted to the contest.

The impression prevails that the Nassau county officials may exact conditions from the Metropolitan Automobile Association which its originators may find somewhat difficult to comply with. Prominent A. A. A. officials who have been connected with previous Vanderbilt Cup races are unanimous in the belief that there should be no road race except over a course guarded by soldiers.

Nevertheless, not a few manufacturers are interested in the holding of a race, and it is a certainty that it would attract many thousands of people to Long Island, possibly prove a success, and possibly be conducted without any fatal accidents. But the task is a trying one, according to those who have had previous experiences, and the belief exists that the promoters do not appreciate the amount of work involved.

NO DECISION YET IN CHICAGO "24"-HOUR MESS.

CHICAGO, Sept. 9.—The Chicago Automobile Club's special committee, consisting of Sidney S. Gorham, L. E. Myers and N. H. Van Sicklen, has not yet made its report to the board of directors of the club in reference to the much-discussed and criticised 24-hour race of July 12-13. The committee has not yet examined all of the witnesses.

At the meeting of the enlarged racing committee, held last week, it was decided that the club would hold another 24-hour race at the Harlem track and make it the best managed competition of its kind the country has ever seen. Tentative dates were selected for September 27-28, the event to be open to both steam and gasoline cars, and to be of the single-car variety.

MORRIS PARK'S SECOND 24-HOUR RACE.

That automobilists are enthusiastic for a 24-hour race is proven by the rush of entries made Tuesday when it was learned that the next twice-around-the-clock event would be held at the Morris Park track, New York City, September 27 and 28. A thousand dollars in gold coin will again be given to the winners, with gold medals to the winning drivers, and in addition it is planned to give a \$20 gold piece to the car making the greatest number of laps each hour during the afternoon and evening of Saturday.

At a meeting Monday night, it was decided to make a number of changes. The paddock will be entirely fenced off, and each crew will be supplied with a colored badge. The signboard will be made four times as big, and instead of the regular announcement there will be a cinematograph telling all about the race, besides showing automobile scenes and famous contests.

CHRISTIE INJURED AT PITTSBURGH.

PITTSBURGH, Sept. 9.—Although one man had been killed and another badly injured in the event just preceding his appearance on the track, Walter Christie attempted to lower the track record of 58 seconds on the Brunot's Island track to-day in his 140-horsepower Grand Prix racer. The event in question was a 50-mile endurance run in which there were twelve starters. After having made several laps at good speed, Rex Reinertson, of Pittsburgh, who was driving a Haynes, upset on one of the back turns owing to a tire coming off. His mechanic, Clarence Bastion, was hurled clear of the car, but he was pinned beneath it. Despite the serious nature of the accident, no attempt was made to stop the event, and ten more laps were run off before it was called at the demand of Mayor Charles F. Kirschler, who compelled the referee, Congressman J. F. Burke, to stop it. Reinertson and his mechanic were hurried to St. John's Hospital, Allegheny, where the former died soon after, and it is thought that Bastion's chances of recovery are slim.

More than 4,000 spectators had gathered to witness the first of the two-day meet, but the crowd was not anxious for more after Reinertson's accident, and Barney Oldfield, who promoted the meet, gave an impromptu mile exhibition against time. Christie then came on in his front-driven racer. The track was in excellent condition, and he was confident of easily lowering the record by a considerable margin; he drove a preliminary warming-up mile, the latter half of which was covered in :24 flat, the car going by the stand with a rush. Reinertson's car had been shoved to one side, but did not clear the track, and a projecting end of the frame caught Christie's forward right wheel, causing his machine to fly into the air. He was hurled some distance, landing on his back, which was severely injured, his wrist broken, and his right eye cut by his goggles. The crowd swarmed on the track and the police were helpless, so that it was some time before Christie could be removed to St. John's Hospital.

CHRISTIE SAYS HE IS THROUGH WITH RACING.

PITTSBURGH, Sept. 10.—Walter Christie passed a fairly favorable day at the hospital. He is suffering from a broken wrist, a lacerated head, a sprained back, and injuries to his abdomen.

Mr. Christie stated that he had been thinking matters over, and had decided that he would not return to the race track. "Not because I have lost my nerve," he said, "but because I don't think that my wife and relatives will permit it."

Only the first race was pulled off to-day, on account of the rain. An enormous crowd had gathered, drawn by the excitement of the previous day.

CHRISTIE "STARRED" AT THE MINNESOTA FAIR.

MINNEAPOLIS, MINN., Sept. 9.—In the automobile races held on the Hamline track Saturday in connection with the Minnesota State Fair, Walter Christie went around the mile circle in 52 seconds, equalling the world's record made by himself at Boston and breaking the Minnesota record of a mile in 56 3-5 seconds, made by Barney Oldfield. The races were held under the auspices of the Minnesota State Automobile Association.

The big event of the meet was Christie's effort. His driving on the first corner was a wonder. He took the chance of a skid and carried the pole right around under his arm, going to the first quarter in :13 1-4, repeating the same daring performance at the second turn, and sweeping by the half-mile post in 26 seconds. Then came a bad stretch of track, and 39 seconds were gone when he reached the three-quarter mark; and then he struck a tremendous burst of speed, which carried him by the judges' stand with a record of 52 seconds.

Fast time was made in almost all the events, the liveliest being the five-mile contest for professionals, won by Christie.

Asa Paine, F. M. Joyce and L. A. Wood composed the board of referees.

ANOTHER CHAPTER OF SELDEN LITIGATION NEWS

"SELDEN '77 BUGGY PROVES ITS PRACTICABILITY"

From A. L. A. M. Publicity Bureau.

BROADWAY and Forty-ninth street was the scene of unusual activity Friday, September 6, when another demonstration of the original Selden gas buggy was given. The infringers of the patent have for some time been skeptical as to the practicability of the car and its ability to run either on flame or electrical spark ignition. The case, which has been in the courts for many years, has attracted widespread attention in the automobile industry, and as a decision is expected very shortly there is a renewed interest in every demonstration. The infringers of the patent, against whom suits have been brought for infringement, base their defense on the claim that the car built by Selden in 1877 was inoperative and impracticable for road use in any form, and that the car could not be run by its own power.

Several demonstrations to prove that it was practicable have been given, especially the one at the Guttenberg race track several weeks ago before the attorneys and experts for the defend-



"THE ORIGINAL SELDEN GAS BUGGY."

During its trials in and about Forty-ninth street, New York City, Paul Lacroix, American manager for the Renault Freres Co., and Emile Lamberjack, of Paris, were given an opportunity of trying out the first Selden vehicle, which was put through its various paces before an interested assemblage of spectators.

ants and complainants. At Guttenberg the car made a creditable showing, proving that it was operative to a degree which was far beyond the expectations of many of the observers. As that demonstration was made in private, many people believed that the car had not proved the claims of the owners of the patent.

Friday's demonstration again proved that the old car, with its original cylinders, pistons, etc., was capable of doing what the inventor expected it would. It was first run on flame ignition up and down the street, and later run on electrical spark to show its versatility. Up and down the street, through a labyrinth of modern automobiles, trucks, and interested spectators the first automobile of a compression type ever built was run. To show its operativeness, the car was reversed, turned around, and backed up several times, much to the surprise and humiliation of those who have belittled the work of an inventor who had been able to make and operate a car fifteen years before anyone else and whose original invention is operative thirty years after.

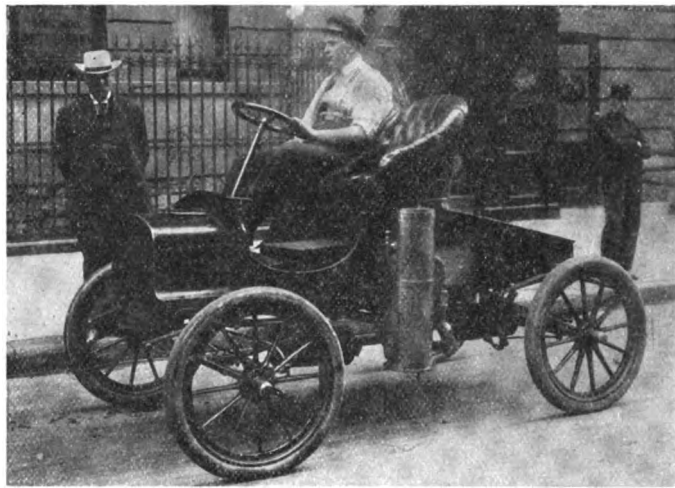
There were many interested witnesses who were surprised at the showing made by the old buggy, not the least being Paul Lacroix and E. Lamberjack, of Paris, who saw the car in operation for the first time. They were also given an opportunity of testing the weight of the claims of its backers with regard to its running powers by getting in and running it themselves.

"FORD FOLLOWERS SCORE ANOTHER VICTORY."

Sent by Ford Motor Company.

HENRY FORD and his followers scored another victory yesterday in the so-called Selden patent suit when his Lenoir car, built from patents issued in 1865, traveled about four times as far and four times as fast as what has been termed the Selden machine. The contest was held on Forty-ninth street, between Broadway and Eighth avenue, in the presence of about 100 spectators, including counsel and experts on both sides of the four-year-old suit which is claimed to involve the rights of the biggest proportion of the American manufacturers to make gasoline cars. Messrs. Cunz, Betts, and Gibbs represented the Selden side, with Messrs. Parker, Murray, Duryea, and Prof. Carpenter representing the Ford.

It was a case of 1865 beating 1877 without the slightest trouble, even when the Selden car ran, which generally was only for a few minutes at a time. In four and one-half minutes it stopped three times and in some cases would not run more than half a minute,



FORD'S REPLICA OF FORTY-YEAR-OLD PATENTS.

To refute the testimony of Dugald Clerk in the Selden action that a Lenoir engine could not be built light enough to operate a road vehicle, Henry Ford built this replica with a Festugier carbureter, the patents on this and the engine dating back to 1865, antedating the Selden invention by a number of years.

while its longest trial was four and three-quarter minutes and its greatest speed 6 1/4 miles an hour. Once it ran the length of the Forty-ninth street block from Broadway to Eighth avenue, but was easily passed by the Lenoir—1865. The Selden test was claimed to be under flame ignition in accordance with the patent papers.

It was not expected that the Lenoir car would be on hand for the comparative tests, but Mr. Parker had brought on the driver from the Ford factory in Detroit. The Lenoir, which is claimed to antedate the Selden engine, ran with two people from the garage to Ninth avenue, and then to Sixth avenue, crossing ten car tracks. In accordance with the ruling of the trial, its spark was fastened in one position so there could be no advancing of the spark. A request that the Selden car cross the tracks was refused. Then the Ford people offered to race the Selden car a 50-mile race, giving it a 45-mile start over the Lenoir. This, too, was declined. It was noticed the Selden car started only when facing down the street grade, and was always pushed around to that position before any attempt to start it was made.

The Ford people claim yesterday's trial not alone proved the superiority of the Lenoir 1865 over the Selden 1877, but that the latter was not practical in any sense, and that even with constant nursing and fussing it will only amble by fits and starts.

CLEVELAND'S SEALED BONNET TEST.

By W. F. BRADLEY.

CLEVELAND, O., Sept. 10.—The Cleveland Automobile Club's three-fold automobile competition has practically resolved itself into a single event owing to the lack of support from manufacturers and dealers. The electric vehicle contest failed to draw any entrants, notwithstanding the fact that Cleveland possesses a greater number of private electrics than probably any city in the country; the commercial vehicle test only appealed to two firms, the Gaeth and the American Motor Truck Company, the latter's truck competing while performing its ordinary duties.

Eight touring cars started from the Hollenden Hotel at three-minute intervals this morning in the sealed bonnet test:

Buick, 2-cylinder; driver, George Bettissl.
 Buick, 4-cylinder; driver, J. T. Trumbull.
 Mora, 4-cylinder; driver, J. W. David.
 Gaeth, 2-cylinder; driver, Paul Gaeth.
 Cartercar, 2-cylinder; driver, B. J. Carter.
 Jackson, 2-cylinder; driver, R. Burman.
 Cartercar, 2-cylinder; driver, A. W. Mall.
 Jackson, 4-cylinder; driver, C. D. Paxson.

In the morning the 80-mile run to Ravenna and back, most of it in drenching rain, which made the confetti trail difficult to follow and often reduced traction to a vanishing point, was successfully undertaken by all but the four-cylinder Jackson.

After half an hour's control at the clubhouse an easterly run was made to Mentor and home, distance 58 miles, at an average of nearly 18 miles an hour, over very bad roads.

Only two cars, the Gaeth, driven by Paul Gaeth, and the four-cylinder Buick, handled by J. T. Trumbull, came up to the high standard of efficiency demanded by the contest committee. The Mora came in on time, broke no seals, and had no adjustments, but lost 25 points for an accidental stalling of the engine when endeavoring to pass other cars stuck on a bad piece of road.

No. 22 Cartercar lost 1 hour 18 minutes repairing a broken gasoline feed pipe. Its companion, No. 21, came in on time, but decided to change a bent front axle. The operation, performed under the eyes of the officials, occupied twenty-four minutes at the rate of five points per minute. The two-cylinder Buick strayed from the route—an easy matter in the heavy rain—dropped into a hole and broke a link in the driving chain. At 9 o'clock neither of the Jacksons had appeared, one being reported out with a seized bearing, the other struggling with an exceptionally bad tire.

Official announcement of scores has been deferred owing to the elaborate system of penalization. Breaking the seals entails a loss of 50 points each time, stopping the motor costs 25 points, adjustments are charged 5 points per minute, and cars have, in addition, a running schedule. Time lost on tires or putting on and taking off chains is allowed for. An account is being kept of gasoline and water used and will form a special table. Good work was done around the city by the Gaeth delivery wagon, driven by J. Blatt, as well as by the American truck under the care of Mr. Lurch.

A. L. A. M. DISCUSSES ALCOHOL AND TIRES.

Hartford, Conn., was selected as the place for the meeting of the Test Committee of the Mechanical Branch of the A. L. A. M. Denatured alcohol and tires were the subjects.

At the morning session, Irving Buck, the chemical expert of the United States Alcohol Company, delivered a lecture on the subject of alcohol and gasoline and submitted to the committee a report of the results of his experiments, which prove that alcohol may shortly be a factor in the propulsion of autos. Action was taken by the committee to assist in a more exhaustive study of alcohol as a fuel, and a specially equipped power plant is to be installed. The first experiments, however, will be conducted with the various carbureters now in use and which will be attached to a Thomas "40" motor, used for engine tests at the

Hartford laboratory. At the conclusion of the chemical and efficiency tests on the motor, special vaporizers will be used and practical road tests given. The experiments so far have resulted in a reversal of opinion as to the starting properties of alcohol.

Part of the afternoon session was devoted to the subject of tires, and a very interesting demonstration was given of the new Dow tube—a non-deflation tube, which promises to eliminate many puncture evils. It has a double walled tube between the air chamber and shoe, which is filled with a plastic material with self-healing properties. When a tire is punctured and the object has been removed, the air pressure inside the tube immediately causes this plastic material (which is mixed with fiber) to flow through the opening from the inside. As soon as this flow begins, the hole is effectually and permanently sealed. To give the engineers a practical demonstration of the tube, the inventor and Secretary Clarkson made the run from New York. Before the start six punctures were made, the spike being withdrawn each time. Four nails were placed in the same shoe and left in during the entire run of 115 miles. In the presence of the engineers these nails were withdrawn, with practically no loss of air.

DRAGON TRANSCONTINENTAL TRIP IN PROGRESS

SAN FRANCISCO, Sept. 5.—The general run of excitement in automobile circles was punctuated yesterday by the departure of



DRAGON: LATEST TRANSCONTINENTAL CANDIDATE.

Charles D'Arcy, the head of D'Arcy, Scott Company, with a crew in a Dragon stock car to attempt to break L. L. Whitman's transcontinental Franklin record of 15 days 6 hours. The start was made on the 4 p.m. ferryboat for Oakland, where the car really took to the road. The time schedule on which the car will travel has been kept a secret. In fact, D'Arcy, having never tried such a long run, has no definite idea of the ability of himself and his crew as cross-country drivers, but, having great faith in his car, has felt that the record could be lowered. He has had very little to say of the trip, preferring to await results before making any statements. The route to be followed on the trip will be over the roads running as close as possible to the Central Pacific, Union Pacific and Chicago and Northwestern railroads. From Chicago they will follow the Lake Shore railroad to New York. Besides D'Arcy, there are T. Martenstein, Frank Sexton and Ben Turner.

RENO, NEV., Sept. 7.—The Dragon car engaged in a transcontinental trip to New York City met with an accident in the Sierra Nevada mountains. Descending a steep decline and to avoid going over an embankment, D'Arcy, the driver, ran the car into the rocks. The front axle and wheels were badly damaged, but repairs were accomplished and the car resumed its journey. At time of accident the Dragon was nine hours ahead of record.

SOME MYSTERIES OF THE CARBURETER

By CHARLES B. HAYWARD.

FROM a popular point of view there is nothing quite so mysterious about the operation of an automobile as the carbureter, and it must be conceded that its appearance and its functions are well calculated to mystify the uninitiated. What manner of "works" might this odd-looking contraption of brass, that sometimes takes the form of a mortuary urn and at others bears close resemblance to a cooking utensil, conceal within its grotesque outline? Mind you, I am speaking of the man who has never seen a carbureter dissected, and there are hundreds who have driven cars for a season or more who have never participated in one of these interesting seances. But there are in addition many hundreds, doubtless, who have viewed one of these mysteries reduced to its elements without being very greatly the wiser as to its construction or manner of working. Gasoline enters it by a most insignificant-looking tube, though nine out of ten of the gentry in question couldn't tell for the life of them how the gasoline does get into it. At the other end it leaves through a bulky outlet, totally disproportionate to that constituting its entrance. What magic process has it undergone in the interim?

For some reason or other automobile manufacturers have aided considerably in the shrouding of this essential of the car in mystery, and, strange to add, they are still doing it. Ask a representative maker, who does not buy his carbureters from a parts manufacturer, what type he is using, and nine chances to one he will reply "float-feet, automatic compensating," or something that means about as much either to the poorly-informed or to those thoroughly conversant with this branch of the art, for, with very few exceptions indeed, all carbureters are of the float-feed order and all are "automatic-compensating," or at least their creators would have intending users believe so. The automobile manufacturer exhibits a decided reluctance to revealing the "innards" of his carbureter in numerous instances, although both he and, in all probability, his inquirer is quite well aware that it embodies nothing whatever out of the ordinary.

Usually a Very Simple Device.

To get back to the man in the street's notion of what our Teutonic friends have very aptly termed the *vergasser*, a word that speaks for itself much more plainly than *carbureter*, it is hardly to be wondered at that so much ignorance and misconception should exist on this subject, any more than it should on that of ignition. Apart from a certain familiarity with its odor in a partly burnt state, and mixed with lubricating oil ditto, as it pollutes the atmosphere, the average man knows mighty little about gasoline, and usually cares less, until he comes to take upon himself the responsibility of owning a car. Compared to the amount of trouble of which it is capable, the carbureter appears to be a most inoffensively simple device, once its elements are understood, and the latter are so few and usually so well put together that the chances of their becoming deranged or of the contrivance as a whole causing trouble would appear to be remote indeed. Yet some of the best-known makers in the country have come to the conclusion that they cannot turn out as good a carbureter in their own works as they can buy from the special parts makers, so that if the manufacturer himself thinks fit to shift the burden to another's shoulders the novice can surely be pardoned some of his density where a clear insight into its working is in question.

In its way, the average carbureter is just as simple as it looks, and its operation is even simpler; but, like so many other *can-be-run-by-a-child* devices, the number of puzzling things that can go wrong with it is certainly amazing. It will play dead, buck, snort and pop, spit fire and perform many other tricks that are amusing and a bit terrifying to the spectator, but far more so to the man at the wheel, who has to descend to diagnose what is to him an ailment as queer as it is perplexing. It will sometimes run the

engine by fits and starts, at others not at all, while there are all kinds of variations and cross harmonics on the scale represented by these two extremes. To sum it up briefly, sometimes it works and sometimes it doesn't, just as is the case with every other device. Ordinarily it is not a very difficult matter to diagnose its ills, once the beginner becomes sufficiently conversant with its mechanism and ways to be able to put cause and effect together and trace one to the other.

Backfiring a Puzzling Form of Trouble.

Of all the carbureter troubles that have mystified the novices of each succeeding season, probably there is none that has proved so utterly puzzling, as well as alarming, as that of popping or backfiring. This mysterious ailment has a habit of appearing with an irregularity that is disconcerting, and which makes it appear as if it were not the outcome of any particular combination of circumstances, as would be the case were its presence only an accompaniment of certain visible and easily detected symptoms. But it comes and goes unexpectedly, at times reaching proportions that are alarming, particularly when flames shoot out of the air inlet of the carbureter, an occurrence that gives the average driver visions of a conflagration and the smoking ruins of his car. It is difficult for him to understand why this fire should not ignite either the gasoline vapor or the gasoline itself that is in the carbureter at the time, and send the whole car up in flames. Simply because the former does not ignite readily, due to the fact that it is almost pure vapor with little or no air, and the flame passes over the latter at such a speed that it has not time to take fire. Even though the spray issuing from the jet should take fire, the flame could not travel back through the spray-nozzle to the float chamber, and it would be extinguished by the next inrush of air immediately following the backfire. The danger from the latter lies not so much in the fear of setting fire to the contents of the carbureter itself, as it does to something on the exterior and directly in the path of the flame. Bits of oil-soaked waste, the braid of the insulation on the ignition wiring and similar things burn readily, and the heat they produce will cause the gasoline supply to take fire also.

Causes of Some Common Ailments.

There are three things that may bring about this objectionable ailment on the part of the carbureter—improperly timed valves, a very weak mixture, or a very rich mixture. The first is most easily eliminated, as, if it be at the root of the trouble, the latter will be constant and not spasmodic, as it is with the mixture which varies greatly at differing speeds of the engine, despite the carbureter-makers' emphatic claims to the contrary. In either case the underlying cause is to be found in the fact that the inlet valve opens while the charge is still burning, both a weak and an over-rich mixture being very slow burning. The sustained pressure causes part of the cylinder contents to be ejected through this valve into the manifold and out through the air-inlet of the carbureter, even though the exhaust valve may be open at the same time. Ordinarily there is not more than sufficient pressure to cause the familiar popping noise, the issuance of flames from the carbureter being the symptoms of an exaggerated case of the malady, in which the mixture is so very slow-burning that it is still on fire not alone after the completion of the power stroke, but after its discharge into the air. The remedy is a change in the adjustment of the spray-nozzle to give more or less gasoline, according to the needs of the case, and the chief thing for the novice to learn in this particular is to make haste very slowly. The reason therefor will be apparent by giving the screw an eighth turn upward or the reverse and noting the marked effect on the running of the engine when the adjustment is very close to what

it should be. As this point recedes a correspondingly greater movement of the screw is necessary to produce a marked effect. To find the proper point the nozzle should be closed tightly, so that all adjustments may be made from a known standard. Then open half a turn, prime and try starting; if the motor will not start, try opening a slight bit more until this can be done. In nine cases out of ten the motor will run poorly when first getting under way. The needle should be screwed up or down as little as possible at a time, and a quarter to a half turn will be found to produce an apparent effect on the motor's running. It will either slow down and begin to get weaker or will speed up very appreciably, according as the adjustment approaches or recedes the point corresponding to the formation of the best mixture. While making these adjustments the throttle should be at the customary starting point, and after having got the motor to run satisfactorily under this condition it should be tried at all points of the throttle, from practically closed to wide open. If it fails to respond as readily at the higher speeds as it should, the trouble probably will be found to lie in the working of the auxiliary air-valve, which is a most prolific source of annoyance.

Proper Adjustment Is a Simple Matter.

Having found a point of adjustment of the spray-nozzle at which the motor performs satisfactorily at low speeds, it is wise to maintain it before going further by tightening the nut and also marking the point on the screw by a file-scratch for future reference, for many carbureter troubles are due solely to the vibration and hammering to which it is subjected by running over rough roads at high speeds. It is safe to say that carbureter troubles would be halved if it were undisturbed in this way, so that vibration is a prolific source of annoyance that can best be guarded against by a periodic inspection, the value of which will be greatly enhanced if there are guide marks to show the state of affairs at a glance. If the engine fails to show the same satisfactory results at higher speeds, and particularly if it fails to run at a high speed—*doesn't pick up when the throttle is opened*, to put it in the vernacular—the auxiliary air-inlet should be the next seat of operations. Hold this valve open and as a substitute for it place the hand over the auxiliary inlet, uncovering the latter gradually and in about the same proportion as the valve itself should uncover it as the throttle is progressively opened. Then the valve itself should be examined to detect any cause for its failure to respond to the varying speeds of the engine. These are most commonly dirt, too high a tension on the controlling spring, or sticking as the result of a violent bump.

A Most Prolific Source of Annoyance.

Volumes could really be written on the idiosyncrasies of the auxiliary air-valve, but the autoist who frets and fumes over its shortcomings to-day, cursing it as an invention of the evil one, should reflect on the condition in which his predecessor of a few years ago found himself before its invention, and if he wishes to enjoy a bit of actual retrospection of this kind he has only to fasten the auxiliary air-valve tight and run the car in that state. Even then his carbureter will work much better than did those of half a decade ago, because a great deal has been learned on the subject in the interim. An auxiliary valve is one of those delicately constituted pieces of mechanism that is a necessary evil under the present system of vaporizing the fuel, and, despite the extent to which it is maligned, the prospect of eliminating it in the near future does not appear overbright, so it is a case of make the best of it. To do this with the least annoyance it is only necessary to apply to it the same system of regular inspection that should be given every other part of the car at stated intervals. Follow the let-well-enough-alone principle of always refraining from disturbing an adjustment as long as it works properly; but this does not mean to overlook it entirely until it breaks down. Railroad companies pay out large sums of money annually for inspection crews, but, in spite of the vigilance exercised in a number of departments, locomotives often go wrong on the road. How then can the

automobile be expected to be immune from the same trouble, when it is not looked after and gets so much harder service with far less care?

Most Troubles Are of the Ordinary Kind.

But to come back to the carbureter. Another chapter of ills is to be found under the category of fuel stoppages, and these may be found anywhere from the gasoline tank to the nozzle, so that they are not purely carbureter troubles. Lack of pressure in pressure-controlled systems and lack of gasoline in any kind of a system may be passed over as not coming in any catalogue known to the trouble-man. Autoists are still held up on the road with empty gasoline tanks that it takes them some time to discover, but probably they never do it twice. Some cars are provided with special stop-cocks right at the line side of the tank, in order to permit of the removal of the piping without emptying the tank, and instances have been known where the failure to reopen this cock has occasioned no end of blasphemy. Then there is usually another cock on the line side of the carbureter. So much for those cases of inadvertently omitting to turn the fuel on at all. Then there are water and sediment as enemies of the autoist's peace of mind. Despite the greatest care employed in handling the fuel, the amount of water and sediment that there is in the quantity used in the course of a season is surprising, so that a periodic flushing of the tank and opening of the drain-cock, both in the latter and in the line and carbureter as well, will reveal the potential source of considerable trouble if permitted to accumulate overlong. All the foregoing may be summed up as *keep the tank full and keep it and the fuel system clean*, as it amounts to nothing more.

Some of the Usual Mechanical Defections.

Then there are the sundry mechanical derangements of the fuel-controlling devices in the carbureter itself. The float comes first in order, though it is practically immune from defections. If of the cork variety it may become loggy and sink to a very much lower level than that intended, in which case the most effective remedy is its prompt replacement. Or, again, it may lose its protective coating of shellac and begin to disintegrate, in which case there will arise the necessity of making an inspection of the spray-nozzle. It's spindle may become bent, and it requires but a slight amount of disalignment to prevent it from performing its functions properly. The habit of hammering on the priming pin that is so prevalent is conducive to this ailment; hitting the pin a punch with the thumb does not bring the gasoline into the float chamber any quicker, as a slight depression and holding down of the tickler will achieve the same result without risk of damage. Getting out of line will sometimes cause the float to bind on the sides of its enclosing chamber, or it will fail to operate the shut-off valve in the fuel line, for reasons arising out of the same cause. Between the float-chamber and the spray-nozzle is a passage of very small bore in a great many carbureters, and though the remainder of the device may apparently be perfectly free from obstructions, they may lodge here and be overlooked. Then last, but far from least, is the spray-nozzle itself. Here of all places is one of the things that should be let alone unless there is positive demand for its adjustment, and when the latter is necessary it is a very bad habit to screw the needle up tightly, as it is apt to enlarge the orifice in the brass nozzle. These are the majority of the principal forms of trouble that will be encountered with the carbureter, though they may appear in so many diverse forms as hardly to be recognizable from the printed description. The number of different forms in which these various ills may make their appearance is legion, while matters are further complicated by the fact that it is difficult to always diagnose them properly, and they are furthermore frequently confused with defections arising from some fault totally foreign to the carbureter. The most common case of this kind is to be found in attributing loss of power to the carbureter, instead of a weak ignition current or poor trembler adjustment.

EFFECTS OF WIND RESISTANCE ON SPEED

By JOSEPH A. MACKLE.

LONDON, Sept. 2.—In these days of big covered cars the resistance caused by windage at high speeds is a matter of great importance, and yet one on which but little reliable information is obtainable. True it is that the R. A. C. hill-climb formula takes into account the power absorbed in overcoming this resistance, but the values assumed are more or less arbitrary and seem to favor unduly the smaller vehicles.

Recognizing the need of reliable data, the enterprising S. F. Edge conducted some interesting experiments at Brooklands track last week. A standard 40-horsepower six-cylinder Napier, without body, was equipped with a pair of well-stayed uprights, standing some eight feet high above the frame. To these stays were fastened horizontal laths, each six feet long by two inches in width, and by varying the number and position of these laths different areas were presented to the wind. Fortunately for the accuracy of these few experiments, the slight breeze blew straight across the track, so that there was no opposing head wind. The runs were made over a measured quarter mile on the finishing straight, and the assistance of the R. A. C.'s official time-keeper was invoked to insure accuracy.

On the first run of the series shown in the table below an area of 30 square feet was exposed (in addition to the normal amount of about 112 square feet for car and driver), the maximum speed attained was 47¾ miles an hour. On subsequent runs the area was gradually reduced by amounts of two square feet, and the speed increased step by step till, when the last lath had been removed and the normal surface presented to the wind, a speed of 79 miles an hour was recorded. The seventeenth run had an area of 15 feet square feet, formed by a gridiron arrangements of laths. The time recorded was 15 4-5 seconds, or a speed of 57 miles per hour, showing that owing to the extra skin and corner friction the resistance was the same as if 18 square feet of continuous area had been displayed. This fact is of much interest in demonstrating the speed-reducing effect of a number of small projections on a car. For the final test a total area of

24 square feet was exposed in two sections, the top portion having 13 square feet surface and being separated from the lower 11-square-foot portion by a gap of 6 square feet. The actual effect on the speed was equal to that offered by nearly 28 feet of continuous surface. It will be noted in going through the table that the lowest speed, recorded with the maximum resistance, was 47.85 miles per hour, while the highest speed was 79 miles per hour, a variation of 31 miles per hour merely by the additional wind resistance and with practically no increase in weight. Owners of large limousines, or touring cars with wind shields, must realize the enormous amount of extra work imposed on their engines, and also on their driving tires, particularly when traveling against a head wind.

These experiments deal, of course, with plane surfaces only, and many interesting tests would suggest themselves for determining in similar manner the best shape for front and rear of a fast car. Without doubt, too, the results so obtained would be of great value in their application to the dust-raising question.

The following gives the speeds attained on the various runs:

Run	Area of Screen	Time Over Flying 1-4 Mile	Speed
1.....	30 square feet	18 4-5 secs.	47.85 miles per hour
2.....	28 " "	18 " "	50 " " "
3.....	26 " "	17 " "	52.9 " " "
4.....	24 " "	16 " "	56.2 " " "
5.....	22 " "	16 3-5 " "	54 " " "
6.....	20 " "	16 1-5 " "	55.5 " " "
7.....	18 " "	15 4-5 " "	57 " " "
8.....	16 " "	15 3-5 " "	57.6 " " "
9.....	14 " "	15 " "	60 " " "
10.....	12 " "	14 2-5 " "	62.5 " " "
11.....	10 " "	14 " "	64.2 " " "
12.....	8 " "	13 3-5 " "	66.2 " " "
13.....	6 " "	12 4-5 " "	70.25 " " "
14.....	4 " "	12 " "	75 " " "
15.....	2 " "	12 1-5 " "	73.8 " " "
16.....	Normal	11 2-5 " "	79 " " "
17.....	15 square feet Arranged as grid- iron.	15 4-5 " "	57 " " "
18.....	24 square feet In two blocks with 6 square feet between.	17 3-5 " "	51.1 " " "

REGISTER OF CYLINDER TEMPERATURES AND PRESSURES*

IN order to arrive at the amount of heat transmitted to the cylinder walls of an internal-combustion motor, in figuring its thermal efficiency, calculations are usually resorted to in which the temperature of the exploding gases and the specific heats of the gases of combustion are taken as the principal factors; but the extremes to which the former reach have not been accurately established. To ascertain this result more accurately, Professor Bertram Hopkinson, of the University of Cambridge, has devised an apparatus which permits of the measurement of this quantity of heat experimentally. The device, which was the object of a communication to the Royal Society in January last, is composed of a cylinder, 30 centimeters in diameter and 30 centimeters long, lined with wood and closed at each end with plates of cork. The principle upon which the apparatus is based is the variation of the electrical resistance of copper as a function of its temperature, and for this purpose the cylinder contains a spiral band of copper 6.5 mm. long, the turns of which are spaced 1 mm. apart. The spiral is extended at each end by straight strips, as shown in the illustration (Fig. 2), these extensions being for the purpose of connecting it electrically with the remainder of the apparatus.

The cylinder itself, which is shown sectionally in Fig. 1, has an opening at each end, the left-hand one (A) being for the insertion of a spark plug or ignitor, which reaches to the center of the

cylinder, while the other (B) communicates with a pressure indicator. The other openings (O) permit the passage of the electrical connections of the spiral already referred to, the admission of the explosive mixture and its exhaust being accomplished by means of stop-cocks, which do not appear in the illustration. The mixture having been admitted and fired, the consequent rise in temperature produced causes a corresponding change in the resistance of the copper spiral, which is measured by means of the arrangement outlined in Fig. 2. The part of the circuit at the left comprises a battery (B1), consisting of 5 storage

cells, a group of 4 incandescent lamps, wired in series-multiple (L), acting as a resistance, and the copper spiral already described. The other half of the circuit at the right consists of a galvanometer (G) and a resistance (R) of 0.25 Ohm, while connected in shunt with it is a second resistance (R1) and a battery (B2) of 6 cells,

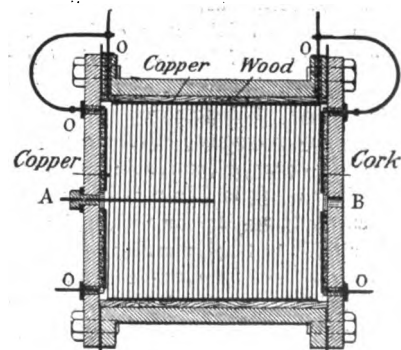


FIG. 1.—Cross sectional view of cylinder.

*Translated from *La Vie Automobile* by Charles B. Hayward.

which opposes the first battery mentioned. The number of lamps in the resistance L is such that the amount of current passing is eight amperes, while the resistance R_1 permits no current to pass through the galvanometer. Under these conditions, the resistance

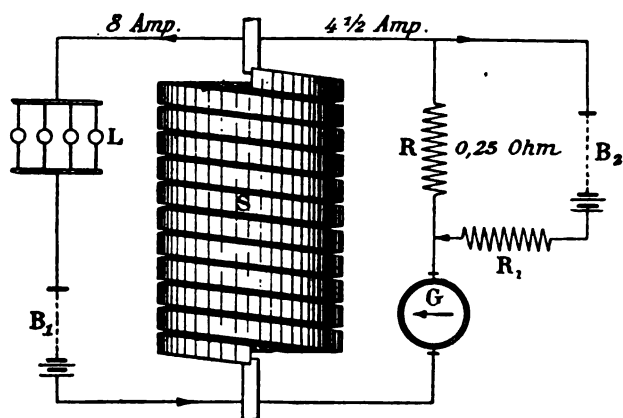


FIG. 2.—Electrical circuits of the apparatus.

of the galvanometer being 3.2 Ohms and that of the copper spiral (S) 0.14 Ohm, the current furnished by the battery (B_2) is 4.5 amperes.

When the explosion takes place the heat produced increases the resistance of the copper spiral to such a slight extent, as compared with the total resistance of the circuit in which it is placed, that the intensity of the current traversing it practically does not vary. On the contrary, the electromotive force within the limits of S is augmented proportionately to its increase in resistance, so that a current which is proportional at that moment to the increase in resistance traverses the galvanometer G . The variation of the resistance of copper as a function of its temperature being known, it suffices to measure the deflection of the needle of the galvanometer to arrive at the variations of temperature of the spiral and, in consequence, the amount of heat absorbed by it, its specific heat at these diverse temperatures having been determined in advance. The reading is taken photographically with the aid of a mirror, which concentrates the luminous ray and throws it on a sensitized plate. The pressures reached within the cylinder are shown by the gauge attached to the opening B , Fig. 1, and, for the purpose of comparison, are recorded photographically at the same time as the deflection of the needle.

WHAT IS THE CAUSE OF RUST?

A short time ago Mr. Moody, by means of a series of experiments, of which the Central Technical College may well be proud, demonstrated that in the absence of carbonic dioxide rusting of iron and steel did not take place, and thus confirmed a view that was then doubtful, says *The Engineer* (London). The text books had taught that oxygen and water were alone sufficient to cause corrosion. It was proved definitely that more was required than water and oxygen to effect the reaction—an important step. Now another theory, remarkable in many ways, attracts attention. Dr. Cushman, of the United States Department of Agriculture, has been studying for some time the corrosion of wire for farmers' fences, and at the meeting of the American Society for Testing Materials on June 22 he described the investigations on which he had been engaged, and the facts he had discovered. From these he arrives at the conclusion that rusting is not a pure chemical reaction, as we have been taught to consider it, but an electrolytic or electro-chemical one. We have become used to the thought that most chemistry is in some way or another electric. The theory does not, therefore, sound unfamiliar, and we are able to follow Dr. Cushman when he tells us that, according to his view, the first attack on iron is not made by oxygen, even in the presence of water, but by hydrogen in the form of the hydrogen ion. A remarkable feature about this theory is that it

is practically the same as that of the corrosion of alloys, which Mr. Rhodin outlines. Electrolytic action as the cause of the wasting of steel, commercial iron, and other alloys is no new thing, but it is carried a stage further by the introduction of modern theories of dissociation. He (Dr. Cushman) has found that in powerful oxidizing agents like bichromate of potash and chromic acid a valuable material for this purpose exists. Solutions of these salts prevent rusting by "polarizing the iron to the condition of an oxygen electrode," which wards off the attacks of the hydrogen ion. Moreover, steel dipped in such a solution retains its power of resisting electro-chemical action for some time, and since solution is the first step towards the formation of rust, rusting does not take place. How far it may be possible to adopt such a method for the protection of iron and steel structures remains to be seen, and on account of its simplicity it will certainly undergo plenty of tests. Mr. Rhodin adopts a different method, and, by an ingenious system of reasoning, arrives at a bronze alloy which is very slightly corrodible. He effects this without robbing the alloy of high physical properties. If such an end may be reached with an alloy of copper and zinc, may it not also be attained in alloys of carbon and iron? We already know that all steels do not equally well resist rusting, and it requires comparatively little effort of the imagination to think of brands more resistant than any we yet have. With Mr. Cushman's theory before us, and Mr. Rhodin's process for arriving at "balanced alloys," are we wrong in expecting the future to provide a non-corrodible steel?

ENGLISH WORRIED OVER GASOLINE PRICES.

The time was, and not so very long ago, when the question of petrol consumption was not a serious one, says the *Motor*. This was when we could buy a two-gallon can for 40 cents. To-day 60 cents a two-gallon can is the standard retail price throughout London, and anything between this and 72 cents is asked in the country. That it will advance yet a few pence higher is at least within the bounds of possibility, and it seems to me that any amount of grumbling or protest is not going to avail much. It is simply a case of being compelled to pay the price if one must have the petrol. Grumbling or protesting doesn't make the monopolists turn a hair; in fact, they rather like it as proof of their being indispensable to the motorist. And this is the position of affairs after the endless talk, discussion and study of what is termed "the fuel problem." The motorist is in a worse position to-day than he was in before the subject was broached. The question is, when is anything definite and practical to arise from such discussion? Why could it not be shown conclusively whether benzol is a thoroughly practical alternative? The results of the official long-distance test under observation of what this spirit could do would be worth reams of the academic discussion. I know for a fact that this spirit can be sold retail at 20 cents per gallon, and it certainly seems to be the only reasonable alternative. Let the petrol people once feel the pinch of vigorous competition and the inflated prices will come down with a rush, but as long as a monopoly closely controls the supply of generally used fuel little or no relief is to be anticipated.

The bucking and snorting refusal to start of the gas engine is, states *Power and Transmission*, often due to moisture in the cylinder, preventing regular ignition till dried by the heat of several explosions. The difficulty may be obviated by shutting off the cooling water a few minutes before starting of the engine and not turning it on again until after the engine begins to explode regularly when again started. The hint contained here may be of use to the autoist who has trouble of this nature in cold weather, as with the customary method of bringing the motor to a stop, that of opening the throttle wide and cutting off the ignition after it has run at speed for a few seconds, the cylinders next to fire are left full of gasoline vapor and air, which condenses when the cylinder walls get thoroughly cold and deposits no little moisture.

LETTERS INTERESTING AND INSTRUCTIVE

SOME QUERIES CONCERNING MOTORCYCLES.

Editor THE AUTOMOBILE:

[889.]—I would like to have you answer some questions about motorcycles, as I intend to buy one. I wish it to pull up almost any hill without pedaling and be able to run thirty to thirty-five miles an hour on the level. Will a 2 1-4 or a 2 1-2-horsepower, single-cylinder machine do this? Will a 3-horsepower or over cool successfully? Which kind of a drive gives the best satisfaction, the V-shaped belt, the flat belt, or the chain drive? Is slipping common with belt drives? I should think they would stretch and would not hold while out in the rain. Will a motorcycle tire last a season, if not, how long is the average life of such a tire? Is a motorcycle as expensive to maintain as a runabout? Is the non-vibrator coil successful, and would not a vibrator coil be much better? Why are they not used? Are there any motorcycle magazines published, and if so, will you kindly give me the necessary addresses?

A SUBSCRIBER.

Flemingsburg, Ky.

A two to three horsepower single-cylinder machine will probably suit your requirements best. In good running order, it will mount the majority of hills without recourse to pedaling, and is altogether the most economical motorcycle both to buy and to maintain. There is no difficulty in cooling larger motors, as motorcycles of five to seven horsepower are common, and racing machines have been built several times as large as this. The question as to which form of drive is superior is one that still remains very largely a matter of personal opinion. As you have doubtless noticed, machines of both kinds are made in this country, and both seem to run well, though on the whole it must be conceded that the chain is a far more durable device. The number of kinds of belts employed, particularly abroad, where this form of drive is very common, is very great, most of the modifications being designed to overcome the fault of slipping, so that this would appear to be the chief defect.

Whether a motorcycle tire will last a season or not depends entirely upon the service it gives and the care that it gets, though under ordinary circumstances it would hardly seem possible to wear out a tire in the course of an average season's riding, barring accidents.

We have no idea what the average life of a motorcycle tire is, but as many automobile tires, which bear several times the weight and are subjected to much harder service in every way, are good for anywhere from five to ten thousand miles, we should think a motorcycle tire ought to do double this. The expense of maintaining a motorcycle is far less than that of keeping even the smallest of runabouts. The non-vibrator coil has been found to be the most successful, owing to the rapidity of its action as well as its freedom from trouble. Vibrator coils are not used owing to the fact that running over rough roads would soon cause derangement of the contact-making device. *The Bicycling World*, New York, is, to our knowledge, the only paper published in this country dealing with the motorcycle.

EXPERIENCES WITH SOLID TIRES WANTED.

Editor THE AUTOMOBILE:

[890.]—I am a subscriber to "The Automobile," and desire to obtain all the information possible regarding the subject of solid tires. I have a light runabout, and am thinking of equipping it with solid tires. Can you give me any suggestions that will enable me to get the best?

C. N. PATTY.

Pontiac, Ill.

Not having had any extended personal experience with solid tires in this role, we do not feel competent to answer your inquiry in exactly the form it is made. The question involves the weight of your car, roads to be traveled and other data, which you do not supply. Moreover, it is very largely a matter of personal experience, some autoists praising the use of solid tires, while others condemn them utterly, so we think it will probably be wise to ask any autoists who have tackled the problem to let us hear from them.

SOME QUESTIONS ON VARIOUS TOPICS.

Editor THE AUTOMOBILE:

[891.]—How many cubic feet of gas will a gallon of gasoline produce if properly mixed for an automobile engine? Also, how can I obtain the names of different garage owners throughout the country? Would it be of any advantage to take up the matter of a muffler cut-out and transmission which occupy one-half to one-third the space at present necessary for transmissions? It can be very easily operated by a lever on the steering wheel. I am considering this from a financial point of view.

N. J. G.

Grand Rapids, Mich.

By gas we presume you mean mixture, and not pure gasoline vapor. There is some data extant on the subject that is not at hand at the moment, but to answer such a question definitely the specific gravity of the fuel, temperature and the like must be known. With the gasoline ordinarily used in automobiles the proportion of air is generally about 8 or 10 to 1, but actually the increment added by the introduction of the gasoline vapor is said to be so small that the number of cubic feet of air used by an engine in burning a gallon of gasoline would probably give an approximately correct answer to your query. Given the cylinder capacity, this could be easily calculated by multiplying it by the number of power strokes in the time required to burn a gallon of gasoline, though this would make no allowance for throttling or small charges. At ordinary temperatures, a gallon of gasoline of the specific gravity generally used nowadays in automobiles will probably produce from 70 to 90 cubic feet of vapor, and eight to ten times an average figure, such as 80 cubic feet, will doubtless give a fairly accurate result.

The best way for you to procure the names of garage owners throughout the country will be to obtain a copy of the Official Automobile Blue Book. Regarding the inventions you mention, if the devices in question are superior to those now generally in use it would certainly be to your advantage to have them placed on the market; but as to the method of doing this, we can hardly be of much assistance to you, other than to advise you to submit them to various automobile manufacturers and get their opinions.

ADVICE ABOUT ENTERING THE AUTO BUSINESS.

Editor THE AUTOMOBILE:

[892.]—I am anxious to enter the automobile business and would like a little advice upon the subject. I am at present working in a general store, but am mechanically inclined and believe the automobile business is a great field for the right kind of a young man. I would like to learn repairing and driving and later obtain an agency or enter the employ of some company as salesman. I am twenty-three years old and have had five years' business experience after a high school education. I have been a reader of "The Automobile" for some time and would appreciate any information you can give me.

H. H. WOOD.

Enfield, Ill.

To learn repairing and driving, which seem to be the stepping-stone to further advancement in the automobile business, it will be necessary to enter the employ of some manufacturer, garage or dealer. While, as you say, the automobile business is a promising field for the right kind of young man, the advisability of entering it is something which you must decide for yourself; but if you are inclined that way, you will doubtless make no mistake in taking it up.

INCREASING THE POWER OF A "ONE-LUNGER."

Editor THE AUTOMOBILE:

[893.]—Will you please let me know, through the Letters Interesting and Instructive column of "The Automobile," if the gasoline engine in an Olds runabout, having a 4 1-2-inch bore by 6-inch stroke, can be made more powerful, and to what extent. To do this, should the inlet and exhaust valves be made larger, and how much? Also, how much lift should the valves be given? Or would it be preferable to decrease the amount of space between the piston and cylinder head, which now amounts to one and one-eighth inches? If

so, how much should this space be lessened, and should the plate be put on the piston or on the cylinder head? H. X. MELIN.
Galva, Ill.

It is possible to make such an engine produce a slightly greater output than that for which it was originally designed by increasing the initial compression. The easiest way to do this will be to fasten the plate to the cylinder head, thus reducing the clearance. It would not do to attach such a plate to the piston, as it would destroy the balance of the engine. It will be unnecessary to alter either the size or lift of the valves, as compressing the same volume that they are designed to admit and exhaust to a much higher degree will give the desired result, with a minimum of complication. Probably it would not be advisable to decrease the clearance by more than 25 per cent., or approximately 5-16 inch, as this will doubtless give the maximum benefit to be obtained from such a change without unduly cutting down the factor of safety of the remaining parts of the engine. Only a brake test will serve to show how much the power of the engine has been increased.

INSTALLING GAS ENGINE ON STEAM RUNABOUT.

Editor THE AUTOMOBILE:

[894.]—I would like to know if it would be possible to install an internal combustion motor in the body of a 1903 Locomobile runabout, and what would be the necessary expense of doing so?

Corydon, Ia.

J. T. ROGERS.

It would be quite possible, but the job would be somewhat akin to building a new coat around an old button, and the result would be far from satisfactory. A light, air-cooled motor might be installed and made to run the combination, but it would neither be a thing of beauty nor a joy forever. As to the expense, there is no telling what this would amount to; but doubtless it would be far cheaper in the end to throw the old chassis on the scrap heap and buy a new car.

INFORMATION FROM HAWAIIAN ISLANDS WANTED

Editor THE AUTOMOBILE:

[895.]—Can you give me any information regarding the automobile business in the Hawaiian Islands? If so, your favor will be greatly appreciated, as I am an expert rubber man, can do anything with rubber, and am thinking of going to the Islands. I use a combination of rubber, cement, and treatments that are known to me only; in other words, I have perfected the vulcanizing proposition, and I want to get in a country where there is the most money—you understand how a fellow feels when he has got a good game. I have been employed by the Nevada Mobile Transit Company for more than a year. My work has been pronounced standard by representatives from every rubber company in the United States. Here in Goldfield during the summer months the heat is something fierce. Yet I have yet to have the first job to go bad. My work has held up on trips through Death Valley when the heat was registered from 140 to 160 degrees in the shade. I have seen new tubes and old tubes blow out a yard long, but never has one of my patches been affected from the heat. If you care to mention me in your magazine, and desire me to do so, I can furnish you with samples of my work to back up my assertion that I am at the top of the ladder in my profession. It has occurred to me that Honolulu ought to be a great town for my line of work on account of the extreme heat. I am a reader of your magazine, and if you can give me some advice in regard to that country and the addresses of the automobile companies there, I would greatly appreciate your favor; also any information regarding Mexico, Cuba, or South America will be gladly received.

Goldfield, Nev.

LEE A. CRAW.

LONG-DISTANCE TOURING UNDER DIFFICULTIES.

Editor THE AUTOMOBILE:

[896.]—My father, brother and myself have just completed a 2,500-mile tour through the east, taking in Boston and New York, and as we did something of a stunt on the part of the trip between Youngstown, O., and Toledo, I thought it might be of general interest. I was driving a 1906, 40-horsepower Pope-Toledo, and when we left Youngstown on Thursday, August 29, at 7:30 a. m., our transmission was practically gone; that is, we had nothing but the high speed, the first, second and reverse all being out of commission. We arrived in Toledo the same evening, having completed the trip of 194 1-2 miles on the high gear alone. As you perhaps know, if you have ever been over these roads, there are lots of steep and rough hills, especially between Youngstown and

Cleveland, to say nothing of the sand between Cleveland and Toledo. When I started up the hill just across the river from Chagrin Falls, I thought we were done, for I never expected to see the top. We made it, however, and I knew then that the car was capable of getting through to Toledo. It was pretty rough work, nevertheless, for we could not stop on the bumps at the bottom.

Chicago, Ill.

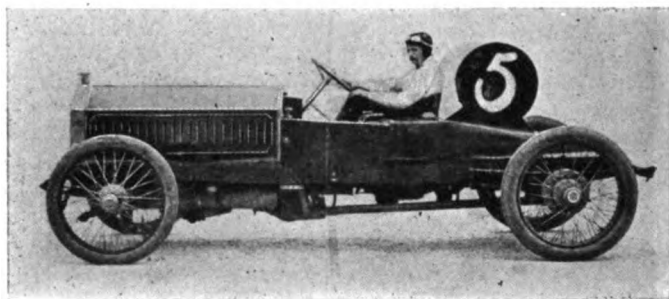
HORACE B. HORTON.

NEW WAY OF NUMBERING IN TRACK RACES.

Editor THE AUTOMOBILE:

[897.]—No doubt you are aware that the Brooklands Automobile Club has issued greatly improved regulations for the races to be held September 14 and henceforth on the Brooklands track. A new rule to be enacted is in regard to the method of identifying cars, and the regulations state that a disc shall be provided for each competitor's car, two feet in diameter, and that a number shall be painted upon it.

I enclose you a photograph of a six-cylinder Napier with the disc attached, as arranged by Mr. Napier, which may prove inter-



HOW THE NUMBERS LOOK WHEN APPLIED TO THE CAR.

esting to your readers, and which, I think, you will agree with me in saying it will be a splendid method of identification, and enable the spectators to easily identify each individual car. I find by experiment that the numbers can be plainly distinguished from all parts, even the highest point on the course, i. e., furthest away from the track. The Brooklands people are to be congratulated on inaugurating this simple and neat form of distinguishing the cars, without in any way detracting from their speed.

London, England.

S. F. EDGE.

REMEDY FOR A GREASY RADIATOR.

[898.]—I am enclosing my subscription for one year. I have read with much interest your up-to-date journal, and as I have not seen in its pages the following remedy for greasy radiators, I am sending it along for your approval. I had a very greasy honeycomb radiator, and tried to clean it with hot water and caustic soda, but did not succeed. I then tried the following: One gallon of naphtha poured into the empty radiator, and shook it up and down. Cleaned it all out in two minutes. Of course I had to detach the radiator to do so. It is a most effective cure.

Oatlands, Tasmania.

T. C. BUTTON.

SOME INFORMATION ABOUT ACETONE.

Editor THE AUTOMOBILE:

[899.]—If your correspondent in the August 22 issue—Letter No. 866—will write me, I will be pleased to give him particulars about acetone and gas storage tanks. For your information, would say that the greatest use of acetone is in the manufacture of high explosive smokeless powder. Thousands of barrels are sent yearly to England and Japan from the United States. Less than 2 per cent. of the production is used for dissolving acetylene gas. It is the greatest solvent of carbon known.

Milwaukee, Wis.

P. C. AVERY.

THE GREASE THAT TRACY DID USE.

Editor THE AUTOMOBILE:

[900.]—We desire to call your attention to page 334 of last week's issue of "The Automobile," in which you print an inquiry from C. L. Weimer, of Lebanon, Pa., asking what stuff Tracy used in his Locomobile racer in the 1905 Vanderbilt Cup Race. Your footnote in reply to this inquiry, is incorrect. Tracy used Havemeyer Gear Compound, which fact we advertised in your paper at the time, and it was to this very advertisement that your correspondent refers in his inquiry. Mr. Tracy also gave us a letter at the time, stating that he used our compound and that the same was most satisfactory.

New York City.

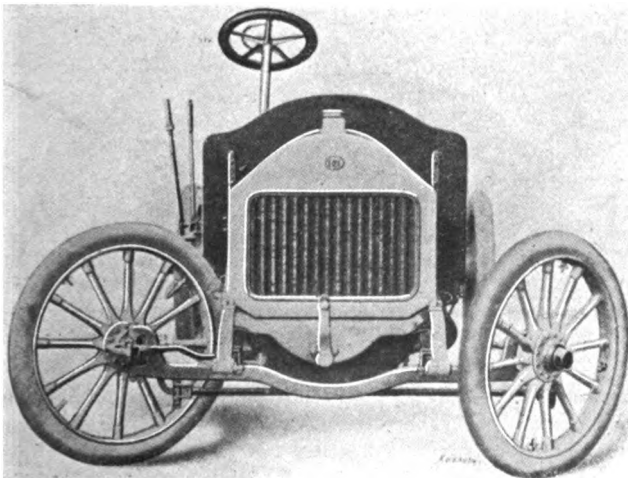


FIRST OF THE 600 DARRACQ TAXICABS FOR NEW

YORKERS' USE.

In the competition to supply New York with an efficient fleet of gasoline taximeter cabs, plying for hire at a reasonable figure, Darracq has been victorious. Associated with the French constructor—for the pioneer firm on the banks of the Seine limits its activities to automobile building—is the New York Taxicab Company, with offices at 546 Fifth avenue, and with a temporary garage at 40 West Sixtieth street, near Broadway. The officials of the company announce that thirty-five cabs will be on the streets of New York by the end of the month, and that additions will be made at the rate of sixty per month. Before the end of the winter 300 cabs will be in service, and by next spring the number will have reached 600. Rates of travel by the taximeter will be 30 cents for the first half mile and 10 cents for every additional quarter mile, in any district. Traveling further uptown than 125th street, and not returning, will entail an additional fixed charge; there will also be a supplementary charge for crossing any of the ferries. Waiting time will be at the rate of \$1 per hour.

Two types of gasoline cab have been constructed by the Darracq Company, one with a two-cylinder motor, the other equipped with a four-cylinder engine. For cities possessing well-paved streets, without difficult grades, the former model should be sufficiently powerful; for New York the more powerful car was considered preferable. Starting after some of the French firms, the



REVERSE NEVER NEEDED FOR TURNING IN STREETS.

spring clamps allows the rear axle and gear box to be taken down. Instead of being suspended from the frame, the gear box is carried with the differential on a fixed rear axle, the driving shafts transmitting power only, and not bearing any of the weight of the vehicle. There are three forward speeds, the third having direct drive, and one reverse. Large-size ball-bearings are employed in the rear axle and transmission, and gears are made exceptionally large for this size of car in order to ensure length of service. Placed on the rear axle, it is claimed that less noise is heard from revolving and changing of gears than in any other position.

In crowded traffic the Darracq cabs are exceedingly handy; the frame is narrowed forward to allow a wide steering angle, the turning radius being about 22 feet. Control is by means of throttle on the steering wheel and by a foot accelerator. Nothing is carried on the dash but the sight-feed lubricator. Gears are operated by a side lever, with a gate-type quadrant.

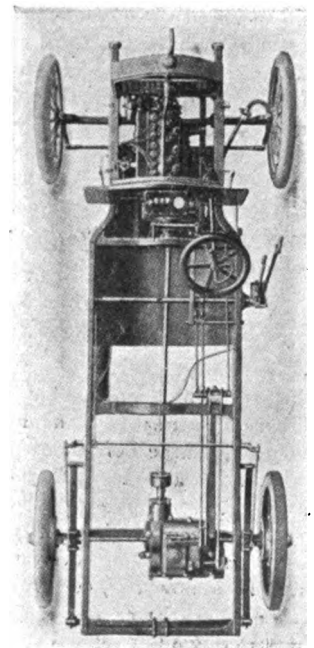
A landaulet body, constructed in Paris by the Carrosserie Industrielle, has been adopted, it allowing the vehicle to be either open or closed at pleasure. The taximeter, also of French construction, is carried on the left-hand side of the driver, where it is visible to both chauffeur and passengers. Instead of carrying spare tires, each machine will be equipped with a Stepany spare wheel, a British invention recently introduced to the United States. Gaulois tires are used on the cabs already arrived in New York, but it is declared that the Goodrich will be employed exclusively on the later vehicles. A school will shortly be opened to train the 500 drivers already enrolled on the company's books.

Darracq engineers recognized that an automobile for rough cab work must be built on entirely different lines from the pleasure vehicle; thus their existing models were put to one side and new vehicles designed. Nearly eighteen months ago we saw the first cab in the hands of the testers; to-day the new factory adjoining the old works is in full operation, turning out 3,000 cabs the first year, and having a contract for 2,000 chassis annually for ten years with one large syndicate.

The four-cylinder motor in one casting has cylinders 85 by 100 bore and stroke, horsepower rating being given as 14-16. Valves, mechanically operated, are all on one side, and ignition is by high-tension Simms-Bosch magneto. A winged-tube radiator-forming tank is used, with belt-driven fan and gear-driven centrifugal pump.

Combined with robustness, interchangeability and accessibility have been sought in the new cab. If the motor needs attention, it can be dismantled in a few minutes merely by removing four bolts.

In the same way the removal of four



VIEW OF CHASSIS.

FORECAST OF 1908 FRENCH MODELS

By GEORGES DUPUY.

PARIS, Sept. 2.—Interesting changes are being effected on the 1908 chassis, to be exhibited at the Grand Palais on November 12. There is a general tendency towards the chain, the cardan shaft having lost many of its admirers. In fact, it has been generally demonstrated on our European roads that the "non-suspended weight," the straining upon the differential gears (whenever there is a difference of level between the two traction wheels), the instability of the rear part of the car at high speed, and, above all, the wear upon the tires, are strong factors against the popularity of the shaft-drive. The small-town service chassis excepted—taximeters or light delivery vans—the European manufacturers will now equip almost all their models with the good old chain. A chain case of leather or aluminum will also be seen on every fashionable "voiture" in 1908.

Renault Freres have totally changed their transmission. Instead of the patented lateral switching of the gears which they have used successfully for the past four years—that is, the lateral displacement of the two gear shafts in the box—they are now building a double-sliding (triple with that of the reverse) like every common mortal. This will be just as silent as the old system, of course. They also do away with that big drop oiler on the dashboard. The drop-tubes alone are visible, while the oil tank is hidden under the bonnet. Lastly, their racer-like runabout—equipped with the ordinary 35-45 motor—seems to have conquered the favor of refined automobilists here, although I could name a few American runabouts much more comfortable.

The Panhard firm, old and venerable, has decided to wake up and do something. They have designed a motor with cylinders cast in pairs, fitted with a new Nilmelior magneto. They keep their armored wood frame, as in the past. De Dietrich will, next season, inaugurate the direct drive and a new tubular radiator.

Gobron has placed on the market a beautiful six-cylinder chassis of 60-100-horsepower, and a four-cylinder 15-horsepower for cab use, chain driven. The Gobron motor, as is well known, has a "double compensated" motion—that is to say, an explosion chamber at the top and at the bottom of each piston, so that the crankshaft works without any straining or deformation on its bearings, while the whole system gives the motor a perfect bal-

ance at all speeds. Bayard-Clément will exhibit a very interesting little 4-cylinder car, 14-20-horsepower, selling at \$1,300 complete, with four-seat double phaeton or the regular runabout body; Simms-Bosch magneto.

Simms-Bosch firm has just patented a new system of ignition, consisting of a magnetic ruptor fitted on the high-tension plug in the explosion chamber. This system suppresses entirely the high-tension distributor, as well as the ordinary low-tension ruptors, always so difficult to regulate. The camshaft, of course, acts directly on the new magnetic ruptors.

That transverse spring at the rear of the chassis, which is used on the Peerless in America, the Darracq, the Brouhot, the Pilain, the Delahaye and many others in France, and was abandoned by Renault last year, is likely to disappear, at least on the powerful cars. It gives a too considerable rocking motion to the heavy closed bodies, say the experts. C. G. V., Delahaye, Mors, Peugeot, Brasier, Delaunay-Belleville, Darracq, Mercedes, Hotchkiss, Leon Bollie, Fiat and other Italians will not add or modify anything of importance next year.

The "monobloc" motor—four cylinders in one casting—of which the C. G. V. firm is the pioneer, is gaining popularity. Almost all the "voiturette" builders are now adopting it on their chassis. This type is shorter, somewhat lighter, and gives a better cooling with less expense in the casting. The best "six" on the European market is now advertised by Napier, Bollée, Gobron, Itala, Fraignac, Mercedes, Hotchkiss, Brasier, Fiat and Darracq.

Multiple disc clutches have come to stay almost everywhere. They will be seen on a large number of chassis at the Salon. The old cone clutch has lived long enough. The Italians have adopted exclusively the Hele-Shaw pattern, with some times as many as twenty-six pairs of discs. Many French constructors are now placing the gasoline tank under the front seats, having realized the great difficulty of keeping a regular feed—on rough and uneven roads—with the actually prevailing system of exhaust pressure, hand pumps and "nurses." Finally, the detachable rim for touring purposes has not yet seen its best days here. A provision of "ready tires" constitutes a considerable weight to the load of the car, but seems likely to continue in vogue for some time yet.

RECORD SPACE TOO SMALL FOR SALON.

PARIS, Sept. 2.—Entries for the decennial automobile salon, which will fling open its doors on November 12, were finally closed on August 15. The Paris municipality having generously given up a large portion of the Esplanade des Invalides for the erection of a huge temporary hall to supplement the Grand Palais, it was believed that for once every exhibitor could be allotted the maximum amount of space. Gustave Rives, the general manager, has to announce, however, that the cutting down process will again be indulged in, even the two big halls on the left and right banks of the River Seine being insufficient to accommodate all those asking for space. From a glance over the lists, American manufacturers do not appear to have been attracted by the decennial celebration. The few firms having agencies in France—they are still only a few—will be present as usual. Some lamp manufacturers and makers of accessories will exhibit, either directly or through agents. The only American display of any note, however, will be in the machinery section, where various types of machine tools will be shown in motion. Nearly a dozen leading American machine tool manufacturers have agents in Europe, who will show side by side with French and German houses.

During the Salon a competition will be held in the machinery hall for motor-driven electricity-producing plants, using low-grade coal gas. Silver and bronze medals are offered for competition by the *Poids Lourds*, in addition to numerous prizes offered by the executive committee.

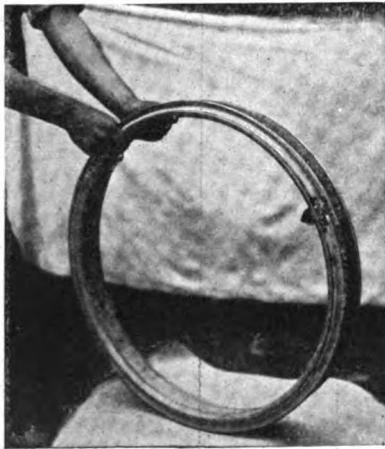
BREAKDOWN COMPETITION FOR CHAUFFEURS.

PARIS, Sept. 2.—Automobile mechanics are naturally men of resource, never non-plussed by breakdowns or refusals of the motor to perform the duties for which it was called into the world. At a smoker or any social gathering their skill in diagnosing and remedying the ills of the gasoline inspiring machine has been known to develop in a fantastic manner. To know what a mechanic can do under mundane conditions, when a silent, stubborn, responseless automobile is at his feet, a Parisian automobile journal has proposed a breakdown competition.

At one of the big automobile factories encircling Paris or on the quiet road around Longchamps race-course, where cyclists develop their form, the candidates for the expert mechanic diploma will be lined up in front of a row of machines, each one of which has the same secret malady. On the word of command each expert will rush to the machine reserved for him and endeavor to get it going in the shortest possible time. In one series the magnetos will be tampered with; in another clutches will need tender care; in a third the carbureters will have been specially disarranged; a fourth heat will test the ability of the men to change a number of burst tires. Thus tests will succeed one another until only the best men are left to compete in the finals. One dollar per head will be charged as entrance fee, in order to keep out the joyous individuals more anxious to obtain a half-day vacation from their employers than to compete in a competition. An official diploma will award the most skilled automobilists.

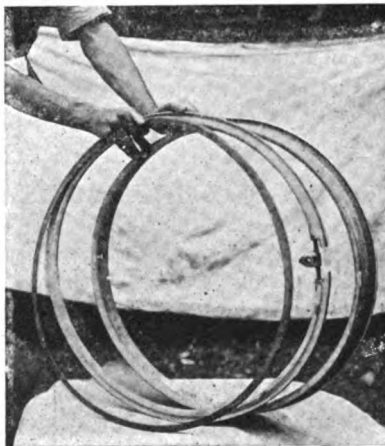
FEATURES OF NEW MIDGLEY RIM.

Attempts to solve the problem of providing a quicker and easier method of changing tires than the one in general use have not been lacking, though they have rarely met with considerable success, during the past few years. A new production of more than ordinary interest has been designed by Thomas Midgley, inventor of the Midgley universal rim, the Midgley tread and other automobile accessories, and has been placed on the market by the Hartford Rubber Works Company, of Hartford, Conn.

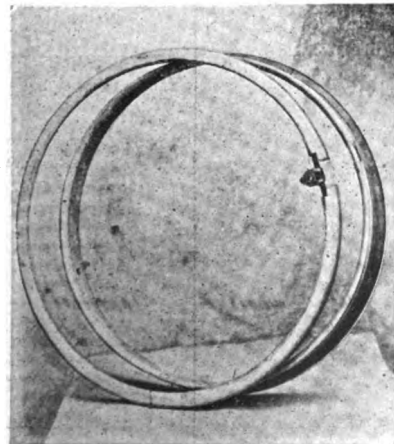


BEAD LOCKED IN POSITION.

The accompanying illustrations show the nature of the rim, which, it is declared, is truly universal, and can be used for any standard tire, either clincher or Dunlop. Previous attempts to produce a detachable bead have only been available for one type of tire. The new rim will supersede the Midgley universal rim, a former invention of Mr. Midgley and now widely used on automobiles. The turnbuckle feature, which has been a success on the former Midgley universal rim, is retained in the latest production. As shown by the pictures there is only one bead and one turnbuckle. When the rim is used for the Dunlop tire a strip of rubber, as shown in illustration, exactly fitting the clincher groove, is put in on the inner side and the bead is reversed. By taking out the band of rubber and by reversing the bead the rim takes any style of clincher tire.

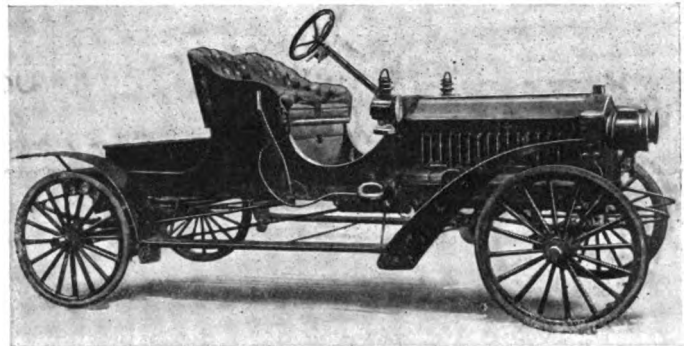


BAND FOR DUNLOP TIRES.



THE TWO COMPONENT PARTS.

Lightness has been obtained on the new rim with sufficient strength to give every guarantee of safety. The rim can be used with or without lugs. The three illustrations depict the rim complete, with the detachable rim secured in position; in the second one the band of rubber allowing the rim to be used for a Dunlop tire is seen; and in the last cut the two parts are shown side by side. To put on a tire by this device calls for the minimum of labor; the shoe and air chamber are slipped over the smooth edge of the rim, the bead put on and secured by means of the turnbuckle.

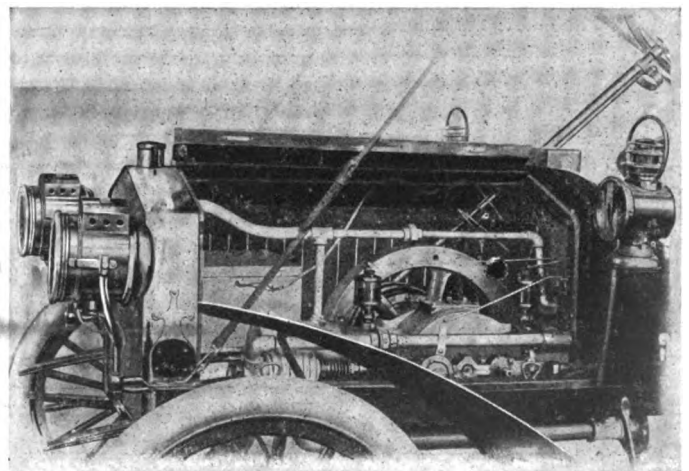


STANLEY GASOLINE RUNABOUT FROM MOORLAND, IND.

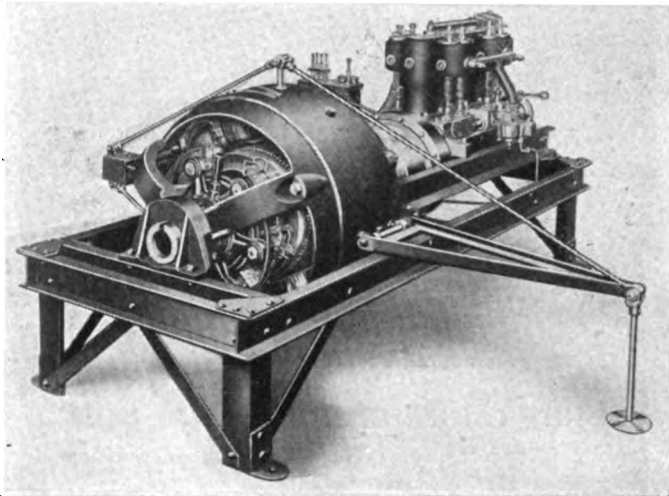
A NEW CAR FROM THE CENTRAL WEST.

Indiana is maintaining its reputation for the production of popular-priced cars, the latest to make its bow being the Stanley gasoline runabout, made by the Stanley Automobile Manufacturing Company, at Mooreland, Ind. The newcomer is designed as a general utility car at a low price, and combines many features of merit. While its makers have taken advantage of the simplicity of the horizontal opposed two-cylinder engine, they have shorn it of some of its ordinary shortcomings by placing it forward under the hood, though still retaining the longitudinal position with regard to the chassis. The cylinders measure 5 by 5½ inches bore and stroke respectively, and the motor is rated at 20-horsepower. All the valves are mechanically operated and the motor is water-cooled, the car as a whole giving no inkling of the unusual position of the motor, as will be evident from the photograph illustrating it complete. A force-feed oiler is employed for the lubrication, while the carburetor is of a standard type and the ignition is of the high-tension order, current being supplied by dry cells. This placing of the motor has been taken advantage of to render every one of its parts not alone easily accessible, but also removable from the chassis without the necessity of dismounting the motor itself from the latter.

The frame is of the standard channel-section pressed steel, measuring ¼x2x3 inches, and is supported on four-leaf full elliptic springs all round, measuring 36x1½ inches, the latter in turn being carried on 34-inch wheels, which are shod with solid tires of the same size. The wheelbase is 108 inches and the tread standard, while the weight all on is 1,410 pounds. The front axle is a single piece of 1¼-inch steel, while the rear axle consists of crucible steel castings and seamless tubing as a housing, the driving shaft being 2¼ inches in diameter. A planetary type of transmission is employed, giving two speeds forward and reverse, with a single chain-drive to the rear axle. Roller bearings are used throughout. The Stanley runabout complete lists at \$900.



POWER PLANT OF THE 20-HORSEPOWER STANLEY CAR.



SPRAGUE ELECTRIC DYNAMOMETER WITH ENGINE COUPLED.

ELECTRIC DYNAMOMETERS FOR ENGINE TESTS.

The handling of an electric current offers such a convenient and accurate method of determining the power output of a motor on test, that the use of a generator and resistance for testing preparatory to installing the motors in the chassis has become very general with automobile manufacturers. As a rule, most of the apparatus employed has been of home manufacture and more or less crude, usually consisting of a direct-current generator and bank of lamps or a water rheostat to dispose of the current. To obtain more accurate results, electric dynamometers have begun to take the place of these outfits, and specially designed apparatus of this kind is now being placed on the market by the Sprague Electric Company, New York City. They consist of a specially constructed direct-current generator, with compensating poles, mounted on a bed adapted to carry the motor to be tested, the general arrangement of the apparatus being shown by the accompanying illustration. The field frame of the generator consists of a cylindrical magnet yoke, to the inner side of which the poles are bolted, each pole supporting a field coil. Brackets containing the bearings are bolted to the end of the yoke, the front bracket carrying the rocker arm. Special bosses are cast on the end brackets to receive ball-bearings, which support the entire generator in such a manner as to permit of the oscillation of the field frame concentric with the armature. The movement of the latter is limited by a stud on the outside of the yoke projecting through a slot in a forging secured to the side of the supporting frame. The length of the slot, therefore, determines the arc through which the field frame can move. A short and a long arm extend horizontally from opposite sides of the field frame, to which they are rigidly secured, the short arm carrying at its outer end a small box to receive the amount of lead necessary to counter-balance the field frame on its ball-bearings, while the long arm is provided with a hanger for slotted weights, similar to those employed on an ordinary platform scale.

The motor to be tested having been mounted on the bed and attached to the dynamometer through the flexible coupling, its output is measured by means of the torque exerted by the generator armature in its tendency to rotate the field in the same direction as it is turning. By means of the weights on the hanger already mentioned, the amount of this torque can be readily measured. The horsepower of the engine can then be determined by the aid of the following formula:

$$HP = \frac{W + 2D + 3.1416 + S}{33,000}$$

in which W = weight in pounds on the end of the hanger; D = distance in feet from center of armature to weight, and S = speed of the engine in revolutions per minute during the test. It will be noted that in this formula the only variables with a

given dynamometer are the weight W and the speed S , so that with the aid of a curve or tabulation showing the horsepower developed at different speeds, an ordinary mechanic can perform the tests without making any calculations.

BENJAMIN BRISCOE ON TRADE CONDITIONS.

"Recent events have caused some discussion as to the destiny of the automobile business," says Benjamin Briscoe, chairman of the committee of management of the A. M. C. M. A. "The tenor of this discussion has been, of course, influenced by the failure of two or three large concerns. These failures, in my estimation, mean nothing particularly as referring to the business as a whole.

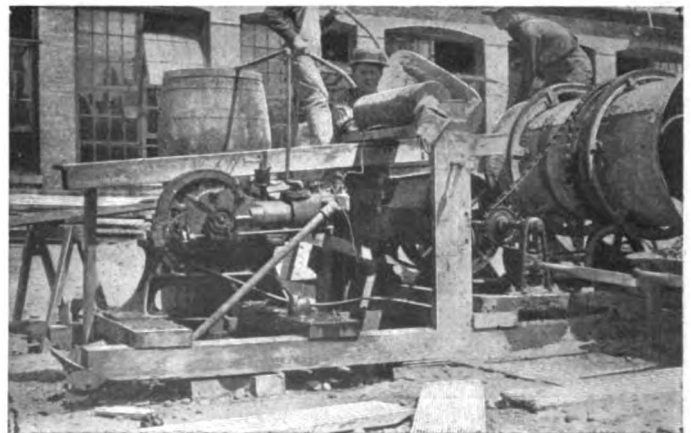
"Last winter, in an interview, I said that I believed certain concerns were bound to fail and I decried the entry of so many new concerns into the field, which had little capital and less experience.

"As to the failures that have taken place, one can put his finger on the exact cause, and it is certainly not occasioned by a lessening general demand. It is true that there have been several contributory causes such as the lateness of the season, caused by the cold weather during the spring, even up to June, the general tightness of the money market, but these are not the real causes, it seems to me, though they may have quickened the end.

"One great cause why some concerns seem to lack business is their misinterpreting the demand. To succeed, certain definite policies must be adopted and rigidly adhered to. The everlasting changing of models; the giving of options so that every car made is different from every other car that preceded it; the starting out with a popular priced car and equipping it with accessories that made it necessary to advance the price beyond its class, the putting on of unnecessary and expensive additions, as it were."

HOW AN OLD TIMER GIVES CONSTANT SERVICE.

The general presumption is that automobile engines require constant manual attention in the way of speed regulation and general control, particularly when working under varying loads, but the one here shown, which is used as a power unit for a concrete-mixing machine, seems to refute that theory effectively. The motor is one of the first of the single-cylinder Ramblers, and is fitted with the regular equipment standard at the time of its construction five years ago, both as to carbureter, lubricating and igniting systems. It is provided with an automatic spark controller, and it is said that with the throttle locked in position runs for hours under the varying loads to which it is subjected, without appreciable change of speed. While the power demanded is not excessive, when it is considered that the engine is exposed to all kinds of weather, and generally half covered with sand, mud and oil, it will be seen that the service exacted is of a decidedly strenuous nature.



HOW THE OLD RAMBLER ENGINE TURNS THE CONCRETE MIXER.



VILLE DE PARIS BEGINNING WORK AGAIN AFTER ITS ACCIDENT.

PARIS, Sept. 2.—In a boat-building yard in the eastern suburbs of Paris an aeroplane of much more than ordinary importance has been discovered under construction. Some time ago Captain Ferber, one of the leading authorities on aerial navigation, obtained a three years' leave of absence from the army to devote himself entirely to his favorite studies. In answer to all inquiries, the Captain replied that he was considering a new aeroplane, but had made little progress. Levavasseur, the maker of light-weight aeroplane motors, who was supposed to be in league with Captain Ferber, guarded off all inquiries in a similar manner.

Considerable progress, however, had been made with the new machine, work now being in such an advanced condition that flights may be expected this year. A 13-foot model, propelled by mechanical means, has made a series of flights, varying from 100 to 130 yards, with a wonderful display of stability.

The Antoinette-Ferber aeroplane has few points of resemblance with the existing successful machines. Its main members are a long keel and a couple of lateral wings. Two rudders are carried in front, and driving power is obtained from a 100-horsepower Antoinette motor, operating a propeller 94 inches in diameter. The illustrations of the aeroplane under construction in the Lein workshop show originality in methods of building. After repeated experiments with skeletons of birds, an improved form of wing has been designed with a cylindrical surface, declared to be 50 per cent. more effective than plane bearing surfaces. There are no metal or rope stays, so common on all aeroplanes up to the present, the new machine being as clean cut as a bird. Ash is employed for the wings, joints being formed by

aluminum sleeves and stays riveted with copper. Fully equipped with its 100-horsepower motor, its propeller and its pilot—who will be Captain Ferber himself—the aeroplane will weigh not more than 1,100 pounds. The 100-horsepower 16-cylinder motor, similar to the one used by Santos-Dumont, weighs exactly 100 kilos (220 pounds), or one kilogramme per horsepower. In 1902, when Levavasseur built his first aeroplane motor, the weight was two kilogrammes per horsepower. First experimental flights with the new machine will be made on the military drill-ground at Issy, near Paris.

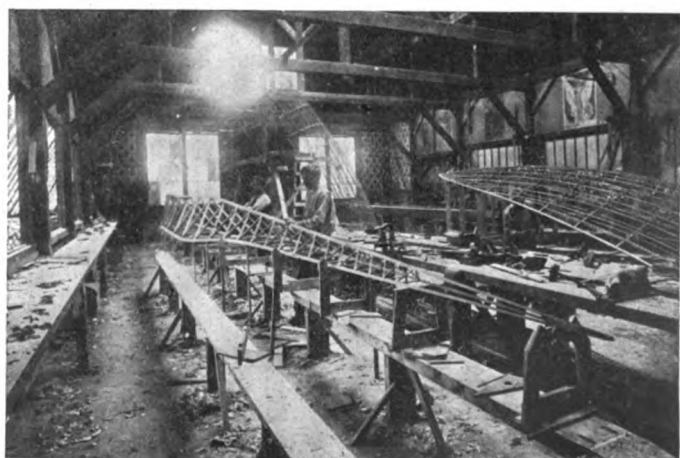
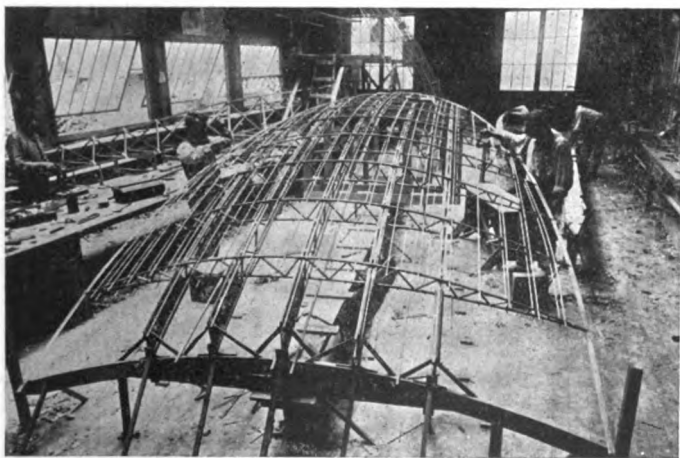
After several months absence for repairs, as the result of a collision with her shed, the *Ville de Paris*, steerable balloon, has once more come forth. Its appearance coincides with the temporary retirement of the *Patrie*, called in for lengthening and strengthening of the frame with a view to carrying a heavier load. The first run undertaken to familiarize the crew with the working of the balloon was a complete success. Starting from Sartrouville,

the balloon made for the railroad station, then headed back for Maisons-Laffitte, touched Montesson and worked back to the starting point, answering its helm in a very satisfactory manner and proving thoroughly stable. On board were the owner, M. Henry Deutsch de la Meurthe, the designers, Surcouf and Kapferer, and a couple of engineers.

The *Ville de Paris* is 203 feet in length, 34 feet greatest diameter, and has at its rear eight cylindrical compensating tubes inflated with hydrogen, placed in pairs above, below and at each side of the rear portion. Its power plant consists of a 70-horsepower Argus motor, driving a propeller designed by the late Colonel Renard. There are two pairs of rudders, one of which is for altitude, the other for lateral movements. Inflexible military service has called M. Surcouf to the colors for several weeks, thus postponing further experiments. Immediately on his return, the balloon will recommence its daily tests.

TROPHY FOR AEROPLANE COMPETITION.

A trophy which should have considerable influence in developing the growing interest in aeronautics has been offered by the *Scientific American* for competition for heavier-than-air flying machines. In order that the competition might be held under the auspices of experts, the trophy has been given under a deed of gift to the Aero Club of America, to be competed for annually by both American and foreign inventors. The first competition will occur at the Jamestown Exposition, September 14, 1907, and will be for a flight of one kilometer (3,280 feet) in a straight



HOW THE LEVAVASSEUR-FERBER AEROPLANE IS BEING BUILT ON ORIGINAL LINES IN A FRENCH WORKSHOP

line. The rules for the competition have been drawn up by a committee of the Aero Club. The competition is to be progressive in character—that is to say, if the flight of the predetermined distance is accomplished this year, next year a longer flight will be required. In other words, the conditions of the yearly contests will be such that they will be just ahead of the art, in order to induce inventors continually to strive to improve and perfect their machines. After every competition the name of the winner will be

inscribed on the trophy. If it is won three times in different years by any competitor, the trophy will become his personal property.

This splendid example of the silversmith's art which is intended to foster a great invention—a machine that shall conquer the air—is of great beauty. From a handsome green onyx base with a silver cartouche rises the massive sterling silver trophy, measuring 32 inches over all. At the base are six winged horses of cast silver, at right and left in groups of threes, with a rider astride each middle horse raising aloft the palm of victory. With this concession to mythology (for Pegasus, the horse of the muses, has always been at the service of the poets), we again ascend through the swirling air until we come upon the globe. Here, projected away from the earth, we find an aero-



SCIENTIFIC AMERICAN FLYING MACHINE TROPHY.

plane plunging through the ethereal envelope. The machine is in high relief, standing away from the silver globe with its frame held together by silver guy ropes. Above, surmounting the globe, is the eagle—the American Eagle—holding the wreath of victory, an eloquent forecast of the success of an American inventor. The trophy is valued at \$2,500 and its beauty at once brings to the lips the words: "Blue Ribbon of the Air." The contest will be watched with great interest.

LOOKING FOR A COURSE FOR GRAND PRIX.

The Automobile Club of France is in the market for a first-class racing circuit on which to hold the 1908 Grand Prix, and has sent broadcast a request for applications. Essential qualities are a length of not more than 62 miles, no railroad crossing, no large villages immediately on the course, but some large towns capable of serving as headquarters must be within easy reach. A course of 50 miles round would be preferred to one of 62 miles, but as the new regulations are likely to bring forth a large number of contestants, safety calls for the increased distance. Naturally, the Dieppe authorities will put in a plea for the continuance of the favor bestowed upon them this year—to be selected as the scene of the French international automobile race is the greatest honor a provincial municipal council has yet conceived—but it will not receive preferential treatment. It is a foregone conclusion that the district selected will be asked to hand over a few thousand francs to meet expenses, but there is not likely to be any difficulty, even in the sparsely populated districts, in raising the amount. Dieppe is suggested as a permanent course by many automobilists, who would prefer greater economy in the organization, and believe that by reason of its nearness to Paris this circuit would be an excellent ground for all kinds of competitions.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
- Nov. 2-9.....—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
- Nov. 29-Dec. 6.—Chicago, Casino Garden, Second Annual Auto Parts Show. A. M. Andrews, secretary, 184 La Salle street.
- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 14-21.....—St. Louis, Mo., New Coliseum, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
- Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.
- Feb. 20-Mar. 7.—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsmen's Show.
- April 6-11.....—Buffalo, Convention Hall, Motor Boat and Sportsman's Show. D. H. Lewis, manager.

Races, Hill-Climbs, Etc.

- Sept. 14.....—Boston, Readville Track, Race Meet Bay State Automobile Association (postponed from September 2).
- Sept. 14.....—Philadelphia, Point Breeze Track, Quaker City Motor Club.
- Sept. 14.....—Jamestown (Va.) Exposition, Aeroplane Contest for "Scientific American" prize.
- Sept. 14.....—Albany, N. Y., 95-mile Road Race, under the auspices of the Albany Automobile Club.
- Sept. 21.....—St. Louis, First Annual Owners' Reliability Tour, Automobile Club of St. Louis.
- Sept. 20-21.....—Milwaukee, Wis., State Fair Grounds Track, 24-hour Race, Milwaukee Automobile Club and Milwaukee Dealers' Association.
- Sept. 21.....—Harrisburg, Pa., Middletown Track, Race Meet, Motor Club of Harrisburg.
- Sept. 22-24.....—Newark, N. J., Olympic Park Track, Essex County Fair Automobile Races.
- Sept. 24-25.....—Springfield, Mass., Good Roads and Legislative Convention, under auspices of Springfield Automobile Club.
- Sept. 30-Oct. 5.—Trenton, N. J., Inter-State Fair Automobile Races, Includes 24-hour Event.
- Oct. 21.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

FOREIGN.

Shows.

- Aug. 1-Sept. 30.—Holland, Amsterdam, International Exhibition of Motors and Machines, Palace of Industry.
- Sept. 28-Oct. 7.—Denmark, Copenhagen International Auto Show.
- Nov. 11-23.....—London, Olympia Motor Show.
- Nov. 12-Dec. 1.—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
- Dec. 5-22.....—Berlin, Germany, Automobile Show.
- Jan. 18-Feb. 2.—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.

Races, Hill-Climbs, Etc.

- Sept. 15.....—Austria, Semmering Hill Climb, Austrian Automobile Club.
- Sept. 15.....—France, Chateau-Thierry Hill Climb.
- Oct. 1-15.....—Paris, Electric Vehicle Competition, Automobile Club of France.
- Oct. 20.....—France, Gaillon Hill Climb.
- Nov. 1-15.....—France, Volturette Contest near Paris.
- May 16, 1908....—Sicily, Targo Florio, Automobile Club of Italy.
- June 20-July 5, 1908.—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
- July 14, 1908....—Paris to London, Aerial Race.

EARLY FALL HAPPENINGS AMONG THE CLUBS

SPLENDID AUTO PARADE IN THE BISON CITY.

BUFFALO, N. Y., Sept. 9.—No spectacle of Buffalo's Old Home Week excelled the automobile parade which was held the evening of Tuesday, September 3. Never before have the people of this city witnessed such a pageant of horseless vehicles. In point of beauty of illumination, harmony of color and extravagance of



E. R. THOMAS'S THOMAS FLYER THAT WON THE FIRST PRIZE.

decorative art, the automobile parade had everything beaten. It must have cost a lot of money to decorate some of the cars in that parade, and the owners spared nothing in their endeavor to capture the eyes of the three judges who awarded the prizes.

The competing cars lined up on the west side of Main street in front of the automobile club's rooms, and about eight o'clock pots of red fire announced the start of the procession, which slowly proceeded down Main street to the Terrace and countermarched to Luna Park, where the judging took place. As the cars entered the park they backed up in double rows, facing the packed grandstand. The judges, Wilfred P. Davidson, John D. Wells, and A. M. Sterling had to dive in and out of a moving throng in order to get a good scrutiny of the decorations. They had twenty-five prizes to award.

Secretary D. H. Lewis worked indefatigably for the success of the event. President W. H. Hotchkiss of the A. A. A. was a participant in the parade, but did not enter for the prize competition.

The E. R. Thomas heavy touring car was lavishly decorated, a huge centerpiece representing the American eagle on the wing and typifying the Thomas Flyer. Jesse B. Eccleston's Peerless was bedecked in silk, with numerous white doves holding ribbons in their bills. F. A. Babcock's electric touring car, second prize in its class, was trimmed in white, with countless electric bulbs of miniature size. The judges announced the following as prize winners:

Heavy Touring Cars—First, E. R. Thomas, Thomas Flyer; second, Jesse B. Eccleston, Peerless; third, Chauncey J. Hamlin; fourth, Mrs. John L. Clawson; fifth, Eugene Kulp; sixth, James L. Byers; seventh, F. B. Wells.

Light Touring Cars—First, Charles Schoenhut; second, F. A. Babcock, Babcock electric; third, J. L. Gress; fourth, D. H. Lewis; fifth, J. H. McNulty; sixth, G. H. Poppenberg, Rambler; seventh, W. O. Holmes; eighth, W. G. Ruddle; ninth, George F. Beck; tenth, Empire State Tire Company; eleventh, Seymour P. White.

Heavy Runabouts—First, Albert Poppenburg; second, Louis Block, Ford; third, Ralph Sidway.

Light Runabouts—First, Otto Hagelln; second, William Orell; third, Deschaum Automobile Company.

Special Prize—Captain J. B. Souter.

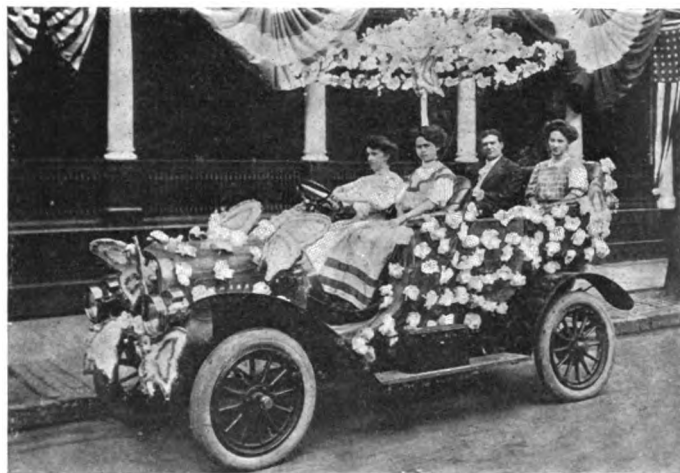
MONTANA'S FIRST AUTO CLUB FLOURISHES.

BUTTE CITY, MONT., Sept. 7.—Though but very recently organized, the Butte Automobile Association is already becoming extremely active and there is every prospect that within a short time it will constitute a body such as few cities of a similar size can boast of. Bruce Kreamer has been appointed attorney and the club will be duly incorporated under the laws of Montana. Until such time as the charter membership roll shall be closed, the initiation for members is to remain at \$5 and that for associate members at \$2.50, and the club has immediately made itself strong with all the powers that be by electing the mayor, members of the board of aldermen, the county commissioners and the newspaper men all associate members. The club now has 75 members and it is anticipated that this will be increased to 300 or more within the next 30 days, when the charter roll is to be closed.

The club will actively interest itself in everything calculated to advance the interests of automobiling and as a first step Messrs. Gillie, Carroll, Berkin and Rinckel were appointed a legislative committee, while as the result of a communication from the Chicago Automobile Club, requesting particulars of a route to Butte, President H. E. Harris suggested the appointment of a route bureau. The idea was acted upon favorably and a committee consisting of Walter Beck, Arthur Pierce, Creighton Leargey and Dr. Rinckel was appointed. The meeting was held in the rooms of the Stock Exchange and they will continue to be club headquarters until the organization has grown sufficiently to erect its own building.

AURORA CLUB TO HOLD AUTO CARNIVAL.

AURORA, ILL., Sept. 9.—The Aurora Automobile Club has decided to treat the inhabitants of this part of the State of Illinois to an automobile carnival, the like of which they have never seen before. It is scheduled for September 28 and plans are under way to make the celebration as complete as can possibly be done, every member of the special committee appointed at the meeting held last week having been allotted a special part of the work to superintend. So far as at present outlined, the affair is to be opened with an extended series of gymkhana events, for which



G. H. POPPENBERG'S RAMBLER, ALSO A BUFFALO WINNER.

numerous novel features hitherto untried are promised. There will also be speed races, and it is intended to have one of the well-known racing cracks in attendance as the drawing card of this part of the program. The members of the special committee appointed at the last meeting are: W. A. Legerman, D. W. Simpson, C. C. Hinckley, C. B. Phillips, Dr. E. J. Sill, R. H.

Colby, M. E. Woolf, W. F. Thorne, Frank Anderson, S. E. Miller, Otto Hammerlund, F. D. DeVier, J. J. Warne and E. A. Miley. Prizes will be offered in all events and as an inducement to outside autoists all those purchasing tickets to the value of \$2.50 or more will be entitled to a club membership until the first of the coming year.

MOTOR-BOAT CARNIVAL ON THE HUDSON.

NEW YORK, N. Y., Sept. 10.—Beginning September 23 the race week of the Motor Boat Club of America, in which is included the National Motor Boat Carnival, will be held on the Hudson river, New York, and the program outlined promises a very interesting series of events. In order to make the interest more general a distinction has been made between purely racing craft and utility types, and there will be events for various classes from dinghys up. The events are open to all members of regularly organized yacht or motor boat clubs in this country or abroad, the races being governed by the rules of the Motor Boat Club of America.

The program of events for the week is as follows: Monday, September 23: Reliability trials. Tuesday morning, September 24: Mile speed trials against all existing world's records; afternoon, free for all race, also races for motor dinghys up. This is generally looked upon as ladies' day. Wednesday, September 25, Thursday, September 26, and Friday, September 27: Series races, all classes, in which are included the perpetual challenge trophies for the championships, as follows: International, national, interstate, motor yacht and cabin cruisers. Saturday morning, September 28: Long distance race, New York to Albany and return; afternoon, long distance from New York to Poughkeepsie and return. The former is intended for the larger type of high-speed boats, and the Poughkeepsie race more for the cruising type of boats.

OHIO VALLEY AUTO CLUB BANQUETS.

WHEELING, W. VA., Sept. 9.—The Ohio Valley Automobile Club, which has its headquarters in this city, is proving to be a most successful organization and is doing a great deal for the welfare of autoists and automobiling, besides having a good time of it in the process. Following closely upon its successful run to Coleraine, O., of a few weeks ago, the club gave a dinner at the Stone House, Roney's Point, W. Va., last Thursday evening, which under the able management of Secretary T. A. Westmyer proved a most enjoyable affair. The club has been very active in prosecuting its good roads campaign and is also taking considerable interest in road marking, besides which folders are issued giving the routes to important points from Wheeling, one of the latest to appear being that to Columbus, O., via Fairview, Zanesville, Jacksontown and Reynoldsburg over the old national pike. It also contains an injunction that is of value to every autoist passing that way: "Don't forget to register at the first toll-gate in Guernsey county, which is the last toll-gate on the pike, as otherwise double rates are charged."

VIRGINIA AUTOISTS FORM STATE ASSOCIATION.

RICHMOND, VA., Sept. 9.—In order to become eligible to membership in the American Automobile Association, as a State body, the Richmond Automobile Club has been succeeded by the Virginia Automobile Association, which has a charter membership of 45. The following officers were elected at a meeting held at the Richmond Hotel last week. President, Dr. R. Angus Nichols; vice-president, John B. Swartout; secretary and treasurer, Otis M. Alfriend. The president appointed committees to draft a constitution and by-laws as well as to carry out other necessary work to perfect the organization.

The purpose of the latter is to advance the interests of autoists generally and to endeavor to defeat proposed hostile legislation, as well as to effect the repeal of that now in force. It is ex-

pected that the 100 members necessary to complete the State organization will be enrolled within the next fortnight, as auto enthusiasm is increasing daily throughout the Old Dominion.

OQUAGA CUP TOUR STARTS SEPTEMBER 16.

BINGHAMTON, N. Y., Sept. 9.—Dates have been set for the Oquaga Cup tour for 1907, and start will be made from this city, September 16. Members of the Binghamton Automobile Club only are eligible to compete for the trophy, and entries will close September 14. The first leg of the tour is from Binghamton to Richfield Springs, N. Y., a distance of 98 miles, where the first night stop will be made. The second day's run will be 84 miles, from Richfield Springs to Syracuse, and the third day from Syracuse to Ithaca, a distance of about 130 miles. The final and fourth day's run will be from Ithaca to Binghamton, 56 miles. The Oquaga cup was the joint gift of W. G. Faatz and F. E. Barnes to the club, and was won last year by Ross M. Russell, who has donated it to the club to be contested for again.

BIG ENTRY FOR PHILADELPHIA'S 24-HOUR.

PHILADELPHIA, Sept. 9.—Next Saturday's meet of the Quaker City Motor Club will in all likelihood far outclass in importance all previous efforts of that hustling organization. The 100-mile event, the Keystone State championship, will see fully a dozen cars lined up, including two Frayer-Millers, Packard, Welch, Peerless, Oldsmobile, Stearns, Pullman, Pennsylvania and Thomas, with several possibilities to be heard from. The two 25-mile events—one for touring cars, the other for runabouts—also have filled well, and good weather is all that is needed to bring a record crowd to Point Breeze next Saturday.

FREEPORT, ILL., ORGANIZES AN AUTO CLUB.

FREEPORT, ILL., Sept. 9.—Organization of the Freeport Automobile Club has been effected here with a goodly number of local autoists as charter members. One of the features projected by the new organization is a race meet on the local track the latter part of September, the date for which will be made public in a few days.

SOME AUTO NEWS FROM GERMANY.

BERLIN, Sept. 1.—The two German officers, Graetz and von Roeder, accompanied by a chauffeur, started August 10 on their African tour from Dar-es-Salem to Swakopmund. They sent off a telegram to the King of the Belgians at their start, greeting him as the chief bearer of culture in Africa. This has caused some comment, as the Belgian rule in Africa can hardly be called a happy one.

The commercial car trials arranged for the autumn will be held during a period of six days from October 7 to 12 on the Berlin Magdeburg-Dessau-Jueterbog route. The entries closed on September 1, and are already numerous enough to insure the success of the contest.

It is pretty well assured that the German Autodrome will be laid out in the Eifel, as in spite of assertions to the contrary there is a very strong opposing body in Taunus. Several meetings have taken place at Aix-la-Chapelle, which would then be made the starting point.

His Majesty, the German Emperor, has bestowed the Order of the Prussian Crown, third class, upon Count Sierstorff and Dr. Levin-Stoelting; of the fourth class upon Herr Engler, and the Order of the Red Eagle, fourth class, on Count Arco, Baron von Schrenck-Notzing, and Herr De La Croix, for their services in regard to motoring.

Neither Baron von Hewaldt nor Captain Hildebrandt intend going to St. Louis as Germany's representatives for the Aero Gordon-Bennett in October, according to present information.

MASSACHUSETTS RE-REGISTRATION SHOWS 9,257 AUTOS

BOSTON, Sept. 9.—Legislators and automobilists who expected to see every road in Massachusetts made into a fine macadamized and oiled highway with the proceeds of the automobile law passed this spring, assessing an annual fee of \$5 upon every owner of an automobile, were very much surprised when they learned the result of the re-registration of automobiles, which has been in progress under the direction of the Highway Commission for the past five weeks or more. The most conservative estimated that the re-registration would yield at least \$75,000 for road work, and there were plenty who expected that as much as \$100,000 revenue might result. Even the Highway Commission prepared to re-register as many as 15,000 cars.

As a matter of fact, the re-registration, which is now practically completed, shows that there are now less than 10,000 cars in use in Massachusetts. The exact figures are 8,207 automobiles re-registered and 1,050 new certificates issued, making a total of 9,257 cars in use at the present time. This number seems very small when it is compared with the more than 23,000 sets of number plates that have been given out in the last four years. In addition to the automobiles, the commission has re-registered 478 motor cycles and 186 dealers or manufacturers, and the total income from re-registration is \$44,781, which looks small indeed compared with the estimates that were made last winter when the

law was under discussion at the State House. Added to this amount there is about \$5,250 from new registration, but the total amount is only about \$50,000, and the Highway Commission estimated that it would take that amount alone to make the necessary repairs of damage caused by automobilists to existing State roads. And the work of re-registration has cost over \$5,000.

The principal cause of the shrinkage is thought to be that owners of cars have failed to obey the law, which requires that upon the transfer of ownership of a car the party selling it shall notify the Commission and have the certificate of registration cancelled. Applications for re-registration indicate that much more of this has been going on than the Commission suspected. Another cause of shrinkage is that each summer many cars from outside States are registered in Massachusetts. These cars are now in their home States as a rule and will not be re-registered until next summer. Some autoists have put their cars in storage rather than pay \$5 now and another \$5 for registration in 1908 on January 1, while there is no doubt that there are owners who are taking chances of being arrested and are planning to run their cars the rest of the fall without re-registering them. Some clubs have advised their members not to re-register their cars, on the ground that the law is unconstitutional. This attitude is bound to bring about a test if it is persisted in through the fall months.

A NEW JERSEY FINE AND A PENNSYLVANIA SENATOR

PHILADELPHIA, Sept. 9.—A fortnight ago, Justice of the Peace Carver, of Elwood, N. J., fined State Senator James P. McNichol, the political leader of this city, \$13.30 for fracturing the speed ordinance of the State, rousing the Senator's ire, to put it mildly. Had McNichol not been in a hurry to reach the shore, he would have refused then and there to "pony up." But the constables had him and his machine, and to get away he had to pay. When he reached Atlantic City he lost no time in calling up his lawyers and instructing them to appeal to the Supreme Court. The appeal was heard by Justice Frenchard in Camden last week, and the Senator won his point, securing an order for the remittance of the fine. True, the victory was on a technicality over the irregular manner in which the complaint was made, there being no decision that the law had not been violated.

But the end is not yet. Justice Carver has carried his case

to Motor Vehicle Commissioner Smith, and the latter, firmly believing from the testimony that McNichol and his chauffeur broke the laws, has ordered them to appear before him at Trenton next Friday to show cause why their licenses shall not be revoked. As New Jersey is the Senator's favorite stamping ground, and as those who know him say he will fight what he thinks an injustice to the last ditch, local automobilists are preparing for a hot legal battle at the Jersey capital. It has been the custom of the Motor Vehicle Department to revoke the licenses of those who fail to appear in answer to the Commissioner's summons, and if McNichol and his chauffeur do not show up next Friday their names will, in all probability, be stricken from the list of eligibles, and if afterward caught operating a car in Jersey they will be jailed.

Much interest is manifested in the outcome of the incident.

ANENT IMMUNITY FOR MEDICAL AUTOISTS.

INDIANAPOLIS, IND., Sept. 9.—At its next meeting the City Council will be asked to pass an ordinance allowing local physicians and surgeons to break the automobile speed laws in answering emergency runs. Such an ordinance was suggested by Police Judge Thomas Whallon recently when he discharged Dr. Frank Dorsey, who had been arrested while making a fast run to see a patient who had been crushed by falling iron. For several days leading physicians have been drafting an ordinance that they believe will meet their needs.

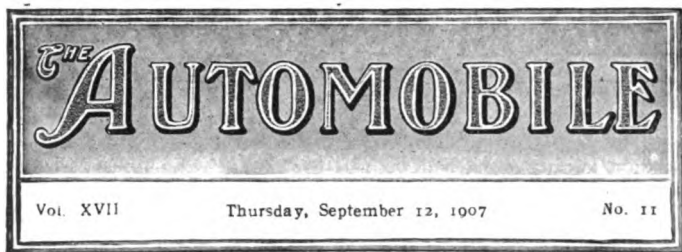
The proposed ordinance has succeeded in raising a difference of opinion among physicians who drive automobiles. The majority are in favor of a measure that would assure them immunity from arrest when driving fast. Dr. T. A. Wagner, one of the oldest practitioners in the city, has taken a stand against it. He declares that in the thirty years he has practiced he could count all of the cases on the fingers of one hand where a few minutes saved would have saved the life of a patient. Dr. Wagner uses automobiles exclusively in his practice.

ECONOMICAL POLICE SERVICE AUTO TRIAL.

INDIANAPOLIS, IND., Sept. 9.—Local police have just been given an extensive test with an automobile patrol wagon, at the request of the Board of Public Safety, which is contemplating the purchase of one or more such vehicles to add to the White steam touring car and the Autocar runabout now in service.

The demonstration was made last Saturday and Sunday by the Indianapolis Motor Car Company with a Rapid gasoline delivery wagon, temporarily equipped as a patrol wagon. A test covering forty-eight hours and making all but three calls that came in was made, doing the work, with the one slight exception of two horse-drawn patrol wagons and two relays of horses. Two of the three runs could have been made, as the automobile patrol returned to police headquarters as one of the horse-drawn wagons was leaving.

In the forty-eight hours' time, in fifty-one runs for prisoners, 185 miles was covered. This was accomplished with eighteen gallons of gasoline that cost \$2.04. An appropriation will be requested at once and bids will probably soon be asked for.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
LOUIS R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoiland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00
To subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hife & Sons, Limited, 20, Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the
Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October,
1903, and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905,	- - - - -	730,000
" " in 1906,	- - - - -	791,000
" " This Issue	- - - - -	17,000
" " Since January 1,	- - - - -	604,650

What Finally Becomes of the Old Automobiles?

There is a popular impression, more or less prevalent, that the automobile is a machine of short duration and that it would be difficult to find many that date back to the early days of the industry. Anyone who wishes to disabuse himself of such a notion will not find it difficult to do so, particularly if he be located in one of the larger automobiling centers. He has but to respond to some of the alluring baits held out by a few of the many second-hand dealers, and, equipped with a knowledge of what cars were, and what they are to-day, compare the printed description and its subject, lined up awaiting a purchaser.

To the average autoist of to-day a car of the vintage of 1902 is a relic in about the same class as Fulton's first steamboat, and he would be amazed to find the number in existence, not alone of the year in question, but those preceding it. Like the maid who has left her prime behind, the second-hand man is fond of lopping off years and it does not trouble his conscience much to say 1904 when he should say 1901. It takes one well versed in the models of different years to be able to say with certainty the date of their origin, particularly where foreign cars are concerned, one dealer calmly offering a French car as of the year 1903 until the knowledge of the prospective purchaser forced him to admit that it dated back to 1900, though rebuilding had obliterated many of its early earmarks. American cars of former years are generally

easier to distinguish, but nevertheless it is little short of marvelous the number of them that are still far from the scrap heap. That so few of them are seen running in the cities would appear to indicate that their outlet is found in the rural districts. Yet, if a contest of old-timers, such as has been held on the other side, were to be run, the number that would come forth even in New York City would be little short of eye-opening.



Steel as a Material for Piston Construction.

In view of the fact that automobile manufacturers have halted at nothing to improve the quality of their product, materials of a nature so costly as to be absolutely prohibitive to the makers of other kinds of machinery being lavishly employed, the question has frequently risen as to the reason for the non-use of steel for pistons and cylinders. Sheet steel cylinders and pistons have been resorted to in the construction of at least one racing car built on this side of the Atlantic; but doubtless, owing chiefly to the difficulty of properly lubricating this metal in contact with itself, its employment has not been regarded seriously. To take up the matter of pistons alone, the very high speeds found necessary in automobile practice, due to the necessarily restricted size of the motor, make imperative the use of moving parts that shall be as light as possible. The use of steel for this purpose would appear to be the most direct means of achieving this end, beside which the material also has other advantages over the commonly used castiron piston which dates back to the time of the invention of the first prime-movers.

French makers have been concededly in advance of their competitors in other lands in the matter of research along such lines, so that it is not surprising that the use of pistons of pressed steel is now said to be gaining considerable favor with the more prominent automobile builders of that country, although one American maker under license will import these parts and embody them in his 1908 models. The fact is of more than ordinary importance in that it marks the first radical departure from methods of engine construction that have held their own so long as to be considered almost inalterable. The automobile has been responsible for countless hitherto undreamed of innovations, but none so far-reaching as this, so that its outcome will be watched with unusual interest.



Present Status of the Self-starting Device.

For one reason or another, interest in self-starting devices seems to have lapsed into a semi-dormant state during the past season, and at the present writing it appears questionable whether there will be any decided revival apparent in number of the devices exhibited for this purpose at the coming shows. It is generally conceded that ability to restart the motor from the seat, regardless of the length of time it has been standing idle, is a great advantage, but whether it is such to an extent that compensates for the extra complication involved is questionable. Not that there is any particular or insurmountable difficulty inherent in the problem of evolving such a device for automobile use, as there seems to be no reason why stationary practice in the use of compressed air cannot be modified to suit the altered conditions presented by the automobile.

Doubtless, the more general acceptance with which the six-cylinder motor has met, and the fact that there will be a great many more cars of this type turned out during the manufacturing season of 1908, may have had something to do with it. The modern four-cylinder motor has been developed to a point where, under normal conditions, there is considerably less use for the starting crank than formerly, and the six-cylinder motor greatly surpasses it in this respect. Both are self-starting to such an extent that the matter of installing an extraneous device to provide for the small percentage of instances in which they fail, merely to avoid a little work at the crank, is not destined to be generally regarded in a favorable light in the near future.

BAY STATE AUTOISTS HOLD NOTABLE MEET.

NEWCASTLE, N. H., Sept. 9.—The first general meeting and outing of the Massachusetts State Automobile Association of the American Automobile Association, held at the Hotel Wentworth in this town, broke up this afternoon, and the automobilists who were present as representatives of the various clubs throughout the State affiliated with the Massachusetts organization went away well pleased with the results of the gathering. About one hundred members of the State association and ladies arrived Friday evening and others came Saturday, so that there was a large attendance Sunday and to-day.

The principal feature of the meeting was the banquet Saturday evening, and the formal addresses delivered on that occasion and informal discussions later have given the automobilists a better understanding than they ever had before of what the State association aims to accomplish. Moreover, a general policy to be pursued during the coming winter before the Legislature was outlined. The speakers at the banquet included Elliot C. Lee of the Massachusetts Automobile Club, formerly president of the A. A. A.; President L. R. Speare, of the Bay State association; President J. H. MacAlman, of the Boston Automobile Dealers' Association; ex-Congressman Samuel L. Powers, a leading corporation lawyer of Boston; S. L. Haynes, of the Springfield Automobile Club; President Hill, of the Brockton Automobile Club; Representative A. D. Converse; Secretary James Fortescue, of the Bay State association, and others.

President Speare explained the national automobile registration bill which has been drafted by Chairman Terry of the A. A. A. Legislative Board. He stated that this bill, if it became a law, would enable an automobilist to tour wherever he wishes without being hindered by the different State laws.

Mr. Powers spoke in favor of the passage of a bill by the next Massachusetts Legislature making it obligatory for all vehicles using the roads at night to carry lights. He said that by united action on the part of the automobilists he thought the Legislature could be induced to pass the bill. It was the general sentiment of the automobilists present that such a bill would be of much value, not only to automobilists but to drivers of horses.

The other speakers touched upon these subjects and urged the automobilists to obey the laws and respect the rights of other persons who use the highways.

On Saturday there was a baseball game between a team representing the Bay State association and one made up of members of other clubs, and afterwards the automobilists united in a parade which was a part of the celebration of the anniversary of the signing of the peace treaty between Russia and Japan. The concluding feature of the meeting was a series of gymkhana games this afternoon for owners of cars, the prizes being offered by the management of the hotel.

GENERAL MEETING OF A. A. A. DIRECTORS.

A meeting of the board of directors of the American Automobile Association will be held Thursday morning, September 19, at 11 o'clock, at the association's offices, 437 Fifth avenue, New York City.

The national body's entire board, composed of representatives selected by the various State organizations, meets three times a year, the coming session being the second one for 1907. The acts of the executive committee come before this board for approval.

WELLMAN'S POLE TRIP AGAIN POSTPONED.

TROMSOE, Sept. 9.—According to Captain Isachen, in command of the Norwegian Arctic expedition which arrived here to-day from the North, Walter Wellman and his party will probably return here at the end of the present month, abandoning their plan to attempt to reach the pole in an airship for the present year. No start had been attempted up to August 26.

THE DEMAND FOR AMERICAN AUTOS ABROAD.

In response to the constantly increasing number of requests made by American manufacturers as to the conditions prevailing in foreign countries and the standing of the latter as markets for American-made automobiles, the Bureau of Manufactures of the Department of Commerce and Labor at Washington has just compiled the reports of consuls in all parts of the globe, covering the matter very comprehensively. These reports, the majority of which have been published in *THE AUTOMOBILE* from time to time as they appeared, cover every phase of the use of the automobile in the countries from which they emanate, the market for American machines, the manner in which the latter are regarded by the inhabitants, number of machines of all kinds in use, prevailing prices, demand for accessories and the like, as well as the best methods of obtaining business in such places. Furthermore, they generally go into detail regarding the types and characteristics of the cars most desired and the reasons therefor, so that the pamphlet, which is entitled *Motor Machines*, being Volume XL. of the *Special Consular Reports*, should prove of considerable assistance to manufacturers desiring to increase their export business. Copies may be had on application to the Department of Commerce and Labor, besides which there is much special information on file at the Bureau of Manufactures.

BRITISH COMMERCIAL VEHICLE TRIALS.

LONDON, Sept. 2.—For the long deferred trials of the British Club a total of sixty-two entries has been obtained in the eight classes. Possibly the makers have become tired of waiting for this event, for the list is not as great as had been anticipated.

All the same, the event has been well boomed in the general press and will doubtless serve an important purpose in further popularizing the utility motor vehicle. The trial will consist of twenty-two days' closely-observed running, under full load conditions, and during the tour the vehicles will, at different times, be on exhibition at the important industrial centers. The proceedings commence on September 9. No American vehicle is included in the list.

CHANGES IN N. A. A. M. EXECUTIVE COMMITTEE.

Owing to the embarrassment of the Pope interests, Albert L. Pope tendered his resignation as president of the executive committee of the National Association of Automobile Manufacturers at its September meeting, held last week, together with that of George W. Bennett, who recently severed his connection with the Knox Automobile Company to take charge of the New York branch of the White Company. Mr. Bennett's resignation was accepted as a matter of course, and he was succeeded by M. L. Goss, of the Baker Motor Vehicle Company, but the members of the executive committee unanimously refused to accept Mr. Pope's resignation, instructing the secretary to wire Mr. Pope, demanding the withdrawal of his resignation. In view of this token of regard, Mr. Pope acceded to the wishes of his associates and will continue in office as if nothing had happened.

WHY "THE AUTOMOBILE" WAS LATE.

Readers of *THE AUTOMOBILE* undoubtedly were surprised at the tardiness of the September 5 issue in reaching them. A delay was caused in the New York Post Office, the entire edition being held up for forty-eight hours until a ruling could be obtained from Washington in reference to the Winton page advertisement, wherein prizes were offered to chauffeurs who obtained the best economical results from their Six-Teen-Sixes. The New York Post Office officials, questioning that the advertisement might violate the lottery provisions of the law, promptly submitted the case to Washington for a decision. The advertisement was ruled "unobjectionable," but few of *THE AUTOMOBILE* subscribers saw their copies until Monday morning.

EXHIBITORS FOR THE A. C. A. PALACE SHOW

OWING to the tremendous demand for space at the eighth annual show of the Automobile Club of America, held in conjunction with the American Motor Car Manufacturers' Association and the Motor and Accessory Manufacturers, Inc., it has been decided to practically remodel the big exhibition hall of the Grand Central Palace, where the show will open on October 24 and continue until the following Thursday night, inclusive. Instead of dividing the exhibits on three floors, as formerly, there will be a main exhibition hall and two galleries. To do this, the café will be relegated to the second gallery and all the partitions which now separate the upper galleries from the main floor will be torn out. A ten-foot aisle will be cut through the first gallery to a central stairway, connecting with the upper gallery.

The elimination of the partitions will enable visitors to obtain a comprehensive view of almost the entire exhibition, either from

the main floor or the upper gallery. The latter will also house the Aero Club's exhibit and a theater.

With the changes, there has been made available a total floor space of 65,279 square feet, of which the members of the American Motor Car Manufacturers' Association will occupy the lion's share, or a total of 23,641 square feet; with 16,087 square feet for the use of the Motor and Accessory Manufacturers, the remainder being given over to commercial vehicles, motorcycles and spaces under the head of "General Allotments," which will be occupied by manufacturers not affiliated with either of the above organizations. In round numbers the latter aggregate 10,000 square feet of space on the main floor for the exhibition of cars and a like amount in the upper gallery for accessories.

Seventy makers of complete vehicles are included in the list of the exhibitors.

MAIN FLOOR—AUTOMOBILES.

Abendroth & Root Manufacturing Company, Newburgh, N. Y.
Acme Motor Car Company, Reading, Pa.
American Motor Car Company, Indianapolis, Ind.
Austin Automobile Company, Grand Rapids, Mich.
Bartholomew Company, The, Peoria, Ill.
B. L. M. Motor & Equipment Company, New York, N. Y.
The C. H. Blomstrom Motor Company, Detroit, Mich.
Buckeye Manufacturing Company, Anderson, Ind.
Cameron Car Company, Brockton, Mass.
Chadwick Engineering Works, Philadelphia, Pa.
The Cleveland Motor Car Company, Cleveland, Ohio.
Colt Runabout Company, 1876 Broadway, New York City.
Crawford Automobile Company, Hagerstown, Md.
Dayton Motor Car Company, Dayton, Ohio.
De Luxe Motor Car Company, Detroit, Mich.
Dolson Automobile Company, Charlotte, Mich.
Dorris Motor Car Company, St. Louis, Mo.
Dragon Automobile Company, Philadelphia, Pa.
Evansville Automobile Company, Evansville, Ind.
Ford Motor Company, Detroit, Mich.
The Forrest City Motor Car Company, Massillon, Ohio.
Gaeth Automobile Works, Cleveland, Ohio.
Garford Motor Car Company of New York, 1540 B'way, N. Y. City.
Gearless Transmission Company, Rochester, N. Y.
Hatfield Motor Vehicle Company, Miamisburg, Ohio.
Holsman Automobile Company, 662 Monadnock Block, Chicago, Ill.
Huntington Automobile Company, Huntington, L. I., N. Y.
Imperial Motor Car Company, Williamsport, Pa.
Jackson Automobile Company, Jackson, Mich.
Thomas B. Jeffery & Company, Kenosha, Wis.
Kingston Motor Car Company, Kingston, N. Y.
Kissell Motor Car Company, Hartford, Wis.
Klink Motor Car Manufacturing Company, Danesville, N. Y.
Knox Motor Truck Company, Springfield, Mass.
Lane Motor Vehicle Company, Poughkeepsie, N. Y.
The Lansden Company, 54 Lackawanna Avenue, Newark, N. J.
The Logan Construction Company, Chillicothe, Ohio.
Mack Bros. Motor Car Company, Allentown, Pa.
Marion Motor Car Company, Indianapolis, Ind.
Maxwell-Briscoe Motor Company, Tarrytown, N. Y.
Miller Motor Car Company, Bridgeport, Conn.
Mitchell Motor Company, Racine, Wis.
Moline Automobile Company, East Moline, Ill.
Moon Motor Car Company, St. Louis, Mo.
Moore Automobile Company, 576 Fifth Avenue, New York City.
Mora Motor Car Company, Newark, N. Y.
Motorcar Company, Detroit, Mich.
Napier Motor Company of America, Jamaica Plain, Boston, Mass.
National Motor Vehicle Company, Indianapolis, Ind.
Nordyke & Marmon Company, Indianapolis, Ind.
Oscar Lear Auto Company, Springfield, Ohio.
Overland Auto Company, Indianapolis, Ind.
J. M. Quinby & Co., 21 Division Street, Newark, N. J.
Pennsylvania Auto Motor Company, Bryn Mawr, Pa.
Premier Motor Manufacturing Company, Indianapolis, Ind.
Ranier Motor Car Company, Broadway and 50th street, N. Y. City.
Rapid Motor Vehicle Company, Pontiac, Mich.
Reliable Dayton Motor Car Company, 375 W. Lake St., Chicago, Ill.
Reliance Motor Car Company, Detroit, Mich.

Reo Motor Car Company, Lansing, Mich.
St. Louis Car Company, St. Louis, Mo.
The Schact Manufacturing Company, Cincinnati, Ohio.
Shawmut Motor Company, Stoneham, Mass.
Simplex Motor Car Company, Mishawaka, Ind.
Smith Auto Company, Topeka, Kan.
Wayne Automobile Company, Detroit, Mich.
Wayne Works, Richmond, Maine Co., Ind.
Welch Motor Car Company, Pontiac, Mich.
York Auto Car Company, York, Pa.
Zim-Rock Motor Car Company, 1853 Broadway, New York City.

MOTORCYCLE SECTION.

The Light Manufacturing Company, Pottstown, Pa.
Ovington Motor Company, 2208 Broadway, New York City.
Reading Standard Company, Reading, Pa.

ACCESSORY FLOOR ALLOTMENTS.

Block A.

Thos. Prosser & Son.
Ventilated Cushion & Spring Co.
N. Y. School of Automobile Engineers.
Central Auto Top Co.
Chas. L. Klauder.
Crown Battery Co.
Traver Blowout Patch Co.

Block B.

C. J. Downing.
Motz Clincher Tire & Rubber Tire Co.
Comstock Shock-Absorber Co.
Pneu 'L Electric Co.

Block C.

Manhattan Electrical Supply Co.
Pierson Motor Supply Co.
Standard Brake Co.
Acetyvone Company.
Ampere Manufacturing Co.
Hill Manufacturing Co.
C. A. Shaler Co.
Randall-Falchney Co.
The Clover Mfg. Co.
Norton Company.
Commonwealth Rubber Co.
Nathan Novelty Mfg. Co.
Patterson, Gottfried & Hunter.
Automobile Supply Mfg. Co.
I. G. Johnson & Co.
The Perfection Spring Co.
E. J. Kaltenbach.
Presto Detachable Rim.
Twombly Goggle Co.

Block D.

The Allen Auto Specialty Co.
W. P. Miller's Sons.

Block E.

Brownell-Trebert Co.
Martin-Evans Co.
William Wooster.
K. W. Ignition Co.
Cycle & Automobile Trade Journal.

Block F.

F. R. V. Auto Parts Co.
Hicks Speed Indicator Co.
Roger B. McMullen.
Lavalette & Company.
Continental Caoutchouc Co.

Block G.

Comptour Innovations Pour Automobiles.
St. John Rubber Tire Co.
Leon Mann Co.
Auto Appliance Co.
J. S. Bretz Co.
Jeffery-DeWitt Co.
Merchant & Evans Co.
The Troy Carriage & Sun Shade Co.
Supplementary Spiral Spring Co.

Block H.

Scandinavian Fur & Leather Co.
Block J.
The Post & Lester Co.
New Departure Manufacturing Co.

Block K.

N. Y. Sporting Goods Co.

Block L.

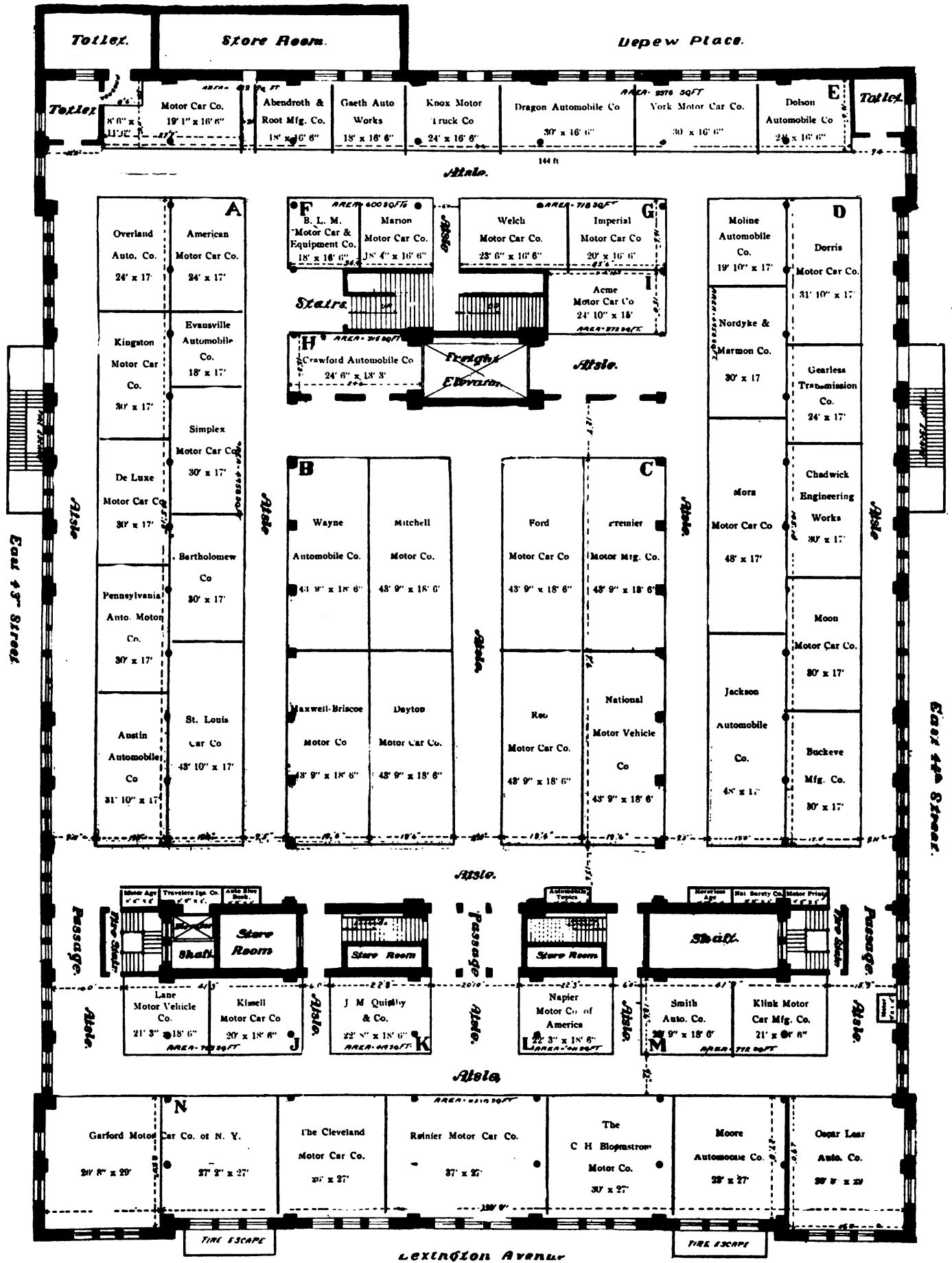
Motor Vehicle Publishing Co.
Mort Howe.

BALTIMORE SHOW THANKSGIVING WEEK.

BALTIMORE, Sept. 10.—At a meeting held last night by the Automobile Dealers' Association, arrangements were made for the holding of an automobile show in this city on Thanksgiving week. While the dealers were unanimous in favor of holding the show, there was some little difficulty at first as to time and place. This will bring the show between the Licensed show in New York and the Chicago show. The association, assisted by the A. C. of Maryland, is now negotiating for a building.

NEW HAVEN TO HAVE AN EARLY SHOW.

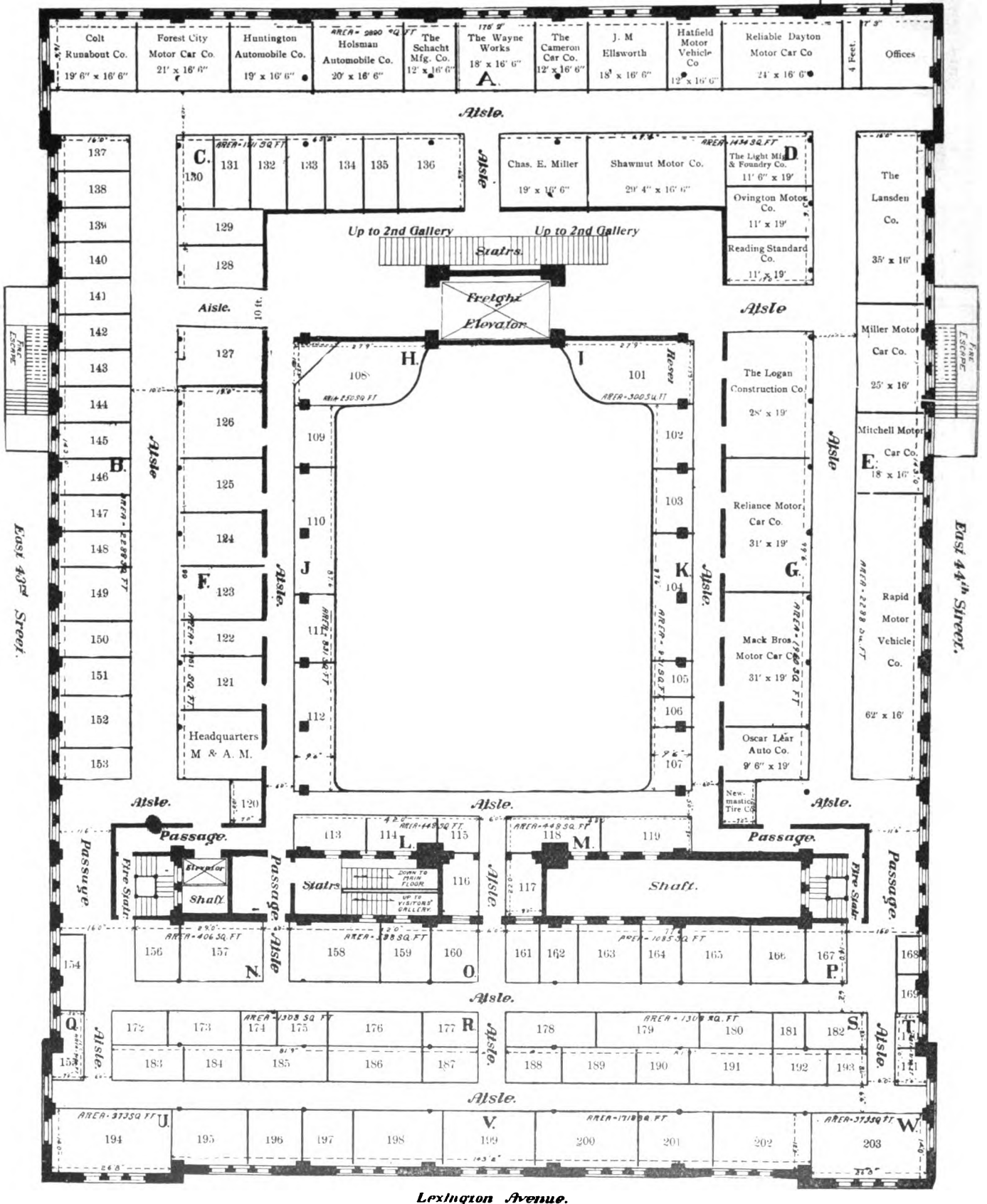
NEW HAVEN, CONN., Sept. 9.—When the New Haven Business Men's Association opens its third big exposition at the Second Regiment Armory, October 26, it is expected that there will be one of the most complete exhibits of automobiles on the floor ever seen in this city. All of the local dealers will be represented, and in connection with the show a number of special events are being planned which will interest not only dealers but owners of cars as well.



PLAN OF THE MAIN FLOOR OF THE GRAND CENTRAL PALACE, SHOWING LOCATIONS OF EXHIBITORS.

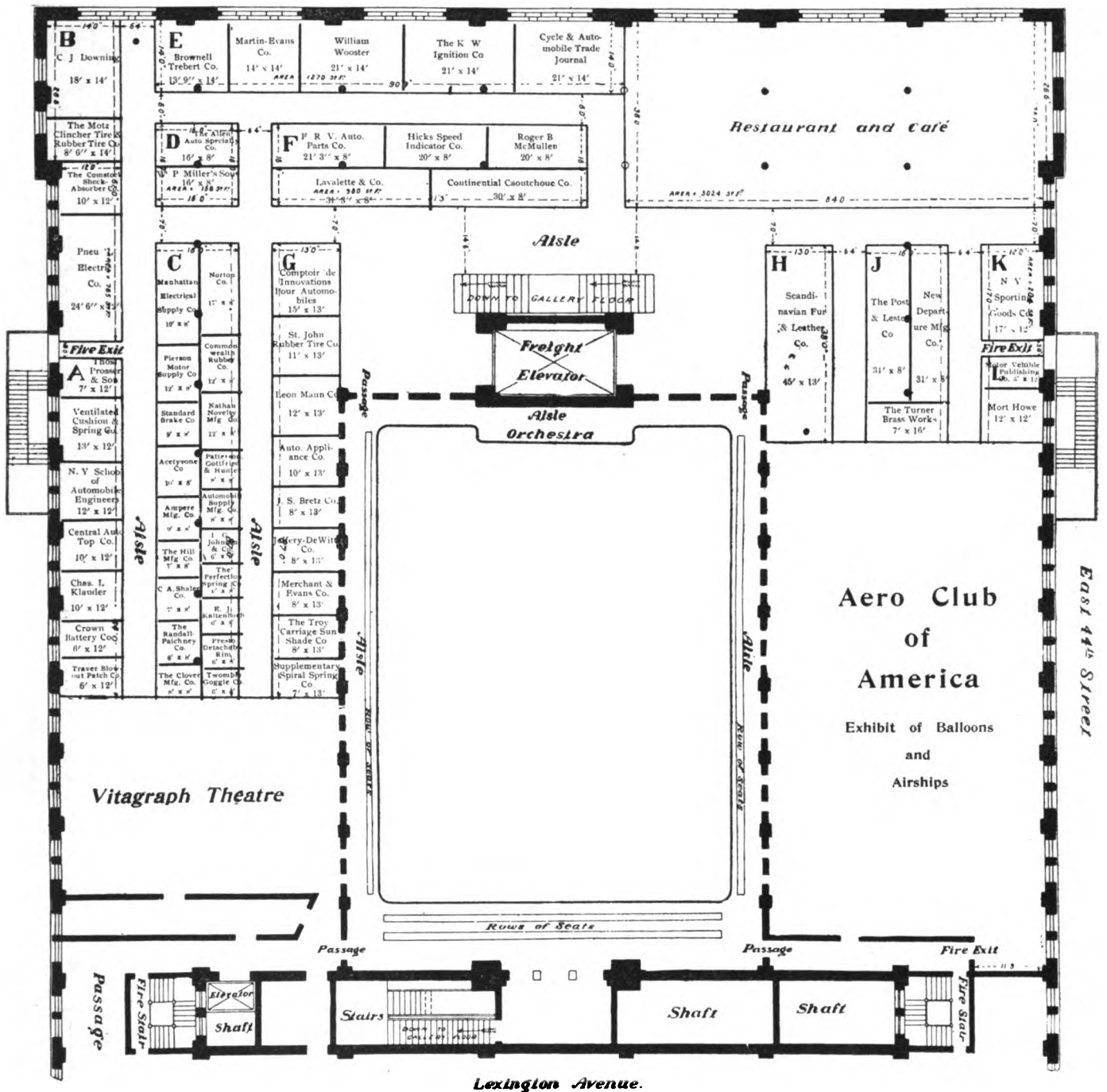
Depew Place

Press Room



WHERE THE EXHIBITORS WHO OCCUPY THE GALLERY OF THE GRAND CENTRAL PALACE WILL HOLD FORTH.

Depow Place



ACCESSORIES WILL BE SHOWN ON THE THIRD FLOOR AS OUTLINED IN THE ABOVE DIAGRAM.

MATHEMATICS OF THE WILKESBARRE CLIMB.

One of the prizes offered at this year's climb up "Giants' Despair" at Wilkesbarre, Pa., was the *News* gold medal, to be awarded to the car drawing the greatest weight per horsepower per second. More than half of the two-score participants in all classes decided in the hill-climb were entered in this contest, and the great amount of figuring necessary accounts for the delay in announcing the winners, and they have just been made public by the members of the Wilkesbarre Automobile Club, who acted as judges and referee. The results were calculated by weighing the cars and determining their horsepower according to the recently adopted formula of the A. L. A. M. This gives the weight per horsepower, the time element being computed from the records made on the hill by the various cars.

The committee was composed of P. A. Meixell, W. L. Raeder and B. R. Jones as judges, and D. C. Roberts as referee, all being members of the Wilkesbarre Automobile Club. The following

table reveals the standing of the first six cars according to this method of figuring:

Car	Driver	H.P. Pounds per Second
Matheson.....	Ross Anderson.....	5535
Flat.....	Kessler	4984
Matheson.....	Charles Ward.....	4118
Knox.....	Bourque	4063
Thomas Flyer.....	Montague Roberts.....	3649
Maxwell.....	Price	3268

THE WINTON TRANSCONTINENTAL SHOW.

General Sales Manager Charles B. Shanks, of the Winton Motor Carriage Co., yesterday arrived at the New York City branch of the Winton Company, Broadway and Seventieth street, where the "Model Six-Teen-Six" is to be exhibited for the next two days. It is a certainty that Mr. Winton's latest creation will be thoroughly examined by the many interested in the engineering work of this pioneer of automobiling.

HOW THE CHICAGO EXHIBITORS WILL BE PLACED

AFTER all Chicago again will have the truly national automobile show this year: November 30 to December 7. The members of the rival associations, the Association of Licensed Automobile Manufacturers and the American Motor Car Manufacturers' Association, will sink their differences, at least on show matters, so that the Coliseum and its annex and the First and Seventh Regiment Armories will shelter the "Licensed" and "Independents" alike, not to speak of the many that owe allegiance to neither of these bodies.

In order to make more room for the pleasure vehicles, the First Annual National Exhibition of Commercial Vehicles will be inaugurated under the same auspices, the National Association of Automobile Manufacturers, and will hold forth in the

Seventh Regiment Armory. So far twelve manufacturers of cars and six makers of accessories have contracted for space. There will thus be ninety-two exhibitors of complete cars.

Where accessories are concerned, the showing is equally impressive. In the coliseum basement there will be 9 exhibitors, while the galleries will house no less than 118 different exhibits of various small wares. There will be 16 additional exhibitors of accessories in the gallery of the First Regiment Armory, and 6 in the Seventh Regiment Armory, so that in all there will be 237 exhibitors in the Coliseum show and its annex, and 18 at the commercial vehicle show in the Seventh Regiment Armory. These are simply the figures at the present writing, and they will doubtless be considerably augmented.

COLISEUM MAIN FLOOR—AUTOMOBILES.

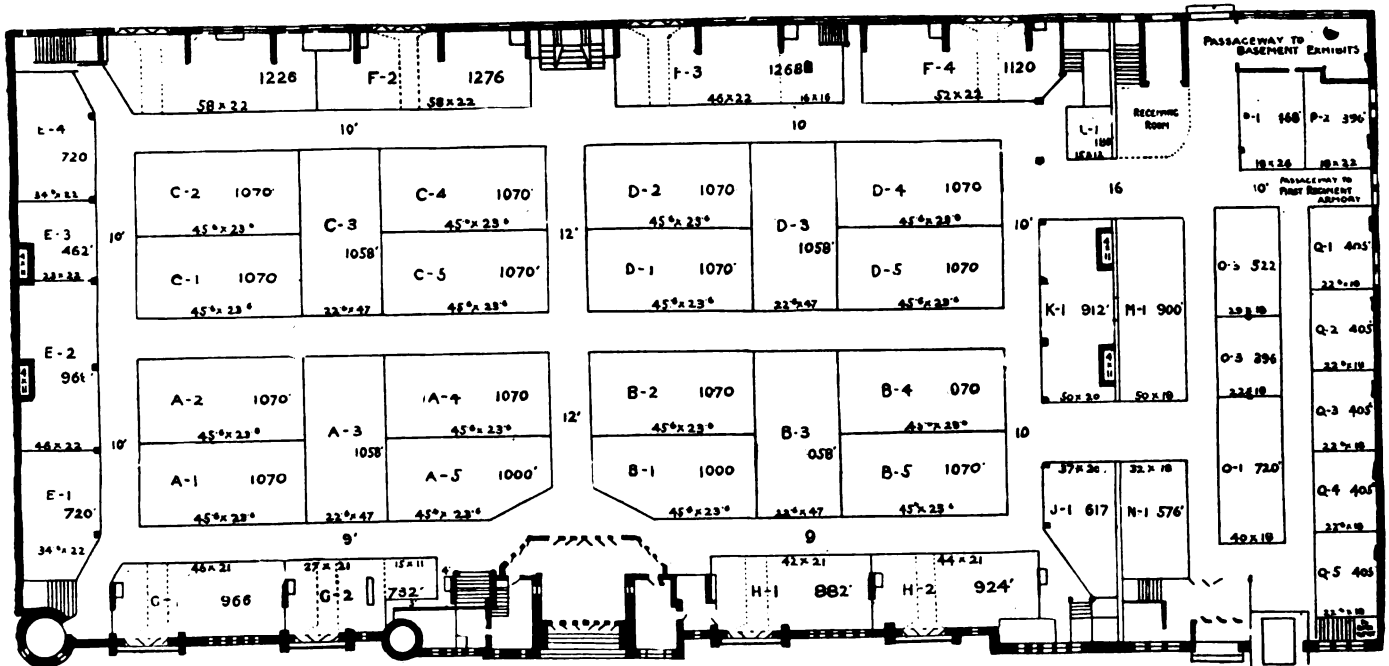
- A-1. Packard Motor Car Company, Detroit, Mich.
- A-2. Locomobile Company of America, Bridgeport, Conn.
- A-3. Wayne Automobile Company, Detroit, Mich.
- A-4. Electric Vehicle Company, Hartford, Conn.
- A-5. Knox Automobile Company, Springfield, Mass.
- B-1. Woods Motor Vehicle Company, Chicago, Ill.
- B-2. Reo Motor Car Company, Lansing, Mich.
- B-3. Studebaker Bros. Manufacturing Company, South Bend, Ind.
- B-4. E. R. Thomas Motor Car Company, Buffalo, N. Y.
- B-5. F. B. Stearns Company, Cleveland, Ohio.
- C-1. Apperson Bros. Automobile Company, Kokomo, Ind.
- C-2. Northern Motor Car Company, Detroit, Mich.
- C-3. Elmore Manufacturing Company, Clyde, Ohio.
- C-4. Olds Motor Works, Lansing, Mich.
- C-5. Lozier Motor Company, New York.
- D-1. Dayton Motor Car Company, Dayton, Ohio.
- D-2. Pope Motor Car Company, Hartford, Conn.
- D-3. Pope Manufacturing Company, Hartford, Conn.
- D-4. H. H. Franklin Manufacturing Company, Syracuse, N. Y.
- D-5. The Bartholomew Company, Peoria, Ill.
- E-1. Babcock Electric Carriage Company, Buffalo, N. Y.
- E-2. Premier Motor Manufacturing Company, Indianapolis, Ind.
- E-3. Matheson Motor Car Company, Wilkesbarre, Pa.
- E-4. Maxwell-Briscoe Motor Company, Tarrytown, N. Y.
- F-1. George N. Pierce Company, Buffalo, N. Y.
- F-2. The White Company, Cleveland, Ohio.
- F-3. Stevens-Duryea Company, Chicopee Falls, Mass.
- F-4. Haynes Automobile Company, Kokomo, Ind.
- G-1. Winton Motor Carriage Company, Cleveland, Ohio.
- G-2. Royal Motor Car Company, Cleveland, Ohio.
- H-1. Thomas B. Jeffery & Company, Kenosha, Wis.
- H-2. National Motor Vehicle Company, Indianapolis, Ind.
- J-1. Waltham Manufacturing Company, Waltham, Mass.
- K-1. Mitchell Motor Car Company, Racine, Wis.
- L-1. Pungs-Finch Auto & Gas Engine Company, Detroit, Mich.

ANNEX FIRST FLOOR—AUTOMOBILES.

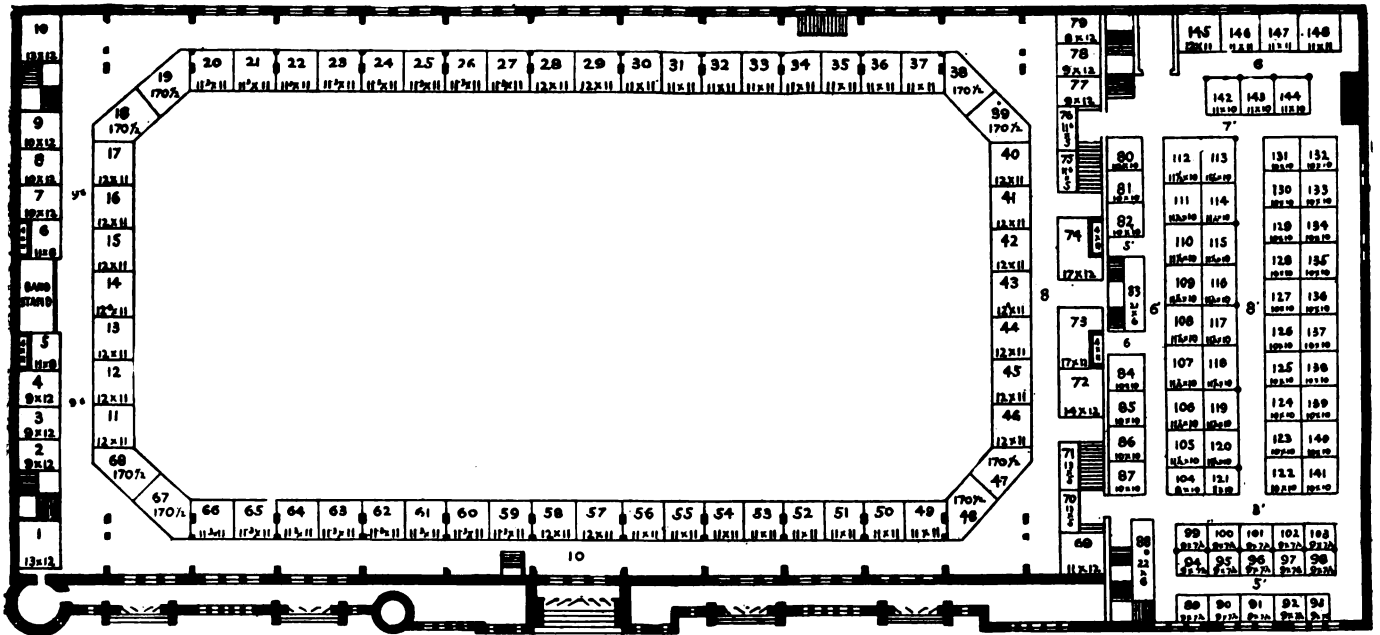
- M-1. Autocar Company, Ardmore, Pa.
- N-1. Dragon Automobile Company, Philadelphia, Pa.
- O-2 and 3. Cadillac Motor Car Company, Detroit, Mich.
- O-1. Baker Motor Vehicle Company, Cleveland, Ohio.
- P-1. Deere-Clark Motor Car Co.
- Q-1. Welch Motor Car Company, Pontiac, Mich.
- Q-2. Peerless Motor Car Company, Cleveland, Ohio.
- Q-3. Peerless Motor Car Company, Cleveland, Ohio.
- Q-4 and 5. Corbin Motor Vehicle Corp'n, New Britain, Conn.

FIRST REGIMENT ARMORY—AUTOMOBILES.

- A-1. Buckeye Manufacturing Company, Anderson, Ind.
- A-2. Columbus Buggy Company, Columbus, Ohio.
- A-3. Knight & Kilbourne, Chicago, Ill.
- A-4. American Locomotive Automobile Company, New York.
- B-1. Rauch & Lang Carriage Company, Cleveland, Ohio.
- B-2. Western Tool Works, Galesburg, Ill.
- B-3. Aerocar Company, Detroit, Mich.
- B-4. Gearless Transmission Company, Rochester, N. Y.
- C-1. Cleveland Motor Car Company, Cleveland, Ohio.
- C-2. Moon Motor Car Company, St. Louis, Mo.
- C-3. Pierce Engine Company, Racine, Wis.
- C-4. Tincher Motor Car Company, South Bend, Ind.
- D-1. Austin Automobile Company, Grand Rapids, Mich.
- D-2. De Luxe Motor Car Company, Detroit, Mich.
- D-3. Jackson Automobile Company, Jackson, Mich.
- D-4. American Motor Car Company, Indianapolis, Ind.
- E-1 (W. 1-2). Chicago Coach & Carriage Company, Chicago, Ill.
- E-1 (E. 1-2). Staver Carriage Company, Chicago, Ill.
- E-2. C. H. Blomstrom Motor Company, Detroit, Mich.
- E-3. Dolson Automobile Company, Charlotte, Mich.
- E-4. Acme Motor Car Company, Reading, Pa.
- E-5. Monarch Motor Car Company, Chicago Heights, Ill.



1 PLAN OF AUTOMOBILE SECTION, EXHIBITS OF COMPLETE CARS, MAIN FLOOR OF COLISEUM AND ANNEX.



LAY-OUT FOR SECOND FLOOR OF COLISEUM AND COLISEUM GALLERY FOR ACCESSORY EXHIBITS.

- E-6. Moline Automobile Company, East Moline, Ill.
- F-2. Nordyke & Marmon Company, Indianapolis, Ind.
- G-1. Holsman Automobile Company, Chicago, Ill.
- G-2. Wayne Works, Richmond, Ind.
- G-3 and 4. Rainier Company, New York.
- G-5. The Kissel Motor Car Company, Hartford, Wis.
- G-6. Smith Automobile Company, Topeka, Kansas.
- 36. Brown-Lipe Gear Company, Syracuse, N. Y.
- 37. Spicer Universal Joint Manufacturing Co., Plainfield, N. J.
- 38 and 39. G & J Tire Company, Indianapolis, Ind.
- 40 and 41. Badger Brass Manufacturing Company, Kenosha, Wis.
- 42. Veeder Manufacturing Company, Hartford, Conn.
- 43 and 44. Gray & Davis, Amesbury, Mass.
- 45. National Carbon Company, Cleveland, Ohio.
- 46. Rose Manufacturing Company, Philadelphia, Pa.
- 47 and 48. The B. F. Goodrich Company, Akron, Ohio.
- 49. C. F. Splittorf, New York.
- 50. Hyatt Roller Bearing Company, Harrison, N. J.
- 51. Shelby Steel Tube Company, Pittsburg, Pa.
- 52. Long Manufacturing Company, Chicago, Ill.
- 53 and 54. Fisk Rubber Company, Chicopee Falls, Mass.
- 55. Diamond Chain & Manufacturing Company, Indianapolis, Ind.
- 56. Joseph W. Jones, New York.
- 57. Warner Gear Company, Muncie, Ind.
- 59 and 60. Goodyear Tire & Rubber Company, Akron, Ohio.
- 61. Baldwin Chain & Manufacturing Company, Worcester, Mass.
- 62. Pantasote Company, New York.
- 63. Warner Instrument Company, Beloit, Wis.
- 64. Swinehart Clincher Tire & Rubber Company, Akron, Ohio.
- 65. New York & New Jersey Lubricants Company, New York.
- 66. Remy Electric Company, Anderson, Ind.
- 67 and 68. Firestone Tire & Rubber Company, Akron, Ohio.
- 70. Cook's Standard Tool Company, Kalamazoo, Mich.
- 71. Oliver Manufacturing Company, Chicago, Ill.
- 72 and 73. S. F. Bowser & Co., Inc., Fort Wayne, Ind.
- 74. Edmunds & Jones Manufacturing Company, Detroit, Mich.
- 75. Byrne-Kingston & Co., Kokomo, Ind.
- 76. Kokomo Electric Company, Kokomo, Ind.
- 77. Weed Chain Tire Grip Company, New York.
- 78. Hancock Manufacturing Company, Charlotte, Mich.
- 79. Leather Tire Goods Company, Newton Upper Falls, Mass.
- 80. Hotchkiss Manufacturing Company, Chicago, Ill.
- 81 and 82. Auto Accessories Manufacturing Company, Detroit, Mich.
- 83. Duff Manufacturing Company, Allegheny, Pa.
- 84. Western Malleable Steel Company, Detroit, Mich.
- 85. Midgley Manufacturing Company, Columbus, Ohio.
- 86. R. E. Hardy Company, New York.
- 87. Joseph Dixon Crucible Company, Chicago, Ill.
- 88. Stewart & Clark Manufacturing Company, Chicago.
- 89. Atwater-Kent Manufacturing Company, Philadelphia, Pa.
- 90 and 91. Ajax-Grieb Rubber Company, New York.
- 92. Stackpole Battery Company, St. Mary's, Pa.
- 93. Ross Gear & Tool Company, Lafayette, Ind.
- 94. J. H. Sager Company, Rochester, N. Y.
- 95. Hoffecker Company, Boston, Mass.
- 96. C. Cowles & Co., New Haven, Conn.

COLISEUM BASEMENT—AUTOMOBILES.

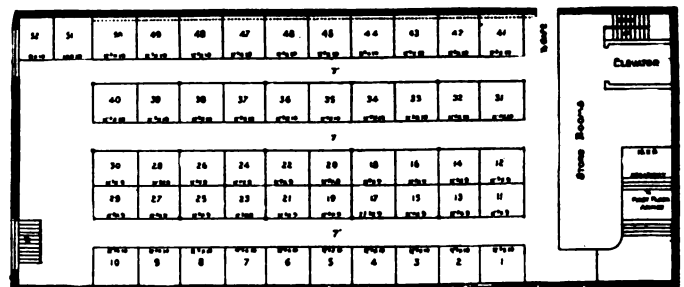
- 15 and 16. Schacht Manufacturing Company, Cincinnati, Ohio.
- 17 to 20. Reliable Dayton Motor Car Company, Chicago, Ill.
- 23 to 25. Aurora Motor Works, Aurora, Ill.
- 29 and 30. Pullman Motor Car Company, Chicago, Ill.
- 31 to 33. Auburn Automobile Company, Auburn, Ind.
- 34. Hatfield Motor Vehicle Company, Miamisburg, Ohio.
- 36 to 40. Cornish-Friedburg Motor Car Company, Chicago, Ill.
- 41 to 43. C V I Motor Company, Jackson, Mich.

COLISEUM BASEMENT—ACCESSORIES.

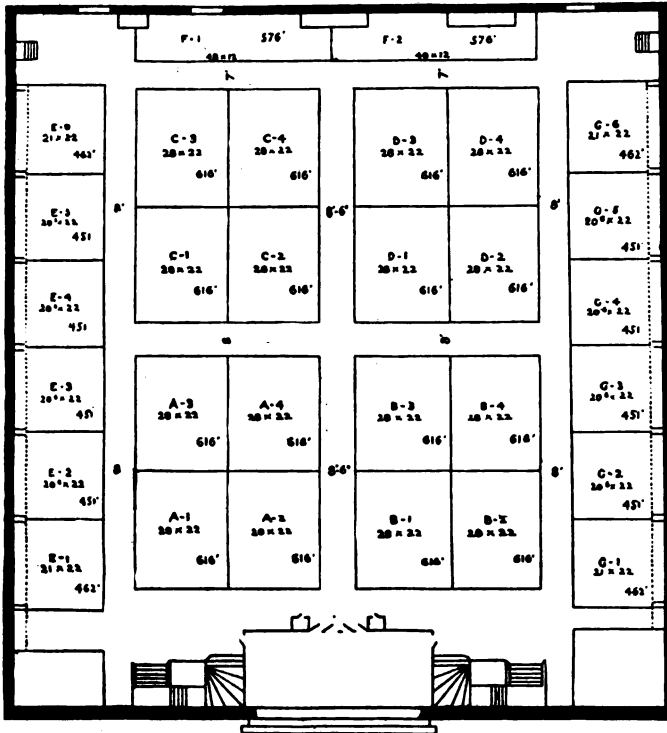
- 1. The K-W Ignition Company, Cleveland, Ohio.
- 2. C. A. Shaler Company, Waupun, Wis.
- 3. Norton Company, Worcester, Mass.
- 4. Empire Automobile Tire Company, Trenton, N. J.
- 5. Chicago School of Motoring, Chicago.
- 6. Randall-Falchney Company, Boston, Mass.
- 7. Michelin Tire Company, Milltown, N. J.
- 8. T. Alton Bemus, Boston, Mass.
- 9. American Aluminum Coating Company, Pittsburg, Pa.
- 10. Thomas Prosser & Son, New York.
- 21 to 22. Roger B. McMullen, Chicago, Ill.
- 24 to 26. Manhattan Screw & Stamping Company, New York.
- 45. Jeffery-DeWitt Company, Newark, N. J.
- 46. Warner Clutch Company, Chicago, Ill.
- 47. Triple Action Spring Company, Chicago, Ill.
- 48. Duplex Coll Company, Fond du Lac, Wis.
- 49 and 50. Longdin-Brugger Company, Fond du Lac, Wis.
- 51. Pfanstiehl Electrical Laboratory, North Chicago, Ill.
- 52. Vivax Storage Battery Company, Chicago, Ill.

COLISEUM GALLERY—ACCESSORIES.

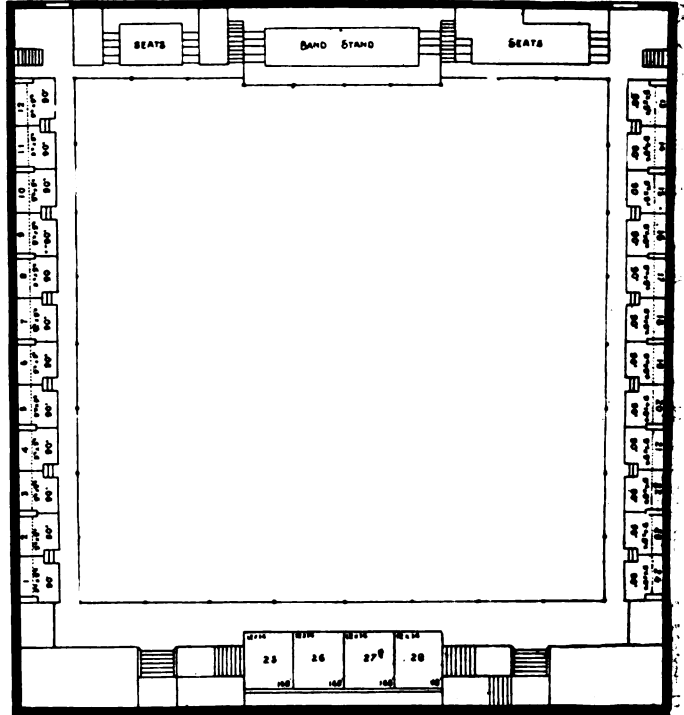
- 1. Kinsey Manufacturing Company, Dayton, Ohio.
- 2 to 4. Sprague Umbrella Company, Norwalk, Ohio.
- 5. Never Miss Spark Plug Company, Lansing, Mich.
- 6. Adam Cook's Sons, New York.
- 7. Indestructible Steel Wheel Company, Chicago.
- 8. Imperial Brass Company, Chicago, Ill.
- 9. Republic Rubber Company, Youngstown, Ohio.
- 10. Motor Car Specialty Company, Philadelphia, Pa.
- 11. Valentine & Co., Chicago.
- 12. Electric Storage Battery Company, Philadelphia, Pa.
- 13. McCord & Co., Chicago, Ill.
- 14. Auto Improvement Company, New York.
- 15. Wray Pump & Register Company, Rochester, N. Y.
- 16 and 17. Aurora Automatic Machinery Company, Aurora, Ill.
- 18. Pennsylvania Rubber Company, Jeannette, Pa.
- 19. Hartford Suspension Company, New York.
- 20. Wm. Cramp & Sons Ship & Engine Bldg. Co., Philadelphia, Pa.
- 21. R. H. Smith Manufacturing Company, Springfield, Mass.
- 22. Chicago Battery Company, Chicago.
- 23. Whitney Manufacturing Company, Hartford, Conn.
- 24. Motsinger Device Manufacturing Company, Pendleton, Ind.
- 25. Wheeler & Schebler, Indianapolis, Ind.
- 26 and 27. Morgan & Wright, Detroit, Mich.
- 28. R. E. Dietz Company, New York.
- 29. The Dayton Electrical Manufacturing Company, Dayton, Ohio.
- 30 and 31. Hartford Rubber Works Company, Hartford, Conn.
- 32 and 33. Timken Roller Bearing Axle Company, Canton, Ohio.
- 34 and 35. Diamond Rubber Company, Akron, Ohio.



SPACES TO BE UTILIZED IN COLISEUM BASEMENT.



PLAN OF MAIN FLOOR, FIRST REGIMENT ARMORY.



ACCESSORY SPACES IN FIRST REGIMENT GALLERY.

98. The Auto Pump Company, Springfield, N. Y.
99. Gray-Hawley Manufacturing Company, Detroit, Mich.
100. Lipman Manufacturing Company, Beloit, Wis.
101. National Battery Company, Buffalo, N. Y.
- 102 and 103. Corcoran Lamp Company, Cincinnati, Ohio.
104. Gemmer Manufacturing Company, Detroit, Mich.
105. Briscoe Manufacturing Company, Detroit, Mich.
106. Heinze Electric Company, Lowell, Mass.
107. Wm. G. Robinson & Son Company, Baltimore, Md.
108. Oliver Instrument Company, Minneapolis, Minn.
109. Whiteley Steel Company, Muncie, Ind.
110. Atwood Manufacturing Company, Amesbury, Mass.
111. Standard Roller Bearing Company, Philadelphia, Pa.
112. Prest-O-Lite Company, Indianapolis, Ind.
114. Connecticut Telephone & Electric Company, Meriden, Conn.
115. Diezemann Shock Absorber Company, Hoboken, N. J.
116. Avery Portable Lighting Company, Milwaukee, Wis.
118. Kilgore's Manufacturing Company, Old Town, Me.
119. Uncas Specialty Company, Norwich, Conn.
120. Witherbee Igniter Company, New York.
121. Muncie Auto Parts Company, Muncie, Ind.
- 122 and 123. Hendee Manufacturing Company, Springfield, Mass.
124. Harley-Davidson Motor Company, Chicago.
125. Armac Motor Company, Chicago.
127. Fowler, Manson, Sherman Cycle Manufacturing Co., Chicago.
- 128 and 129. Pope Manufacturing Company, Hartford, Conn.
- 130 and 131. Consolidated Manufacturing Company, Toledo, Ohio.
- 132 and 133. Merkel Motor Company, Milwaukee, Wis.
134. L. C. Chase & Co., Boston, Mass.
- 135.
136. American Electrical Novelty & Manufacturing Co., New York.
137. Vesta Accumulator Company, Chicago.
138. Igniter Appliance Company, Cleveland, Ohio.
- 139 and 140. Rands Manufacturing Company, Detroit, Mich.
141. Hornecker Motor Manufacturing Company, Whiting, Ind.
142. Gabriel Horn Manufacturing Company, Cleveland, Ohio.
143. C. T. Ham Manufacturing Company, Rochester, N. Y.
144. Holley Bros. & Company, Detroit, Mich.
145. The National Oil Pump & Tire Company, Dayton, Ohio.
146. Limousine Carriage Manufacturing Company, Chicago.
147. A. R. Mosler & Company, New York.
148. Sherwin-Williams Company, Cleveland, Ohio.

FIRST REGT. ARMORY GALLERY—ACCESSORIES.

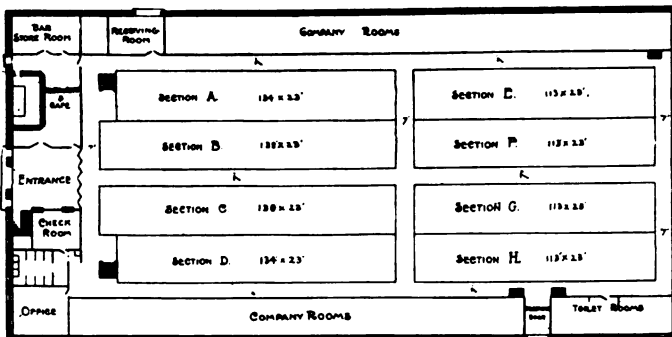
1. Standard Lamp & Manufacturing Company, Chicago.
2. The Motor Way, Chicago.
- 3 and 4. Continental Caoutchouc Company, New York.
- 5 to 8. Eugene Arnstein, Chicago.
10. Acetylene Company, New York.
12. Ventilated Cushion & Spring Company, Jackson, Mich.
- 15 and 16. Franco-American Auto & Supply Company, Chicago.
17. Cycle Auto & Trade Journal, Philadelphia, Pa.
18. McKanna Manufacturing Company, Chicago.
19. Standard Varnish Works, Chicago.
20. Motz Clincher Tire & Rubber Company, Akron, Ohio.
21. Morrison, McIntosh & Co., Grinnell, Iowa.
22. Horseless Age, New York.
- 23 and 24. Motor Age, Chicago.
- 25 to 28. Excelsior Supply Company, Chicago, Ill.
29. Class Journal Company, New York.

SEVENTH REGT. ARMORY—COMMERCIAL CARS.

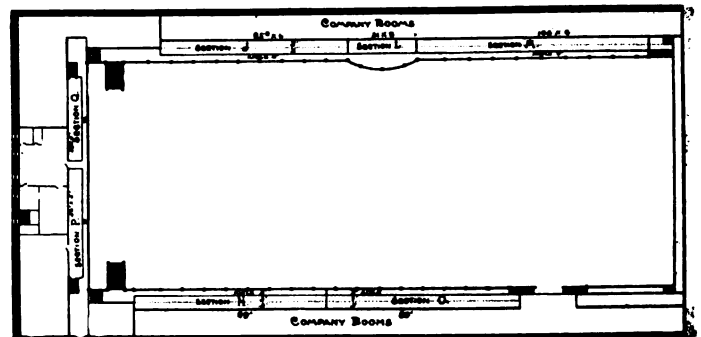
- Section A. H. H. Franklin Manufacturing Company, Syracuse, N. Y.
- Section B. Buckeye Manufacturing Company, Anderson, Ind.
Rapid Motor Vehicle Company, Pontiac, Mich.
The White Company, Cleveland, Ohio.
- Section C. General Vehicle Company, New York.
Logan Construction Company, Chillicothe, Ohio.
Reliance Motor Car Company, Detroit, Mich.
- Section D. Studebaker Bros. Manufacturing Co., South Bend, Ind.
- Section E. Pope Motor Car Co., Hartford, Conn.
- Section F. Mitchell Motor Car Company, Racine, Wis.
Couple Gear Freight Wheel Co., Grand Rapids, Mich.
- Section H. A. D. Melselbach Motor Wagon Co., N. Milwaukee, Wis.

ACCESSORIES.

- Section J. The Hartford Rubber Works Company, Hartford, Conn.
Firestone Tire & Rubber Company, Akron, Ohio.
- Section L. The Diamond Rubber Company, Akron, Ohio.
- Section M. Indestructible Steel Wheel Company, Chicago, Ill.
- Section N. Timken Roller Bearing Axle Company, Canton, Ohio.
Hartford Auto Parts Company, Hartford, Conn.



LAY-OUT FOR THE COMMERCIAL VEHICLE EXHIBITS.



GALLERY PLAN OF SPACES, SEVENTH REGIMENT ARMORY.

ANNUAL MEETING OF LOGAN COMPANY.

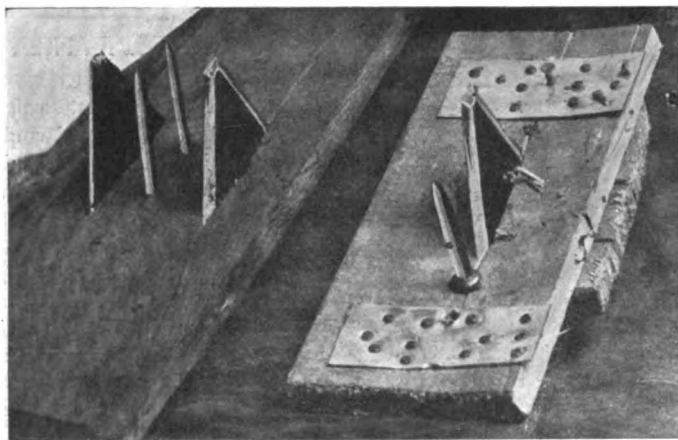
CHILlicothe, O., Sept. 9.—The regular annual meeting of the stockholders of the Logan Construction Company of Chillicothe, O., was held at the company's plant on the evening of September 3, a large majority of the stock being represented.

Reports of the company's business for the past year were gone into in detail and found most satisfactory. The regular quarterly dividend on the preferred stock was passed and the following directors were elected: Jos. L. Schilder, B. A. Gramm, Geo. F. Hunter, Geo. H. Smith, C. F. Smith, John Kellohofer, W. A. Hall, E. L. Bergman and B. E. Stevenson. The stockholders present inspected the new models which are in course of construction for the season of 1908 and were impressed with the fact that the trucks which are being turned out are the most perfect, strongest, and most efficient which the company has ever been able to manufacture. The Logan starts on its new year with every prospect of success.

Recently Mr. Gramm, who has been the general manager of the company since its inception, assumed, in addition to his other duties, that of buyer, succeeding Mr. Twyman. The latter also had been sales manager, B. E. Stevenson succeeding him.

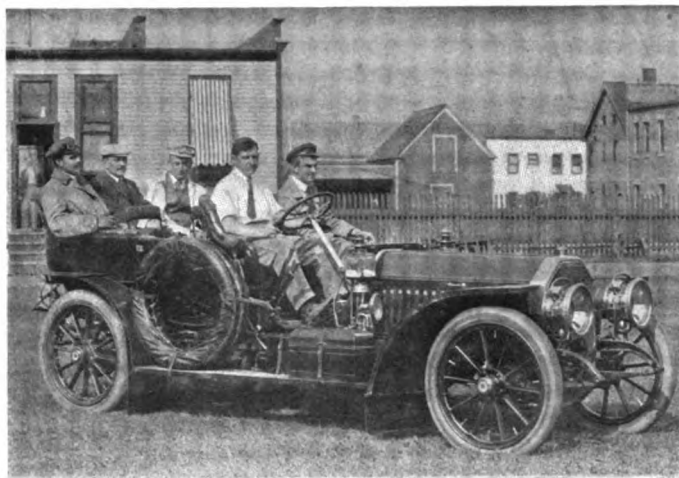
YOUTH WREAKS HAVOC WITH TIRES.

CHESTER, CONN., Sept. 9.—Finding time heavy on his hands and the facilities abundant, Edwin Priest, a 17-year-old boy of this place, living on the pike between Chester and Tylerville,



WHAT THE CONNECTICUT YOUTH BROUGHT FORTH TO TEST TIRES.

exercised his mechanical ingenuity on a contrivance that has at once brought him fame. So far as known, he has no particular grudge against autoists, but probably pneumatic tires struck him as easy game worth hunting. He set to work, and with the aid of three knives abstracted from the cutter blade of a mowing machine, an old chisel and a supply of ample-sized wire-nails, he evolved the fiendish devices shown in the accompanying photograph. To make them more effective he ground the edges of the various cutters, and then carefully concealed one of the boards in each of the ruts of a narrow part of the road. Having placed them to the best advantage, the inventor retired to the shade of the cornstalks and watched. W. H. Scoville, of Hartford, Conn., came bowling along in his car and passed over the trap serenely; few inventions have ever worked more admirably on the occasion of their first trial. Before going 100 yards Mr. Scoville realized that three of the car's tires were flat, and examination showed the job to have been a most thorough one. Search was made for the cause during the wait for repairs, and Priest's devices were soon unearthed. They were turned over to F. B. Cooley, of Hartford, who happened along in his machine, and he handed them over to Highway Commissioner McDonald, who caused Priest's arrest. He was fined \$7 and costs, amounting to \$27.11.



THE BURMAN-PARKHURST PARTY IN THE PEERLESS "SIX."

PEERLESS "SIX" ON A LONG JOURNEY.

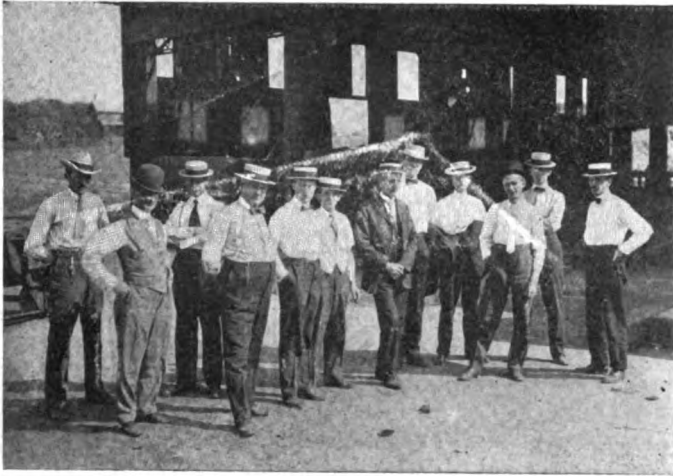
At the end of two years of careful study, Charles Schmidt, designer for the Peerless Motor Car Company, of Cleveland, has completed a six-cylinder car of 57 horsepower. This car is a marvel in design and construction. Its motor construction is along the same general lines as the new Model 18, which is the new 30-horsepower model offered for the season of 1908. After severe tests and try-outs already given the car, E. H. Parkhurst, vice-president of the Peerless Company, with a party including Charles Burman, who has driven a Peerless car with perfect score in the last two Glidden tours, left Cleveland, September 4, for a pleasure tour through the East. Leaving Cleveland, the route included Pittsburg, Bedford Springs, Baltimore, Philadelphia (where two days will be spent), New York (two days), Boston (two days), then through the Berkshire Hills to Albany, through the Mohawk Valley to Utica, Syracuse, Rochester, Buffalo, along the lake shore to Cleveland. The trip will take about ten days.

HANSHUE BREAKS CALIFORNIA RECORD.

Striving after inter-city records is still a popular pastime in California, and the latest attempt on the Los Angeles-Bakersfield time of 8:37, has just been lowered to 7:18 by Harris Hanshue, driving a 20-horsepower Reo. The distance is 100 miles, and represents a continuous climb, many of the grades being very long and stiff, some being given as high as 30 per cent. for a mile or more at a stretch. The roads are far from being favorable, and to vary the monotony of always climbing there are no less than sixty-seven fords to be crossed on the way, some of them being almost three feet deep. In fact, the roads are considered the roughest in that part of California. The run was made without a mishap of any kind.



HANSHUE AND THE REO WHICH LOWERED A CALIFORNIA RECORD.



STEEL EXPERTS AT PLANT OF UNITED STATES STEEL CO., CANTON, O.

FORD COMPANY TESTS VANADIUM STEEL.

Considerable interest has attached to the great amount of attention devoted by the Ford Motor Company, Detroit, Mich., to the production of vanadium steel in commercial quantities for use in automobile construction, and this culminated in the recent making and rolling of the last batch of this steel by the Ford experts at the plant of the United Steel Company, Canton, O. The "heat" consisted of 45 tons of vanadium-chrome steel for crankshafts, and was made under the personal supervision of C. H. Wills and F. Griffith, metallurgists of the Ford Motor Company and the United Steel Company, respectively. Those present were: O. F. Transue, Transue & Williams Company, Alliance, O.; H. W. Alden, Timken Roller Bearing Company, Canton, O.; F. W. Hedgland, Hedgland Mfg. Co., Canton, O.; H. C. Haight, F. C. Groth, Cleveland-Canton Spring Company, Canton, O.; C. W. Cathcart, Hess-Pontiac Spring Company, Pontiac, Mich.; C. H. Wills, E. S. Huff, Ford Motor Company; C. L. Bockus, Western Malleable Company (drop forge department), Detroit; D. Goddard, White Company, Cleveland; B. F. Little, sales manager, and Harry R. Jones, secretary, U. S. Steel Company, Canton, O.

HOW KNOX COMPANY WILL RENEW.

SPRINGFIELD, MASS., Sept 9.—Creditors of the Knox Automobile Company, which recently made a voluntary assignment, met last week, Wednesday, to formulate plans for the reorganization of the company. About 75 per cent. of the indebtedness was represented and practically unanimously adopted a scheme presented by a committee of five creditors, providing for the capitalization of the company's debts of \$500,000 into 8 per cent. cumulative preferred stock and making the company's present capital stock \$360,000 common. A. N. Mayo, the receiver, will continue until the reorganization is perfected. Under the new arrangement the creditors will have complete control of the company's business.

The net earnings of the company, after the payment of the 8 per cent. dividends, less the moneys required for working capital, will be applied under the new arrangement to the retirement of the preferred stock. All claims of less than \$100 will be paid in cash. For all claims over \$100 preferred stock of a par value of \$100 will be issued for every \$100 of indebtedness, except that any indebtedness over \$100 or a multiple thereof—that is, a fractional part of one share—shall be paid in cash. The preferred stock will bear the date of January 1, 1908, and the indebtedness to be capitalized will bear interest up to that date.

The committee of creditors appointed to confer with the stockholders and suggest a plan of reorganization consisted of Robert A. Knight and C. C. Lewis, Springfield; Walter V. Morse, Marlboro; Clarence E. Whitney and Arthur Hyde, Hartford, Conn. About 200 creditors, holding claims against the company of \$8,000, will be paid in cash under the new arrangement.

EMILE LAMBERJACK RETURNS TO PARIS.

After a brief visit of fourteen days in America in connection with the affairs of the Michelin Tire Company, Emile Lamberjack sailed to-day on the French Line steamer for Paris. In an interview before leaving M. Lamberjack declared that the American Michelin factory would start operation in one month, and that the American-made tire would be on the market in about two months.

KINGSTON FROM KINGSTON IN A. M. C. M. A.

Among the late concerns to be admitted to membership in the American Motor Car Manufacturers' Association prior to the allotment of space for the Grand Central Palace show, was the Kingston Motor Car Company, of Kingston, N. Y., in which are interested E. R. Thomas and O. F. Thomas, the New York bankers and motor enthusiasts; F. E. Moscovitz, well known in the trade, and W. Gould Brokaw.

CLEVELAND TO HAVE N. Y. HEADQUARTERS.

As a part of its plans for the selling season of 1908, the Cleveland Motor Car Company, Cleveland, O., builders of the car of the same name, will make its headquarters in New York City on and after October 1. No changes will be made in the manufacturing end, the complete chassis being shipped from Cleveland to New York, where the finishing will all be carried out by a well-known firm of coach builders, the entire distribution of the Cleveland product being handled from this end in future.

CONTINENTAL'S CREDITABLE PERFORMANCE.

Doubt has frequently been expressed as to the genuineness of the many high-gear stunts arranged by the publicity man, so that as a condition precedent to showing what the Continental could do in this respect C. S. Johnston, the car's designer, not only locked the shifting mechanism in the high-speed position, but also disconnected the lever. Accompanied by E. T. Hale, the New Haven, Conn., agent of the Knox, Mr. Johnston left the New York headquarters at 1,359 Broadway at 6 P.M. last Thursday evening. By taking the route via White Plains, South Norwalk and Bridgeport, a great many hills were included, in addition to which much of the road was in process of repair and very rough. In the entire distance of 90 miles it was only necessary to allow the car to slide down one hill backward in order to get a new start, and New Haven was reached at 9 P.M. There were still some doubting Thomases, and, to show them, Mr. Johnston took the car out to Canner street hill, New Haven, the next day. The road is rough, and the grade is reputed to be 18 per cent., while it is said that it has never been taken on the high-gear before. From a standing start on Whitney avenue, the ascent was made without difficulty.



C. S. JOHNSTON TACKLING A STIFF GRADE WITH HIS CONTINENTAL.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

The annual show luncheon of the American Motor Car Manufacturers' Association will be given at the Manhattan Hotel, Tuesday, October 29, of the week of the automobile show at the Grand Central Palace.

In spite of all the 24-hour races that have been held, the National still holds the honor of having the record performance of 1,094 3-16 miles to its credit. The National also holds the 1,000-mile track record, having covered that distance in 21:58:00. The drivers were Jack Clemens and Charles Merz.

From now on Toledo, O., will be surrounded by a cordon of warning signs bearing the curt notice "Slow down to ten miles an hour." There has been much complaint on the score of speeding on roads leading into the city, and after considering various suggestions the local officials have adopted this as one method toward curbing it.

The Automobile Dealers' Association of Pittsburg has just received its charter. It was incorporated with a capital of \$5,000, and the following officers were elected: Treasurer, W. N. Murray, of the Standard Automobile Company; directors, W. H. La Fontaine, of the Atlas Automobile Company, and A. L. Banker, of the Banker Brothers Company.

While driving on the Lancaster turnpike near Wilmington, Del., John Ruth and a companion had an unusual experience. Without warning an automobile crashed into them in the dark, upsetting the buggy and throwing them out. The owner of the car inquired as to the damage, and without further words shoved a \$20 bill in Mr. Ruth's hand and was off.

The Rainier Company makes announcement that it was a 35-horsepower Rainier, not a Mercedes, as was stated in two New York dailies, that enabled J. P. Morgan to catch the Pittsfield express at Lee, Mass., recently, he having missed the train at Pittsfield. The trip of twelve miles was made in Charles Lanier's car, which is a Rainier.

That trade conditions are not alone not as black as they are painted, but not black at all, is amply evidenced by the order which W. H. Kirkpatrick, sales manager of the Peerless Motor Car Company, Cleveland, O., carried away with him from Philadelphia on the occasion of his recent eastern trip. The order is for a large number of Model 18, the Peerless 1908, and delivery is required by November 1.

Early requests for Dragon agencies have necessitated tours of inspection of the ground before placing contracts for 1908, and as a result President John Kane Mills and Sales Manager A. L. Kull, of the Dragon Automobile Company, have been making an extended tour of the Eastern States, while John W. Haynes, assistant sales manager, has been carrying on the same work in the South and Southwest.

The Standard Roller Bearing Company, of Philadelphia, has recently made large additions to its plant. The buildings extend over a half-mile of ground from end to end, having a floor space of over 500,000 square feet. The concern employs over 1,500 men.

The business has grown to such proportions as to necessitate the establishing of a department of publicity, which will be conducted by C. Dickens Sternfels, who has been identified in a similar capacity with the Arthur Koppel Company, Pittsburg, Pa., for the past three years.

For the purpose of testing out one of the new 60-horsepower Thomas cars, it was recently sent on a 1,000 mile trip from the works at Buffalo, N. Y., with the intention of covering that distance in three days. In addition to Montagu Roberts, who drove, George Salzman, Mason Hatch, M. Chedru, Edmond Thomas, and Mr. Haas, representing the sales and mechanical departments of E. R. Thomas Motor Company, rode in the car. The 1,000 miles scheduled were covered in 2 days 15 hours, and immediately upon its arrival at the Hout garage in New York City, on Sunday morning, the tanks were refilled and the return trip to Buffalo undertaken, arriving there early the next day.

W. D. Newerf, Pacific Coast representative of the Goodyear interests, is getting considerable advertising for the Goodyear tires out of the unusual performance of a tourist racer during the coast track campaign. The car was raced at San Bernardino, Los Angeles, Lakeside, Fresno, Sacramento, San Francisco, Seattle, Portland, Everett and Salt Lake City, or 26 events in all, ranging from 3 to 25 miles, winning a majority of them. From the time the car left Los Angeles until it returned, it was not necessary to change one of the original Goodyear tires. The W. D. Newerf Rubber Company now has stores in Los Angeles and San Francisco and agents in Fresno, San Diego, San Jose, Portland, Seattle and other towns on the coast.

NEW AGENCIES ESTABLISHED.

The O. L. Gooden Motor Car Company, 541-543 Ellicott street, Buffalo, will handle the Winton in that city next season. The company was recently organized with Mr. Gooden, who is an experienced automobile salesman, at its head.

For the benefit of the Southern California trade, Morgan & Wright have just opened a new branch house at 118-120-122 East Tenth street, Los Angeles. The M. & W. business on the Coast has grown so rapidly during the past year that it was found impossible to handle it properly from the San Francisco branch. The Detroit rubber goods makers will carry a complete line of their products at the new branch and make it one of the best equipped rubber stores on the Coast.

PERSONAL TRADE MENTION.

Frank G. Dwight, Jr., for the past two years with the Knox Automobile Company, has just taken charge of the Philadelphia office of the Jones Speedometer Company.

C. A. Gilmore, general representative of the Knox Automobile Company, Springfield, Mass., has resigned to become associated with the Boston branch of the White Company.

Arthur Lesser, for some time connected with the sales department of the Rainier Company, has just gone with Wyckoff, Church & Partridge, and will be associated with A. J. Picard in the Stearns department.

W. M. Botto, sales manager of the Palmer & Singer Manufacturing Company, is visiting the Matheson agents throughout the Western States for the purpose of instructing them regarding the improvements incorporated in the 1908 models.

G. G. Westerfield, secretary of the Westerfield Motor Company, Anderson, Ind., manufacturers of gasoline engines, has just joined the forces of the Staver Carriage Company, Chicago, as superintendent of the latter concern's automobile department.

W. A. Woods, formerly connected with the New York branch of the Oldsmobile Company, has just become identified with the interests of the Cleveland Motor Car Company, Cleveland, O., having taken up the duties of sales manager of that concern September 1.

F. A. Nelson, who has represented the Diamond Rubber Company in Southern California through the San Francisco office for the past two years, has just been appointed manager of a new branch house about to be established at Los Angeles, at 1207-1209 Main street. Mr. Nelson has already taken up his new duties.

R. E. Ingersoll, who has acted as a special representative for the Reo and Premier cars in the Central States for the past two years, has been appointed sales manager for the New York branch of R. M. Owen & Company. Prior to taking on the lines in question he was identified with the sales department of the Pope Manufacturing Company for four years.

NEW TRADE PUBLICATIONS.

The Bridgeport Vehicle Company, Bridgeport, Conn., builders of high-grade automobile bodies and whose factory is devoted exclusively to automobile work, has issued a circular showing the ample factory of the company and illustrating the special type of limousine body for which the house is noted. The company builds bodies to order, both of wood and of aluminum, to fit any car.

"Bulletin Number 13" is the title of the latest piece of literature to come from the publicity works of the White Company, Cleveland, O., and it is devoted almost entirely to an attractively illustrated description of the genesis of the White steamers, showing the highly developed methods of production on a large scale. The principal departments and their work are all shown photographically, giving some idea of the extent of the plant, which has been made proof against fire to such an extent that the company carries its own risk. A few pages of the bulletin are devoted to an announcement of the new White models for 1908, which show but few changes as compared with their predecessors of the present season, while the prices remain the same.

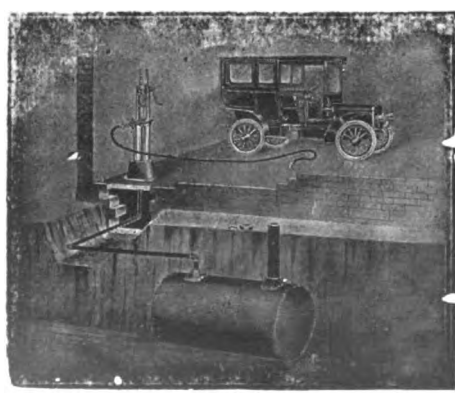
**INDEX
TO ADVERTISERS**

Acetylene Gas Illuminating Co. 59
 Acme Motor Car Co. 89
 Adams Co. 63
 Add-Wear Tire Sleeve Co. 62
 Ajax-Grieb Rubber Co. 98
 Allyn Brass Foundry Co. 77
 American Ball Bearing Co. 82
 American Brass & Aluminum Works 64
 American Die Casting Co. 67
 American Loco. Auto. Co. 106
 American Motor Parts Co. 64
 American Motor Truck Co. 105
 Anderson Forge & Machine Co. 64
 Apperson Bros. Automobile Co. 107
 Appliance Mfg. Co. 79
 Arc Toledo Spark Plug Co. 58
 Ashtabula Carriage Bow Co. 62
 Ashton Valve Co. 62
 Atlas Motor Car Co. 101
 Auburn Automobile Co. 63
 Austin Automobile Co. 102
 Auto and Power Appliance Co. 58
 Auto Improvement Co. 114
 Auto Pump Co. 59
 Autocar Co. 105
 Autocar Equipment Co. 102
 Automobile Blue Book 94
 Automobile Supply Co. 60
 Autoshine Co. 59
 Avery Portable Lighting Co. 73
 Badger Brass Mfg. Co. 72
 Baird-Banks Mfg. & Sup. Co. 73
 Baldwin Chain Mfg. Co. 64
 Barndt-Johnson Auto Sup. Co. 62
 Barnett Drop Forging Co. 66
 Barrett Mfg. Co. 126
 Bay State Auto Co. 68
 Beaver Mfg. Co. 73
 Behen-Faught Motor Car Equipment Co. 60
 Bellfuss Motor Co. 78
 Bemus, T. Alton 58
 Berkshire Motor Car Co. 63
 Besley & Co. C. H. 75
 Bethlehem Steel Co. 60
 Billings & Spencer 57
 Blasier Mfg. Co. M. E. 62
 Blomstrom Mfg. Co. 101
 Blomstrom Motor Co. C. H. 63
 Bloomer, R. E. 74
 Boker & Co. H. 59
 Bosch Magneto 114
 Boston Auto Gage Co. 71
 Bowser & Co. S. F. 86
 Boyle & Co. John. 108
 Bridgeport Vehicle Co. 67
 Briscoe Mfg. Co. 64
 Brownell-Trebert Co. 69
 Buckeye Jack Mfg. Co. 73
 Buckeye Mfg. Co. 104
 Buffalo Carburetor Co. 72
 Bullard, J. H. 62
 Buob & Scheu 62
 Byrne-Kingston Co. 80
 Cadillac Motor Car Co. 112
 Carr, F. S. 62
 Central Body Co. 62
 Chadwick Engineering Wks. 91
 Champion Co. A. 60
 Chandlee & Chandlee 68
 Charter & Co. 39
 Clair, J. C. 65
 Clark, E. S. 58
 Cleanola Co. 65
 Cleveland-Canton Spring Co. 73
 Coates Clipper Mfg. Co. 100
 Colgan Co. J. W. 58
 Colt Runabout Co. 103
 Columbia Lubricants Co. 101

Connecticut Gauge Co. 82
 Conn. Tel. & Elec. Co. 88
 Conover Motor Car Co. 101
 Continental Auto. Mfg. Co. 89
 Continental Caoutchouc Co. 97
 Continental Motor Mfg. Co. 87
 Corbin Motor Vehicle Corp. Cover
 Cornish-Friedburg Motor Car. 104
 Correspondence School Motor Car Practice 59
 Cotta, Chas. 67
 Covert Mfg. Co. 59
 Cowles & Co. C. 58
 Crawford Automobile Co. 53
 Crescent Parts Co. 69
 Cullman Wheel Co. 60
 Daimler Mfg. Co. 63
 Darracq Motor Car Co. 63
 Dayton Electrical Mfg. Co. 63
 Det. & Buffalo Steamboat Co. 66
 Diamond Chain & Mfg. Co. 59
 Diamond Rubber Co. 95
 Dietz Co. R. E. 60
 Dixon Crucible Co. Joseph. 67
 Dorris Motor Car Co. 104
 Dover Co., Geo. W. 57
 Dow Portable Electric Co. 74
 Duff Mfg. Co. 60
 Eclipse Machine Co. 59
 Eco Mfg. Co. 82
 Edmunds & Jones Mfg. Co. 61
 Eldredge Electric Mfg. Co. 65
 Electric Vehicle Co. 105
 Elmore Mfg. Co. 109
 Empire Automobile Tire Co. 84
 Erlicka Mfg. Co. 58
 Excelsior Supply Co. 65
 Firestone Tire & Rubber Co. 62
 Fisk Rubber Co. 96
 Ford Motor Co. 102
 Forest City Motor Car Co. 103
 Franco-American Auto Supply Co. 7
 Franklin Mfg. Co. 123
 Fry, T. C. & W. L. 66
 G & J Tire Co. 81
 Gearless Transmission Co. 110
 General Accumulator & Battery Co. 76
 Gibney & Bros., Jas. L. 59
 Giesler Bros. 75
 Gilbert Mfg. Co. 62
 Goodrich Co., B. F. 84
 Goodyear Tire & Rubber Co. 61
 Gray & Davis. Cover
 Grout Bros. Auto Co. 63
 Gumelastie Tire Co. 66
 Ham Mfg. Co. 68
 Harburg Tire Co. 59
 Hardy Co., The R. E. 71
 Harrington Lubricant Co. 58
 Hartford Auto Parts Co. 82
 Hartford Rubber Wks. Co. 95
 Hartford Suspension Co. 80
 Hatcher Auto Parts Co. 75
 Havoline Oil Co. 85
 Haynes Automobile Co. 63
 Healy Leather Tire Co. 60
 Heinze Electric Co. 81
 Heitger Carburetor Co. 61
 Hercules Auto Specialty Co. 78
 Hercules Electric Mfg. Co. 61
 Herschell-Spillman Co. 58
 Herz & Co. 65
 Hess-Bright Co. 64
 Hicks Speed Indicator Co. 101
 Hine-Watt Mfg. Co. 62
 Hoffecker Co. 84
 Hoffman, Geo. W. 58
 Holly Bros. Co. 88
 Holzman Automobile Co. 100
 Hopewell Bros. 59
 Hotchkiss Mfg. Co. 99
 Hotel Garde 74

Hotel Sweetwater 74
 Hydraulic Pressed Steel Co. 64
 Idium Metal Co. 66
 Indestructible Steel Wheel Co. 64
 Jackson Automobile Co. 63
 Jamesville Mfg. Co. 61
 Jeffery & Co., Thos. B. 117
 Jenkins Specialty Co. 74
 Jersey Brake Co. 59
 Johnson Sporting Goods Co., I. 67
 K. W. Ignition Co. 77
 Kansas City Motor Car Co. 63
 Kellom Co., Chas. F. 68
 Kilgore Mfg. Co. 76
 Kimball Tire Case Co. 67
 Kinsey Mfg. Co. 64
 Kinsler-Bennett Co. 72
 Kirkham Motor Mfg. Co. 61
 Konigslow, Otto 67
 Lavalette & Co. 77
 Lavigne Mfg. Co. 62
 Lear Automobile Co., Oscar 63
 Leather Tire Goods Co. 61
 Limousine-Carriage Mfg. Co. 62
 Lipman Mfg. Co. 64
 Lobe Pump Co. 60
 Locke & Co. 82
 Locomobile Co. of America. 122
 Logan Construction Co. 57
 London Auto Supply Co. 62
 Long & Mann. 58
 Long Mfg. Co. 70
 Lozier Motor Co. 111
 McCord & Co. 70
 Malone, F. E. 74
 Manhattan Electrical Sup. Co. 58
 Manhattan Storage Co. 65
 Maple City Mfg. Co. 71
 Martini Import Co. 81
 Maxwell-Briscoe Motor Co. 119
 Mayo Radiator Co. 64
 McClellan, Chas. P. 62
 Merritt & Co. 58
 Metropolitan Auto. Guide. 92-93
 Metzger, C. A. 80
 Michigan Crucible Steel Casting Co. 64
 Midgley Mfg. Co. 64
 Miller Bros. 70
 Miller, Chas. E. 79
 Mitchell Motor Car Co. 63
 Modern Tool Co. 105
 Moline Automobile Co. 63
 Mora Motor Car Co. Cover
 Morgan & Wright. 86
 Mosler & Co., A. R. 67
 Moss Photo Engraving Co. 71
 Motor Car Co. 101
 Motor Car Equipment Co. 78
 Motor Guide Pub. Co. 61
 Motz Clincher Tire & Rubber Co. 58
 Muller, Albert. 59
 Mutty Co., L. J. 62
 Myers Auto Top Co. 62
 N. Y. Gear Works. 66
 N. Y. Sporting Goods Co. 62
 National Brake & Clutch Co. 71
 National Carbon Co. 83
 National Motor Vehicle Co. 109
 National Oil Pump & Tank Co. 54
 Neustadt Auto & Supply Co. 64
 New England Motor Co. 79
 Niagara Falls Brass Works. 115
 Nordyke & Marmon Co. 63
 Northern Motor Car Co. 113
 Nuttall Co., R. D. 64
 Nutting Machine Co. 82
 O. K. Connector Co. 58
 Oakes & Dow Co. Cover
 Ofeldt & Sons. 61
 Old Colony Light Co. 66
 Olds Motor Works. 83
 Owen & Co., R. M. 104

Pacific Tucking & Mfg. Co. 59
 Packard Electric Co. 58
 Packard Motor Car Co. 120
 Page-Storm Drop Forge Co. 57
 Palmer & Singer Mfg. Co. 115
 Parish & Bingham Co. 64
 Parker, Stearns & Co. 72
 Pedersen Mfg. Co. 58
 Peerless Motor Car Co. Cover
 Penn. Rubber Co. Cover
 Penna. Auto Motor Co. 100
 Perfection Spring Co. 64
 Pfanstiehl Elec. Laboratory. 81
 Phila. Steel & Wire Co. 64
 Pierce Engine Co. 102
 Picrome Hilde Co. 61
 Pioneer Brass Works. 64
 Pittsburg Spark Coil Co. 69
 Post & Lester Co. 60-61-69
 Precision Appliance Co. 76
 Premier Motor Mfg. Co. 108
 Prest-O-Lite Co. 63
 Progressive Mfg. Co. 66
 Prosser & Sons, Thos. 68
 Quad Mfg. Co. 59
 Quinby Co., J. M. 62
 Quincy, Manchester, Sargeant Co. 59
 Ralms & Co. 58
 Rainier Co., The. 68
 Rajah Auto Supply Co. 62
 Randall-Falchney Co. 82
 Reeves Pulley Co. 59
 Remington Tool & Machine Co. 81
 Remy Electric Co. 60
 Renault Freres 124
 Rice Vulcanizing Co., L. E. 72
 Richardson Eng. Co. 60
 Robert Instrument Co. 58
 Roberts Motor Co. 63
 Robinson & Sons Co., Wm. C. 73
 Ross Gear & Tool Co. 64
 Royal Battery Co. 63-66
 Royal Equipment Co. 61
 Royal Motor Car Co. 103
 Rushmore Dynamo Works. 87
 Rutenber, E. A. 72
 St. Louis Car Company. 112
 Sager Co., J. H. 64
 Salisbury Wheel & Mfg. Co. 59
 Samson Leather Tire Co. 69
 Sanford Mfg. Co., F. C. 61
 Saxon Lamp Co. 62
 Schraeder Sons, A. 78
 Shaler Co., C. A. 68
 Shawver Co. 71
 Shoemaker Automobile Co. 103
 Smith Auto Co. 107
 Smith Co., A. O. 79
 Smith Mfg. Co., R. H. 60
 Speed Changing Pulley Co. 60
 Spicer Universal Joint Mfg. Co. 59
 Splittorf, C. F. 60
 Sprague Electric Co. 83
 Sprague Umbrella Co. 74
 Standard Automatic Lub. Co. 75
 Standard Battery Connection Co. 68
 Standard Co. 78
 Standard Connecting Rod Co. 70
 Standard Roller Bearing Co. 61
 Stearns Co., F. B. 90
 Stevens-Durvea Co. 113
 Stewart & Clark Mfg. Co. 121-69
 Stitch-in-Time Vulcanizer Co. 70
 Stackpole Battery Co. 76
 Streit Machine Co. 68
 Success Auto Buggy Co. 63
 Supplementary Spiral Spring. 66
 Swinehart Clincher Tire Co. 74
 Syracuse Alum. & Bronze Co. 80
 Syracuse Auto Supply Co. 58
 Teel Mfg. Co. 66
 Thomas Motor Co., E. R. 106



The Safest Way to Store Gasoline

The NATIONAL is the only pump that discharges gasoline at every movement of the crank; it saves one-half the labor and one-half the time to pump gasoline; there is no evaporation or leakage; the tank is buried underground; the pump may be put in the building in a convenient place. It is the safest way because it meets all of the requirements of The National Board of Fire Underwriters.

For a Garage owner the National portable wheel tank will enable you to fill a car quickly by pushing the wheel tank by hand to the car. It is easily handled even in case the car would be at the curb.

The NATIONAL is also adapted to private motorists, also for lubricating oil storage. Ask for catalogue—it will explain all about the National System.

**The National Oil Pump and Tank Co.,
DAYTON, O.**

THE AUTOMOBILE

One Clean Score Survivor: Gaeth in Cleveland Sealed Bonnet Efficiency Test

By W. F. Bradley

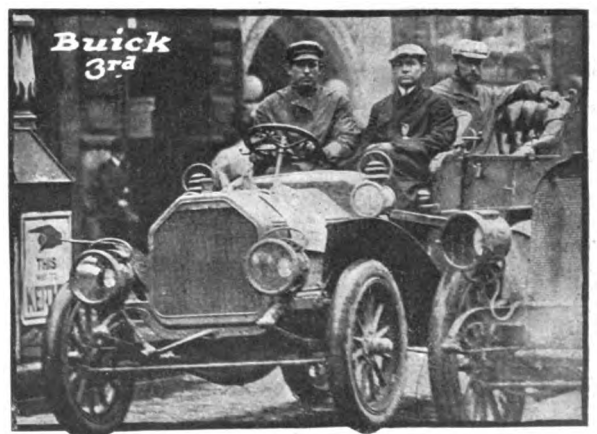
CLEVELAND, O., Sept. 13.—A four-cylinder Gaeth, driven by its owner, Paul Gaeth, was the only contestant which survived with a perfect score the stringent three-days' sealed bonnet contest organized by the Cleveland Automobile Club. J. W. David, piloting a Mora, secured second position with only twenty-five points penalization, incurred through an accidental stalling of the engine when a broken chain blocked the rear wheel. A four-cylinder Buick, but a few hours out of the factory when H. J. Trumbull took charge of it, finished third with forty points against it for taking water on two occasions. All three machines completed the run with their seals intact, the Gaeth in addition having the honor of never stopping its motor except when authorized to do so in control. Had not the Buick run out of gasoline two miles from home, its engine would never have stopped on the run. Less fortunate were the two Cartercars, driven by B. J. Carter, and A. W. Hall, with 549 points and 771 points penalization; the two-cylinder Buick, with a broken driving chain, and two Jacksons, which retired on the first day.

The three utility tests planned by the Cleveland Club failed to draw the support they deserved. No maker of electric vehicles thought it worth while to submit his product to the ordeal outlined by the contest committee. But two commercial vehicles entered the strenuous ranks, and one of these combined the competitive test with its work-a-day duties.

Eight pleasure vehicles responded to the invitation to run over Ohio mud roads for three days with seals on everything sealable and a rival observed to record the good and the bad. Cleveland automobile manufacturers, with a reputation extending far beyond the city limits, were unanimous in declaring that the wrong date had been chosen for the test; some were of opinion that local club events should be abandoned in favor of bigger national competitions, and a few criticised the conditions.

Certainly the rules did not err on the side of leniency; in their endeavor to provide a more comprehensive test than is usual in reliability runs, the committee sacrificed itself unreservedly and would probably have found its self-imposed task too great to keep out criticism but for the ungrudging executive work performed by Chairman George H. Bowler, Walter C. Baker and L. S. Buschman. The seals on the bonnet and coil box could only be broken at a cost of 50 points penalization; 5 points a minute was the price for repairs or adjustments; each involuntary stop of the motor added 25 points to the blacklist, and water could only be had at the rate of 5 points per minute for time spent pouring it in.

For the second day's run of 156 miles to Warren, Ashtabula, and return, the four-cylinder Buick and the Gaeth started out with a clean record, while the Mora, the two-cylinder Buick, and the two Cartercars had against them the varying penalizations of the first day. After the brick pavement of suburban Cleveland,



heavy going was experienced to Chagrin Falls. Onward to Warren, conditions were a little better; but the latter part, from Warren to Ashtabula and home to Cleveland, was punctuated with heavy showers and was over surfaces unworthy to be called



MESSRS. BOWLER, BUSCHMAN AND BAKER WERE A BUSY TRIO.

roads. The Gaeth, the Mora and the two Buicks, however, came through with flying colors, reporting to headquarters on time and without a black mark laid up against them on the observers' cards. Both Cartercars fell during the day, No. 22 being obliged to break the seals to change a cracked spark plug and No. 21 having to renew the water supply after the engine had been stalled.

Along the banks of Lake Erie to Sandusky, on the morning of the third day, was one of the pleasantest rides west of Cleveland. Road conditions having improved, all six machines bowled along at a merry pace in full hopes of terminating without a blemish. Near Monroeville misfortune befell the party. On taking a turn a front tire of the White steamer confetti car came off the rim, rendering the automobile unmanageable. Bert Adams, who was at the wheel, did his best to get the car round the turn, and was assisted by Mertin A. Phillips, who instantly realized the danger on hearing the report, but it was in vain. The car crashed into a telegraph post, cut it down, swung with its rear against a tree and collapsed. One of the rear springs broke under the blow, pierced the gasoline tank and caused an explosion. The two men in front jumped for safety, but did not altogether escape the flames. Fred Baird and J. Lee Cross were enveloped in fire before they could even make an effort to escape from the tonneau. and suffered very severe burns about the head, hands and feet. In addition J. Lee Cross had his shoulder dislocated by the telegraph pole as it fell across the car.

Difficulties Followed Accident.

As they came along, all contestants were held up and only started out again when the injured men had received medical attention and been put on the train for Cleveland. The unfortunate occurrence, however, disorganized the run. W. W. Part-ridge's Stearns, the official car which arrived first on the scene, was given the confetti and sent ahead. Car-bureter troubles came along and the lead had to be transferred to a man unfamiliar with the road. Instead of running to Oberlin, as laid down on the route, a straight course was laid for Elyria through some small town torn up from end to end by a street railroad constructor. Nine miles were saved, but the going was

of such an acrobatic nature that all were heavily handicapped. The four-cylinder Buick, for instance, had been running for a couple of hours with a broken front spring without any apparent inconvenience, but was subjected to an unreasonable strain when called upon to plough through torn up streets, run over building plots, and scramble over half-laid railroad tracks. The engine never stopped, the seals were intact, but water had to be added twice and the first penalization was incurred.

Paul Gaeth's four-cylinder Gaeth ploughed across country valiantly, running on three cylinders for the last few miles, but still reaching control on time, with seals unbroken and without any additions to its cooling water. Its reward was the only perfect score earned in the contest.

J. W. David's Mora, a veteran of the Chicago and New York sealed bonnet contests, went through a series of road accidents during the last few miles. Notwithstanding the engine never stopped, the seals were untouched and control was reached on time. But for the accidental stalling of the engine on the first day the Mora would have tied with the Gaeth for honors.

The Cartercars both incurred penalizations through leaky pipes, causing the loss of water. Both, however, came in with the engine and transmission in excellent condition. Most unfortunate of all was the two-cylinder Buick. When climbing over a heap of dirt, with exposed car lines on one side and a ditch on the other, the single driving chain broke. No spare links being carried, a messenger had to be sent to Cleveland for the necessary repair material, the result being such a late arrival home that the day's penalization was never computed.

Commercial Vehicles Performed Faultlessly.

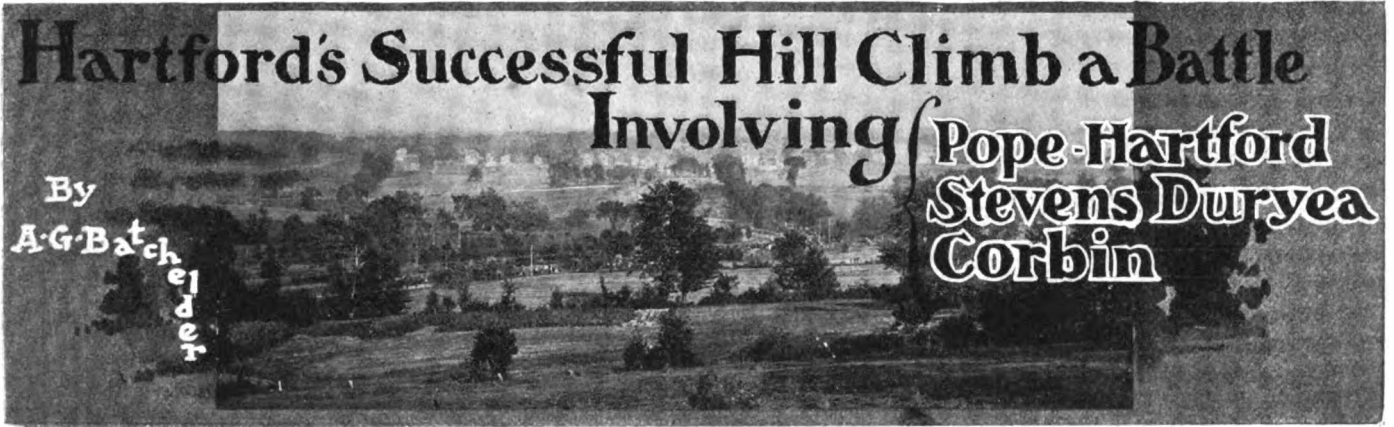
Each day the single-cylinder Gaeth delivery wagon and the four-cylinder truck manufactured by the American Motor Truck Company, of Lockport, N. Y., ran according to schedule through Cleveland and suburbs.

Daily Record of Penalizations.

Car	Driver	First Day	Second Day	Third Day	Total
Gaeth, 4-cylinder.....	Paul Gaeth	0	0	0	0
Mora, 4-cylinder.....	J. W. David.....	25	0	0	25
Buick, 4-cylinder.....	H. J. Trumball.....	0	0	40	40
Cartercar, 2-cylinder....	B. J. Carter.....	120	135	255	549
Cartercar, 2-cylinder....	A. W. Hall.....	562	134	75	771
Buick, 2-cylinder.....	Geo. Bettes.....	551	0	0	Broken chain
Jackson, 2-cylinder.....	R. Burman.....				Tire trouble, abandoned
Jackson, 4-cylinder.....	C. D. Paxon.....				Seized bearing, abandoned

EFFICIENCY TABLE OF CLEVELAND'S SEALED BONNET CONTEST.

Make of car	Buick 2-cyl.	Cartercar 2-cyl.	Cartercar 2-cyl.	Mora 4-cyl.	Buick 4-cyl.	Gaeth 4-cyl.
Weight (pounds)						
First day	2,633	2,695	2,910	3,108	3,070	3,885
Second day	2,600	2,845	2,857	3,105	3,270	3,889
Third day	2,695	2,785	2,998	3,105	3,435	4,150
Total gasoline (gallons)						
Miles, 138	12.00	11.30	14.30	11.00	12.00	15.70
Miles, 156	12.08	11.88	16.43	15.05	15.70	14.85
Miles, 147	12.10	10.60	14.70	12.50	12.10	25.00
Gasoline per ton (gallons)						
First day	9.26	8.40	9.85	7.09	7.83	8.06
Second day	9.30	8.34	11.51	9.86	9.63	7.66
Third day	9.00	7.61	9.82	8.05	7.05	12.05
Gasoline per ton-mile (gallons)						
First day .....	.0672	.0609	.0713	.0513	.0568	.0585
Second day .....	.0597	.0535	.0738	.0633	.0619	.0491
Third day .....	.0592	.0501	.0647	.052	.0464	.0794
Total water (gallons)						
First day .....	.37	3.50	.75	1.00	2.70	1.20
Second day	1.00	7.96	5.20	1.10	2.80	1.67
Third day	1.50	6.70	3.50	1.70	Used hose	7.30
Water per ton (gallons)						
First day .....	.284	2.60	.516	.644	1.76	.618
Second day .....	.77	Broken pipe	3.64	.723	1.71	.860
Third day	1.115	4.82	2.34	1.093	Used hose	3.51
Water per ton-mile (gallons)						
First day .....	.00206	.0188	.00374	.00467	0.127	.00477
Second day .....	.00494	....	.0234	.00463	.01098	.00552
Third day .....	.0734	.0317	.0153	.00706	Used hose	.0231
Total oil (gallons)						
First day .....	.632	.495	.475	.165	.896	.385
Second day .....	.766	.600	1.115	.211	.924	.428
Third day .....	.581	.556	1.463	.1054	.661	.308
Oil per ton (gallons)						
First day .....	.532	.367	.326	.106	.584	.198
Second day .....	.590	.422	.780	.138	.566	.221
Third day .....	.432	.407	.986	.0878	.386	.146
Oil per ton-mile (gallons)						
First day .....	.00386	.00266	.00236	.00076	.00423	.00143
Second day .....	.00378	.00270	.00500	.00088	.00364	.00142
Third day .....	.00284	.00268	.00643	.00043	.00254	.00096



HARTFORD, CONN., Sept. 14.—The first annual hill-climb of the Automobile Club of Hartford supplied spirited contests and had only one accident, and that of a minor sort, despite the fact that the onlookers invaded the road whenever their curiosity got the better of them, which was frequent. Speed is the interesting factor nowadays, and this was made dangerously apparent when the thousands started home while the hill was still being used by the participants in the high-gear slow event. Previously in :56 2-5 the Pope-Hartford, with clever Grady at the wheel, had ascended the three-quarters of a mile climb, which had a maximum 16 per cent. grade until near the summit, when it became 21 per cent., and also possessed a sharp turn more than half way up. Here the two startling events of the day happened. Only one-fifth of a second less was the upward trip of the Stevens-Duryea "Little Six," "Pete" Robinson at the wheel. Corbett, one of the stars of the New York Motor Club 200-mile Albany endurance run, made the journey with a Corbin air cooler in :57. These three were the best climbers of the day, and it all happened in the free-for-all, which event demonstrated the unthinking attitude of the public, for these cars were stripped and denuded.

The man who tours, it would seem, would much prefer to note how good a regularly equipped stock car could make an ascent, rather than to enthuse over skyrocket performances.

There were two ties, one in the smaller runabout class and the other in the larger runabout division, but the desire of the spectators to get home in time for supper—Hartford is in New England—made impossible the deciding of any ties, for the course was flooded with cars and pedestrians. Therefore, the local agents of the Maxwell and Ford will spend more money in their printer's ink battle in the local papers and thus attract a substantial amount of paying publicity. Honors, thus far, are even.

It was possible to see from the top of the hill the starting point at the bottom, owing to the turn in the road, though one might prefer on the next occasion that there be wire communication between base and summit rather than a flag signal even when given by such an experienced one as Starter Hiram Percy Maxim. Clerk of the Course C. H. Gillette was energetic, while F. H. Elliott, A. A. A. secretary, learned of the duties of a referee.

There were all sorts of notables up and down the hill, including such trade figures as J. D. Maxwell, M. S. Hart, Col. George Pope, Charles and Wilbur Walker, D. J. Post, C. H. Veeder and Clarence Whitney, while those present also included S. L. Haynes, ex-president of the Automobile Club of Springfield; A. E. Corbin, another prominent Springfielder; W. F. Fuller, president of the Connecticut State Automobile Association, as well as of the local club; G. K. Dustin, secretary of the two organizations, and Leonard D. Fisk, one of the few at the first Florida meet.

From the finishing point of the climb a magnificent view was obtainable, embracing the Glastonbury range, the Granby hills, and the Simsbury peaks, and, from base to summit, Prospect hill was lined on both sides of the road with thousands of very curious spectators who craved speed rather than practical results.

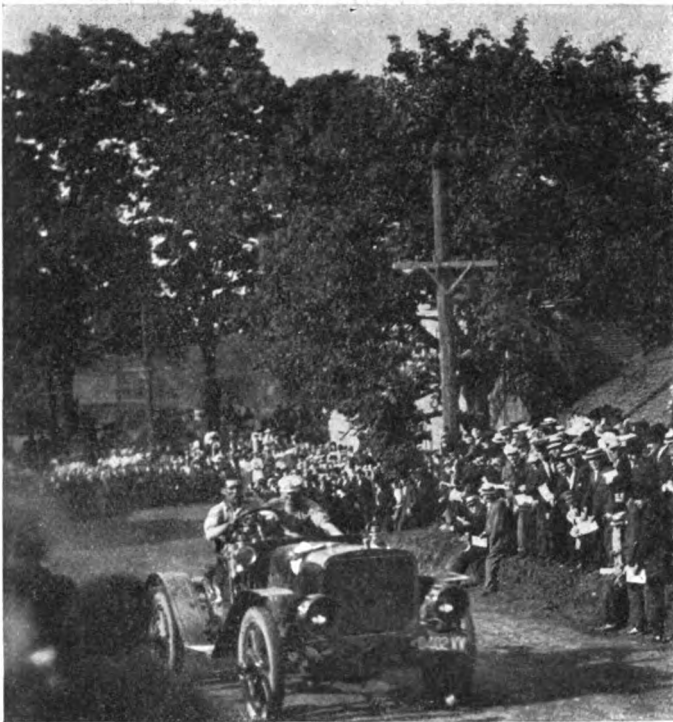
These onlookers secured one thrill when Driver Dennison overturned at the dangerous corner in throwing a tire of his Knox car. He was dragged from underneath little worse for the experience. Subsequently, Robinson and the Stevens-Duryea "Big Six" skidded at the same place, and a police sergeant, in endeavoring to keep back the crowd, got in the way of the big car itself and had some difficulty in saving himself from injury. Summary:

RUNABOUTS, GASOLINE STOCK CARS, \$1,000 OR LESS.

1. Maxwell, Maxwell-Briscoe Co.; driver, C. A. Fleming....1:08 3-5
1. Ford, Elmer Auto Co.; driver, R. Tabor.....1:08 3-5
3. Ford, Elmer Auto Co.; driver, F. W. Kulick.....1:11 3-5



GRADY AND HIS FLYING POPE-HARTFORD ROUNDING THE DIFFICULT TURN FOR THE FINAL RUSH TO THE SUMMIT.

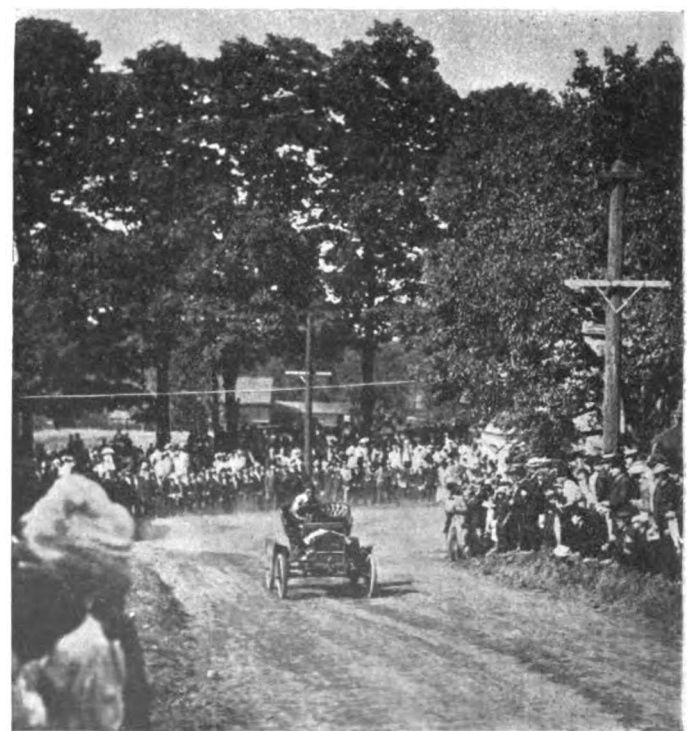
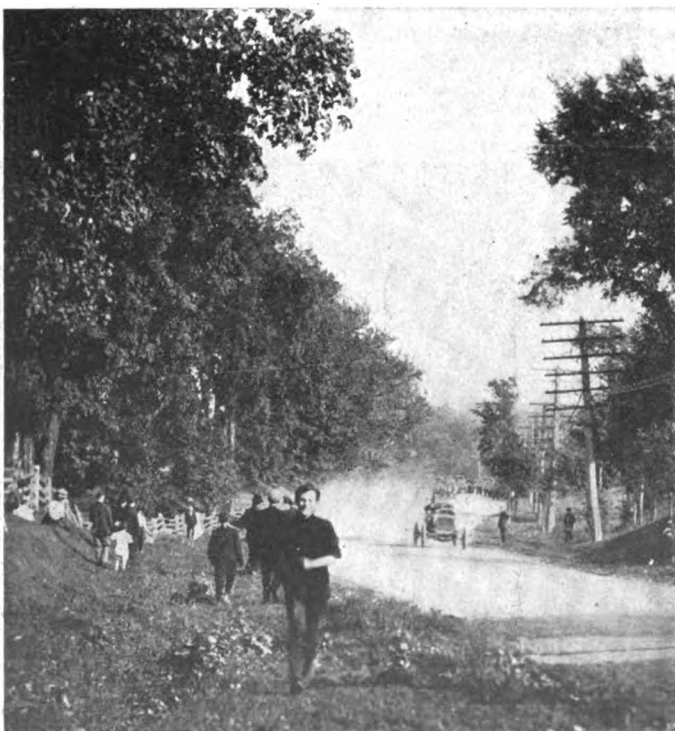


..“PETE” ROBINSON AND STEVENS-DURYEA “LITTLE SIX.”:

KULICK AND FORD “SIX” WERE A DISAPPOINTED PAIR.

- RUNABOUTS, GASOLINE STOCK CARS, \$1,001 to \$2,000.**
1. Jackson, A. W. Bell; driver, E. P. Blake.....1:19 1-5
- TOURING CARS, GASOLINE STOCK, \$1,001 TO \$2,000.**
1. Franklin, R. R. Ashwell; driver, A. E. Wheeler.....1:15 3-5
 2. Jackson, A. W. Bell; driver, D. McCarthy.....1:17 4-5
- RUNABOUTS, GASOLINE STOCK CARS, \$2,001 TO \$2,500.**
1. Knox, Knox Auto Co.; driver, Wm. Burke.....1:02 2-5
 1. Pope-Hartford, Pope Mfg. Co.; driver, J. P. Grady.....1:02 2-5
 3. Corbin, Corbin Corporation; driver, J. Corbett.....1:03 2-5
- TOURING CARS, GASOLINE STOCK, \$2,001 TO \$2,500.**
1. Pope-Hartford, Pope Mfg. Co.; driver, J. P. Grady.....1:01 4-5
 2. Corbin, Corbin Corporation; driver, J. Corbett.....1:07 4-5
 3. Knox, Knox Auto Co.; driver, A. Dennison.....1:09
- RUNABOUTS, GASOLINE STOCK CARS, \$2,501 TO \$3,000.**
1. Corbin, Corbin Corporation; driver, J. W. Swan..... :57 1-5
 2. Ford “Six,” Ford Motor Co.; driver, F. W. Kulick.....1:00 1-5
 3. Pope-Hartford, Pope Mfg. Co.; driver, J. P. Grady.....1:05 1-5
- TOURING CARS, GASOLINE STOCK, \$3,001 TO \$4,000.**
1. Stevens-Duryea “Six”; driver, P. J. Robinson.....1:01

- TOURING CARS, GASOLINE STOCK, \$2,501 TO \$3,000.**
1. Corbin, Corbin Corporation; driver, J. Dower.....1:08 2-5
 2. Pope-Hartford, Pope Mfg. Co.; driver, J. P. Grady.....1:08 3-5
- RUNABOUTS, GASOLINE STOCK CARS, \$3,001 TO \$4,000.**
1. Thomas; entrant and driver, E. D. Seymour.....1:06 4-5
- FREE-FOR-ALL, GASOLINE STOCK CARS.**
1. Stevens-Duryea “Big Six”; driver, P. J. Robinson..... :57 2-5
 2. Corbin, Corbin Corporation; driver, J. W. Swan..... :58 3-5
 3. Mercedes, G. E. Sykes; driver, G. E. Sykes.....1:14 4-5
- FREE-FOR-ALL, GASOLINE CARS.**
1. Pope-Hartford, Pope Mfg. Co.; driver, J. P. Grady..... :56 2-5
 2. Stevens-Duryea “Little Six”; driver, P. J. Robinson..... :56 3-5
 3. Corbin, Corbin Corporation; driver, James Corbett..... :57
 4. Knox, Knox Auto Co.; driver, Wm. Burke..... :58 1-5
 5. Thomas; entrant and driver, E. D. Seymour.....1:04 1-5
 6. Mercedes, G. E. Sykes; driver, G. E. Sykes.....1:04 1-5
- SLOW CONTEST, GASOLINE CARS, ON HIGH GEAR.**
1. Ford “Six,” Ford Motor Co.; driver, F. W. Kulick..... 6:58
 2. Knox, Knox Auto Co.; driver, Wm. Burke..... 3:59



CORBETT AND AIR-COOLED CORBIN STARTING FOR THE SUMMIT.

FLEMING AND THE MAXWELL WHICH CLIMBED STURDILY.



PAUL HOFFMAN, TWO-TIME WINNER, IN HIS PIERCE CAR.

CHICAGO, Sept. 14.—In the second annual fuel-economy test, organized by the Chicago Motor Club and the Chicago Automobile Trade Association, a 28-32-horsepower Pierce, driven by Paul Hoffman, was most economical, its gasoline consumption for the 95-mile journey to Valparaiso and back being equal to 20.7 miles to the gallon. Last year Paul Hoffman won the first test of this nature in a 50-mile run to Cedar Lake.

Very close to the winner was a 24-horsepower Berliet, driven by J. Buchanan, the actual difference in amount of fuel on the two cars being but four ounces, while the number of points according to the weight formula used gave a variance of but .031.

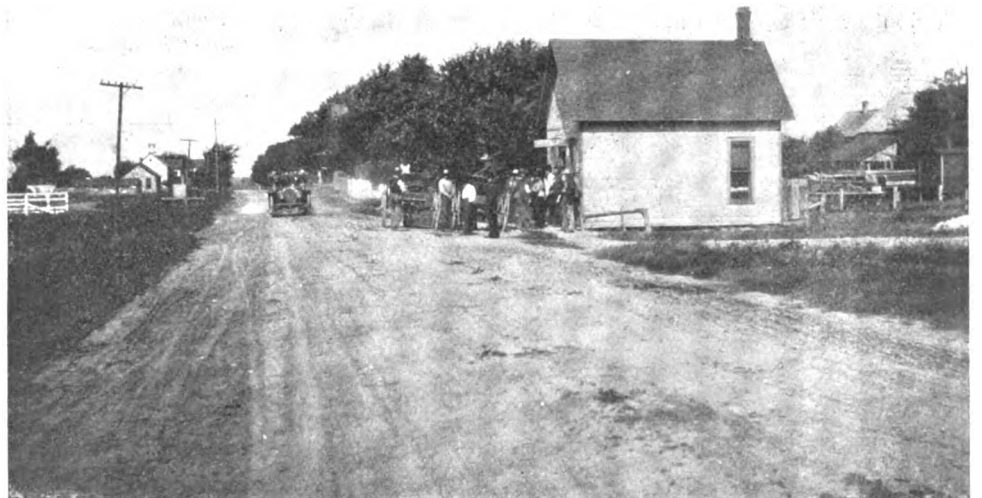
Twenty-four cars—a very representative American bunch—entered for the economy test. Gasoline was officially measured out, poured into the tanks and seals attached over night, and the competing machines left in the care of a guard until starting time on Friday morning. Five minutes before 7 o'clock the pilot car, a six-cylinder Ford, with R. P. Rice at the wheel, took up the confetti bags and went away to lay the trail. There was little danger of going astray, for the Illinois Signboard Commission had inaugurated its campaign by placing guide posts over the course. In addition, cardboard signs with red arrows on them smoothed away the complications between Chicago and Highlands. Orders were that no competitor should be allowed to exceed the schedule of five hours' running time. Ideal weather conditions prevailed for a competition of this nature, but the road surface furnished an unusual quantity of puncture-producing material, which lengthened the running time. On arriving home the competing machines were again handed over to the technical committee for verification of their surplus fuel, and exercises in arithmetic were indulged in to determine the winner and official positions.

Irrespective of weight, the smallest amount of gasoline used by any one

car was 2 gallons 3 quarts 15 ounces by the 15-horsepower Ford runabout driven by T. J. Hay. A 10-horsepower Holsman had the next smallest appetite, with slightly over three gallons. Worked out on the weight basis, however, the machines with the lowest net consumption were by no means as high in the list as those with heavier loads. The rules on which the test was based gave an advantage to the heavier vehicles; this was evidenced by the general desire to obtain heavy men as passengers. Last year's New York record, established by the Franklin, when 87 miles were covered on two gallons of gasoline, was never in danger of being thrown down.

The first ten cars on the list are qualified for a subsequent 200-mile economy run for the \$500 Knight cup, at a date to be arranged later. They comprise two Pierce Arrows, two Berliets, Silent Knight, Diamond T, Locomobile, Corbin, Haynes and Apperson. Although the difference between two succeeding cars on the official table, as worked out on the

percentage basis, is but slight, there is a wide difference in the actual fuel used by the most economical and most prodigal of the automobiles. The quantity varies from 2 gallons 3 quarts 15 ounces to over 8 gallons for less than one hundred miles. Thus, though the leaders made a remarkable run, No. 6 Pierce Arrow, No. 3 Berliet and No. 1 Pierce Arrow being very closely grouped, a number were far from being up to the standard which might be expected of them. In a test, the basis of which is the lowest possible consumption of fuel, the skill of the driver is a most important factor. Making allowance for varying degrees of ability, the official table indicates that about a third of the machines were either not properly tuned up to the highest pitch of efficiency or were naturally wasteful in their use of fuel. Due attention has not always been given to the subject of economy in fuel, but indications are that with the increasing perfection of the automobile, users will be more and more exacting in their requirements under this head and that a contest such as that planned and carried out so successfully by the two Chicago associations



ENTIRE POPULATION OF WHEELER, IND., WITNESSES THE BERLIET PASS BY.



HOLSMAN CAR TAKING ITS FUEL QUOTA BEFORE THE START.

will be more numerous in the future than they have been in the past. Twenty miles to the gallon, given by the leading cars, is an excellent performance, unfortunately not attainable with every make of automobile.

CONTESTANTS, FUEL, AND OFFICIAL PLACING.

Car	Driver	H.P.	Fuel Consumption, Per				
			Wt.	Gal.	Qts.	Oz.	
1 Pierce-Arrow	P. Hoffman	28-30	4,545	4	2	11	3.871
2 Berliet	J. Buchanan	24	4,540	4	2	15	3.84
3 Pierce-Arrow	J. V. Lawrence	45	5,595	5	3	20	3.7
4 Silent Knight	D. Kilbourne	35-40	4,680	5	..	19	3.55
5 Diamond T.	C. A. Tilt	40	4,325	5	..	..	3.37
6 Locomobile	A. J. Banta	20	3,585	4	1	23	3.16
7 Corbin	G. H. Bird	24	3,245	4	..	11	3.102
8 Berliet	P. Grimm	24	4,778	6	..	2	3.1
9 Haynes	C. W. Birchwood	30	3,820	4	3	11	3.085
10 Apperson	N. B. McLean	40	4,760	6	1	11	2.93
11 Oldsmobile	W. L. Githens	35	3,680	4	3	29	2.88
12 Premier	H. Hammond	24	3,480	5	..	29	2.6
13 Stevens-Dur.	6. L. Geyler	35	3,395	5	2	17	2.35
14 Klasekar	Webb Jay	30-35	3,690	6	1	..	2.3
15 Ford runabout	T. J. Hay	15	1,675	2	3	15	2.28
16 Apperson	B. Edwards	40	4,695	8	..	28½	2.23
17 Dragon	F. Wilkins	24	3,530	6	1	29	2.129
18 Premier	Joseph Moore	24	3,340	6	1	17	2.05
19 Oldsmobile	R. C. Niemeyer	35	3,060	6	..	18	1.95
20 Maxwell	C. W. Price	16	2,710	5	3	..	1.84
21 Buick	E. L. Weiant	24	3,280	7	..	25½	1.77
22 Holsman	T. M. Powell	10	1,385	3	..	29½	1.67
23 Knox	L. B. Garrison	25	3,360	8	1	18	1.56

THAT BOULEVARD FROM BUFFALO TO NIAGARA.

BUFFALO, N. Y., Sept. 16.—For the greater part of the way from Buffalo to Niagara Falls the river road is a nightmare. The Automobile Club of Buffalo has been interested in the project of a proposed boulevard for some time past, and E. R. Thomas has consented to accept the chairmanship of a working committee which the club has deemed it advisable to name. It is only a question of time before this broad boulevard from the Queen City to the great cataract will become a reality instead of a dream.



WHERE MIGHT MAKES RIGHT OF WAY, AND NO ARGUMENT.

DARRACQ RECORD FEATURE AT PITTSBURGH.

PITTSBURGH, PA., Sept. 14.—On the resumption of racing at Brunot's Island track, William McCulla, driving a Darracq stripped touring car, covered 50 miles in 58:40 3-5, beating the Point Breeze record, established by William Wallace, also on a Darracq, by 3:7 2-5.

There were six starters in the race, namely: Two Stevens-Duryea, driven by James Kerr and C. A. Collier; Columbia, driver Eddie Bald; Pope-Hartford, driver C. H. Bromier; a Franklin, owned and driven by Mr. Palmer, and the Darracq. The two Stevens-Duryea got away first and held the lead until the fifth lap, when McCulla's Darracq got into second position. On the tenth mile Kerr's Stevens-Duryea led by a quarter of a mile. On the seventeenth mile the Franklin dropped out, and on the twenty-second mile Collier's Stevens-Duryea withdrew for fifteen minutes, came back and ran a mile, then abandoned altogether. At half distance Kerr's Stevens-Duryea was leading on the Darracq by barely 100 feet, time being 29:04.

After a neck-and-neck struggle for one mile between the Stevens and the Darracq, the former got ahead again, but shortly after the American machine withdrew and the Darracq took first place and held it to the end. The Stevens-Duryea came back for a short time, then withdrew. The only other car on the track at the finish was the Pope-Hartford.

Other events included an exhibition race between Barney Oldfield's *Green Dragon* and Ollie Savin in the *Red Devil*, the former, of course, winning; a two-mile race between a couple of Stevens-Duryea six-cylinder cars, the winning one driven by Tom Dunn; a three-mile handicap, won by a six-cylinder Stevens-Duryea, driven by James Kerr, and an open touring car race, won by Eddie Bald on a Columbia.

WHAT OLDFIELD SUPPLIED AT CINCINNATI.

CINCINNATI, O., Sept. 15.—Barney Oldfield made unsuccessful attempts Saturday to lower the world's track record with his *Green Dragon* on the Latonia course. His time for the two miles was exactly two minutes. In the first mile Oldfield got round in 1 minute and 2-5 of a second; on the second mile he was clocked in 59 3-5 seconds. To-day Oldfield covered the two miles in 1:58. In a special match between Oldfield's *Green Dragon* and Eddie Bald's *Red Devil*, Oldfield "won" by a few inches. A. V. Stegman's Stearns, driven by J. R. Rainey, covered twenty-five miles in 29:30, which is a track record for this distance, the best previous performance being 29:45. The car was not stripped in any way, with the exception of the muffler being taken off. After the race the owner got into the car and drove his family home.

The six-hour endurance run was stopped at the end of the fifth hour, when J. Sharp, in a Thomas car, had traveled 188 miles. E. Robinson, in a Franklin, was second, and O. W. Rogers, in a Thomas runabout, third, but so far behind that it was impossible for them to catch the first car.

OLDFIELD AND EX-MANAGER HAVE A SET-TO.

PITTSBURGH, PA., Sept. 16.—A long-standing feud between Barney Oldfield and W. H. Pickens, his former manager, came to a head last Thursday night, when the two men exchanged blows in the corridor of the Fort Pitt Hotel. Oldfield caused to have printed an attack upon Walter Christie, in which he declared that the latter had not the steadiness to drive the machine which he had designed. Finding Pickens later, Oldfield renewed the attack upon Christie, who captured at Minneapolis, September 7, the one-mile track record, which he and Oldfield had held jointly for the past year. The old record was 53 seconds, and Christie reduced this a full second. When Christie was injured, September 9, on the first day of the meet here, Pickens came, in response to a telegram, to look after him. Resenting the remarks of Oldfield, Pickens never hesitated in starting the scrimmage, the final outcome of which was the ejection of the *Green Dragon* driver from the hotel.

POINT BREEZE'S HUNDRED-MILE WON BY A PACKARD

PHILADELPHIA, Pa., Sept. 16.—Over five thousand loyal Quakers yelled their throats raw at Point Breeze track last Saturday afternoon when young Joe Parkin, in a Packard "30," took the lead from Eddie McDuffie's 60-horsepower Mercedes on the eighty-ninth lap of the 100-mile race for the Keystone State Championship for stock cars. True, it was no fault of McDuffie that he lost the lead, which he had taken on the forty-second round. Dirty gasoline had bothered him from the seventieth mile, at which point he had over a lap on his young Quaker rival. McDuffie was bowling along at a remarkably steady pace, averaging around 1:12 for mile after mile. He had set himself a schedule of five miles in six minutes and had figured it out that that pace would win on Point Breeze track. And so it would had the unexpected not happened. His engine began to miss and volumes of bluish black smoke, which trailed after the German car, indicated that something was amiss.

This was young Parkin's opportunity and he began to push his Packard as much as the condition of the track and the ticklish turns would allow. Passing the Mercedes, he set about recovering that lost lap. McDuffie couldn't see his way clear to leave the track and remedy the trouble, for he realized that before he could get going again the Packard would have a comfortable lead, which, with but a score of miles to go, could not be overcome. And he resolved to stick it out, hoping that something might happen to the Packard or his own conditions improve. But they didn't, and each lap saw the irrepressible young Quaker a trifle nearer. It was on the eighty-ninth mile that the youthful Parkin—he's a mere boy—seeing that the big German with the little Irishman at its wheel was in real distress, opened his own engine up wide at the head of the stretch and, passing the crippled Mercedes, laid the groundwork for numerous cases of tonsillitis among the grandstand and clubhouse occupants.

McDuffie hustled into camp on the next lap, but he lost five valuable minutes, and when he reappeared the Packard was almost as many miles to the good. It was too late to save the race, but McDuffie prevented the big Frayer-Miller "50" from pre-empting the place, having a total of ninety-five miles to his credit when the finish gun cracked, as against the air-cooled car's ninety-two, the Thomas Sixty's eighty-nine, and Owen's Packard's eighty-seven.

It is doubtful whether "Kid" Parkin could have won the race without the advice and assistance of his father, who acted as his mechanic. The old gentleman was the real thing, and the nonchalance with which he changed sparking plugs and refilled his lubricators while negotiating the turns at full speed caught the crowd. Once he caught a small can of oil thrown him by one of the Packard assistants, and the car going at a forty-mile clip at

the time! The old gentleman was all over the car, watching everything like a hawk.

Of the seven cars which started, four at some stage of the race held the lead, the winner and the Mercedes twice. Parkin in the Packard (No. 10) went to the front on the seventeenth mile and held it until the forty-second, when the Mercedes took command, only to lose it forty-six rounds later to the Parkin outfit. The Mercedes led at the end of the first mile, after which Tom Berger in the Oldsmobile got in front and stayed there till the thirteenth lap, when "Wally" Owen in the Packard (No. 4) came up strong, to retire four rounds later in favor of the winner.

When the touring car class was called and only two starters showed up at the tape, the Oldsmobile "30," driven by Tom Berger, and the Wayne "30," driven by William Lutton, the officials caused it to be announced that in the event of a walkover the race would be called off. After the Wayne had set the pace for five miles, which had consumed 7:53 1-5 minutes, the officials got their heads together, and, it being evident that the Oldsmobile could win at any time Berger felt disposed to let his car out, a halt was called at the end of the seventh mile and the cup awarded to the Oldsmobile. The summary follows:

25-MILE, RUNABOUT CLASS.

1. Packard, 30-h.p.; driver, "Wally" Owen..... 33:05 4-5
2. Frayer-Miller, 24-h.p.; driver, Dan Webster.....
3. Thomas, 60-h.p.; driver, William Coyle.....

25-MILE, TOURING CAR CLASS.

1. Oldsmobile, 30-h.p.; driver, T. W. Berger..... 11:00 3-5
 2. Wayne, 30-h.p.; driver, William Lutton.....
- (Race stopped end of the seventh mile.)

100-MILE, KEYSTONE STATE CHAMPIONSHIP—OPEN TO ALL.

1. Packard, 30-h.p.; driver, Joseph W. Parkin, Jr..... 2:02:26 4-5
2. Mercedes, 60-h.p.; driver, Eddie McDuffie.....
3. Frayer-Miller, 50-h.p.; driver, Dan Webster.....
4. Thomas, 60-h.p.; driver, Wm. Coyle.....
5. Packard, 30-h.p.; driver, "Wally" Owen.....

TIME AND POSITION AT END OF EACH FIVE MILES.

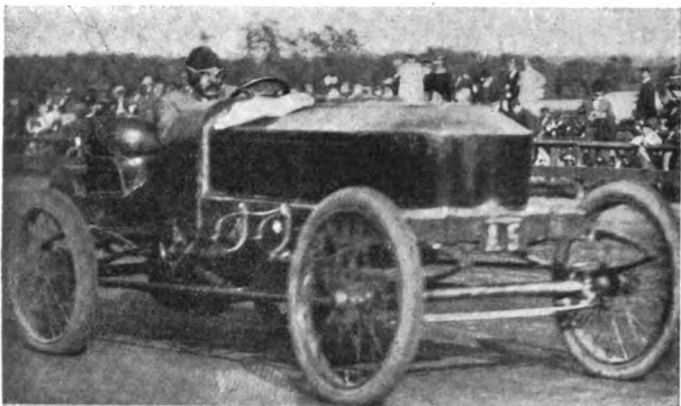
Miles	First	Second	Third	Time
5	Oldsmobile	Mercedes	Packard (No. 4)...	6:27 4-5
10	Oldsmobile	Mercedes	Packard (No. 4)...	12:42 2-5
15	Packard (No. 4)	Oldsmobile	Packard (No. 10)...	19:00 3-5
20	Packard (No. 10)	Packard (No. 4)	Oldsmobile.....	25:06 2-5
25	Packard (No. 10)	Packard (No. 4)	Oldsmobile.....	31:11 4-5
30	Packard (No. 10)	Mercedes	Packard (No. 4)...	37:16 1-5
35	Packard (No. 10)	Mercedes	Packard (No. 4)...	43:21 1-5
40	Packard (No. 10)	Mercedes	Packard (No. 4)...	49:42 3-5
45	Mercedes	Packard (No. 10)	Packard (No. 4)...	55:55 1-5
50	Mercedes	Packard (No. 4)	Oldsmobile.....	1:01:54
55	Mercedes	Packard (No. 10)	Packard (No. 4)...	1:07:54 2-5
60	Mercedes	Packard (No. 10)	Packard (No. 4)...	1:13:54 4-5
65	Mercedes	Packard (No. 10)	Packard (No. 4)...	1:19:59 1-5
70	Mercedes	Packard (No. 10)	Packard (No. 4)...	1:25:57 3-5
75	Mercedes	Packard (No. 10)	Packard (No. 4)...	1:31:57 2-5
80	Mercedes	Packard (No. 10)	Oldsmobile.....	1:37:54
85	Mercedes	Packard (No. 10)	Frayer-Miller.....	1:43:52
90	Packard (No. 10)	Mercedes	Frayer-Miller.....	1:49:50 4-5
95	Packard (No. 10)	Mercedes	Frayer-Miller.....	1:55:52 4-5
100	Packard (No. 10)	Mercedes	Frayer-Miller.....	2:02:26 4-5

NEW TRACK RACE RECORD MILE AT READVILLE

BOSTON, Sept. 14.—The fall race meeting of the Bay State Automobile Association, originally scheduled for Labor Day and twice postponed because of unpleasant weather, was successfully held this afternoon at the Readville track. The attendance suffered somewhat from the postponements. The weather was perfect, and the oiled track was very fast. Walter Christie had been engaged to drive a mile and five miles for the records, but his accident at Pittsburgh made it impossible for him to be present. To take his place, Charles Basle, driver for H. L. Bowden, had agreed to drive Mr. Bowden's famous Mercedes, the "Flying Dutchman" of Ormond fame, for the mile record, and Fred H. Marriott, of Newton, holder of the world's straightaway mile record of :28 2-5 seconds, had also been given permission for a

mile trial. Before the races began, however, Basle, in tuning up his car, stripped a timing gear and was unable to start. Marriott, in a preliminary event, damaged his car, so that he, too, could not go for the record.

Though the troubles of Basle and Marriott prevented two events that promised to be among the most interesting of the meeting, the other races furnished ample excitement, and two new competitive records were established. One of these is 54 2-5 seconds for a mile in competition, and was made by L. H. F. Baldwin, of Providence, with his steam racer. It was made in the first heat of what was to have been a mile match, best two heats in three, between Marriott and Baldwin. Marriott's car had troubles and was out of the race when half way round. Baldwin



BALDWIN AND HIS MILE TRACK RECORD STEAM CAR.

won the second heat and race in a walkover and with a flat tire. The other new record is 1 hour 2 minutes 14-5 seconds for 50 miles on Readville track, and was made by the 24-horsepower Corbin, driven by J. Mattson, in the stripped stock chassis race for all motive powers. The best previous record was 1 hour 3 minutes 4-5 second, made by the Oldsmobile runabout in the stock runabout race on Memorial Day. The 50-mile chassis race was the most interesting of the day. There were four starters: 40-horsepower Berliet, driven by H. F. Grant; Ross steamer, driven by A. H. Waitt; 40-horsepower American, driven by A. J. Andrews; 24-horsepower Corbin, driven by J. Mattson.

At the start the Berliet jumped into the lead, and in the first five miles had lapped the Ross; the American was second, and the Corbin was third. At ten miles, which the Berliet covered in 11:01, the relative positions were unchanged, though the Berliet had again lapped the steamer and was a mile ahead of the Corbin. The Berliet continued to gain, but it was not until the nineteenth mile that it lapped the American, which by that time led the Corbin a mile. The time of the leading car for twenty miles was 21:15 1-5; for thirty miles, 32:44 3-4; for forty miles, 43:39. With only five miles to go, and making a splendid clip that would have landed it a winner under the hour, the Berliet had tire trouble in the forty-fifth mile. The American, which was two miles behind, also had trouble at about the same time.

The Corbin was then six miles behind, but before the Berliet and American got going again it had made up the difference, taken first place and won the race.

Though unfortunate in this race, the same Berliet car, with Grant driving, was more successful in the twenty-mile stock gasoline runabout event. It won this race in 22:19 1-5, having plenty of room to spare over its nearest competitor, a 40-horsepower American, driven by W. A. Fredericks. A 24-horsepower Corbin, driven by J. Mattson, was third.

The touring car race at twenty miles for stock cars had three entries: 60-horsepower Austin, driven by J. C. Kennedy; 24-horsepower Corbin, driven by H. E. Wilson; 24-horsepower Corbin, driven by G. A. Crittenden. The race resolved itself into a duel between the Austin and the Corbin driven by Crittenden. The Austin won eventually in 24:20, but at the conclusion of the race the Corbin owners entered a protest against the Austin, claiming that it was not equipped as per maker's catalogue, as required by the race conditions. The officials examined the car, but reserved their decision pending the production of a catalogue.

Owing to the accident to the timing gear of the "Flying Dutchman," the match race that was scheduled between that car and the old Napier Gordon-Bennett racer, holder of the Mt. Washington hill-climb record, had to be called off. The Napier, however, with F. C. Hoyt at the wheel, was driven a three-mile exhibition and demonstrated that though it was built some years ago it still has much speed. The first mile was covered in 1:01, the second in 1 minute flat, and the third in 1:01, making 3:02 for the three miles.

J. C. Kerrison, as race manager, had general charge of the meeting, while L. R. Speare acted as referee; H. W. Whipple was chief judge and A. D. Peck starter. The summary:

TWENTY MILES, OPEN TO STOCK GASOLINE TOURING CARS.

1. Austin, 60-h.p.; driver, J. C. Kennedy.....24:20
2. Corbin, 24-h.p.; driver, G. A. Crittenden.....
(Protest filed against Austin.)

MATCH RACE, 2 IN 3-MILE HEATS.

F. H. Marriott vs. L. H. F. Baldwin, both driving Stanley steam racers.

First heat won by Baldwin; time, :54 2-5.

Second heat and race won by Baldwin in walkover.

TWENTY MILES, OPEN TO STOCK GASOLINE RUNABOUTS.

1. Berliet, 40-h.p.; driver, H. F. Grant.....22:19 1-5
2. American, 40-h.p.; driver, W. A. Fredericks.....
3. Corbin, 24-h.p.; driver, J. Mattson.....

FIFTY MILES, STRIPPED STOCK CHASSIS, ALL MOTIVE POWERS.

1. Corbin, 24-h.p.; driver, J. Mattson.....1:02:14 4-5
 2. Berliet, 40-h.p.; driver, H. F. Grant.....
 3. Ross Steamer; driver, A. H. Waitt.....
- Time by Berliet for intermediate distances: 10 miles, 11:01; 20, 21:15 1-5; 30, 32:44 3-5; 40, 43:39.

MORRIS PARK'S SECOND 24-HOUR GRIND.

The New York Automobile Trade Association is to be associated with the Morris Park Motordrome Club in the promotion of the 24-hour race at Morris Park track September 27 and 28. There are sixty-two members in the Trade Association, and J. G. Robin, president of the Motordrome Club, felt that he would like to enlist their support in the promotion of meets. This will mean that a part of the management of the meet will be in charge of E. V. Stratton, the present manager of the Trade Association.

In addition to the 24-hour event, it is planned to have a 50-mile event on Saturday under road conditions. A special course will be cut through the track that will supply hills and turns, the same as on the Vanderbilt course. There are seventeen entries in the 24-hour contest.

LONG ISLANDERS HAVE A "GRAND PRIX."

SOUTHAMPTON, L. I., Sept. 16.—On a nine-mile circuit on Shinnecock Hills, Charles L. Lawrence, on a 24-horsepower B. L. M. stock runabout, won the Grand Prix de Shinnecock, distance 45 miles, at an average speed of 50 miles an hour. The race, an invitation event, starting at half-past five o'clock on Saturday morning, was watched by Southampton society people. It will probably become an annual event.

WHITE WINS, RIVAL WRECKED IN RACE.

LOS ANGELES, CAL., Sept. 13.—In a road race between a White steamer, driven by Capt. H. D. Ryus, and an Elmore, handled by A. J. Smith, from Los Angeles to North Baldy Mountain, distance 100 miles, the Elmore overturned, pinned the driver underneath, and caused such injuries that he had to be carried back by train to Los Angeles. The White covered the distance in 4 hours 31 minutes, winning the \$2,000 stakes.

SAND AND TAR AS A DUST REDUCER.

YORK, PA., Sept. 16.—Ex-Senator E. K. McConkey, one of the most enthusiastic autoists in Southeastern Pennsylvania, is experimenting at present to produce dustless roads in this locality, and within the past few weeks has reached the zenith of his ambition. Sand and tar, mixed in certain proportions, is the ex-Senator's formula, and while the two are heated to a boiling condition the substance is sprinkled along the road. The Country Club road, just south of York, which has the reputation of being one of the finest auto roads in the Keystone State, has been treated in the above manner and the objectionable dust has disappeared from that thoroughfare. Local autoists are watching the experiment with keen interest.

BEARING METAL FOR AUTOMOBILE USE*

By THOMAS J. FAY, E.E.

OF bearing metal there is much that can be said that would not interest the automobile engineer for the very good reason that the vogue in automobile work is to employ ball and roller bearings wherever possible. On the other hand, there are a few bearings in automobiles that are, as a rule, of the plain type, and it probably will be a long time ere plain bearings will become wholly obsolete.

It will be desirable then to discuss the plain bearing question at sufficient length to bring out the facts in relation to the class of plain bearings likely to obtain in automobile work.

To begin with the desired properties of bearing metal will lie within the limits as follows:

- (a) The highest possible resistance to crushing strains.
- (b) The greatest possible heat conductivity.
- (c) The greatest anti-friction qualities.
- (d) The highest possible tensile strength, not obtained at the expense of (b) and (c).
- (e) The nearest approach of the elastic limit to the tensile strength.

These conditions primarily dictate the use of ball or roller bearings, but there are few, if any, engineers that are prepared to put ball bearings in crank pins for illustration, and there are other places not readily fitted with any besides plain bearings.

The materials of which plain bearings should be made must hold the right proportion of suitable elements. The right proportion, on the other hand, must be the quantities that evolve a satisfied chemical condition. Take for illustration cast iron. In this mixture carbon is in excess of the amount that can combine chemically and the excess carbon takes on the graphitic form and lays in stratae enmeshed in the section of the structure. This excess carbon does not add to the strength of the metal, whereas, on the other hand, iron without the excess graphite is far stronger and, to make the matter somewhat more plain, a "cemented" iron or steel bearing in which all the carbon is made to combine by a cementing process becomes a very good bearing and is much used in certain places on motor cars, as, for illustration, the piston pin and its bushing are hardened.

The best possible illustration of the fact that mixtures must combine proper elements in the right proportion will be that shown in a tabulation of lead, tin, bismuth alloys, in which melting point advances and recedes, depending upon the proportion of the components present.

LEAD, TIN, AND BISMUTH ALLOYS.

LEAD	TIN	BISMUTH	Melting point of	REMARKS
5	3	8	202	It will be observed that a change in relation brings about a change in the melting point, or as may be said the freezing point, or the point of constant temperature during a change in the state of aggregation, but the change is not in proportion to any set of uniformly advancing increments.
6	3	8	208	
8	3	8	226	
8	4	8	236	
8	6	8	243	
8	8	8	254	
10	8	8	266	
12	8	8	270	
16	8	8	300	
16	16	8	304	
16	12	8	290	
16	14	8	290	
16	16	8	292	
16	18	8	298	
16	20	8	364	
16	22	8	312	
16	24	8	316	
18	24	8	312	
20	24	8	310	
22	24	8	308	
24	24	8	310	
26	24	8	320	
28	24	8	330	
30	24	8	342	
32	24	8	352	

Scientific American Cyclopedia, page 11.

To come to the point, what is the most likely to prove the most valuable for bearings is that which shows no excess of any one component over the amount sufficient to produce an "eutectic" alloy. If an excess of some one component is merely a crystalline or granular mass enmeshed in the eutectic, it is more likely than not a mere foreign substance free to roll about and do damage by its migration.

The manner in which balls for ball bearings are made illustrates exactly what happens when an excess of a component in granular or crystalline form is entrapped in the eutectic of a metal serving for a bearing. The balls for ball bearings are put in a barrel together with oil and emery and the barrel is tilted out of a vertical plane and rotated on a pivot pin by a suitable means. The result is the balls are reduced in size and become true spheres by the continual grinding of one by the other, and were the process to continue, the balls would ultimately reduce to microscopic dimensions, but they would be spherical.

If, however, glue were to be substituted for oil and emery, there would at once be an arrest of the process. The balls would not rotate relatively and the wear would cease. This is what holds when the bearing metal is a satisfied chemical combination and the freezing process is entirely eutectic, whereas, on the other hand, a mixture not entirely eutectic holds unbound granules or crystals and they do the damage in two ways, i.e., the migrating granules set up wear and induce heat. Of course, trouble follows a condition of this sort, if the work to be done by the bearing is enough to produce relative motion of the free—not bounded—crystals or granules as the case may be.

The Use and Utility of Dissimilar Metals.

To look at the question of bearings from still another point of vantage may result in some enlightenment, as, for illustration, it is the practice to either use two dissimilar metals, or hardened steel on steel. Why? It may not be so easy to set down the theoretical structure for these facts and yet a theory is but a statement of a fact. To begin with, like things have a common affinity, but since this is not desired in a bearing, unlike things are used. So far so good; but, hardened steel on steel works and on that account apparently contradicts the first contention. Hardened steel is a product in which the surfaces, to a considerable depth, are into a state of wear saturation of combined carbon. Either member then in a bearing, if both are hardened, has to give up and the affinity, as it were, is destroyed. On the other hand, if one member is soft and the other member is hard, the soft steel member will absorb carbon from the hard steel surface in contact, if the heat raises, and the end will be trouble because the hard member will be rendered soft and the affinity will be reestablished.

At any rate, there is every reason to believe that the molecular or microscopic structure of bearing metal has much to do with the efficiency of the product and no doubt the product that freezes under entirely eutectic conditions is the product of use for bearings. This fact is adequately established in still another way, as for illustration, it is established that a crystallized spindle cannot be made to run cool in the very journal it may have run in for years. The crystalline structure defeats anti-friction conditions because detached crystals roll relatively and set up heat.

The question of anti-friction can, in a large measure, if not entirely, be looked upon as a question of micro-structure of a given alloy, although it may be quite true that the coefficient of friction will be different for the different alloys. To clear the matter a little more, it is but necessary to say, no matter what the bearing material is, the angle in degrees on the "friction tester" will be the same, for all of them, if a certain grade of lubricating oil is used to lubricate all of them and the tempera-

*Extract from "Part V," "Materials for Automobile Construction," by Thomas J. Fay, E.E. Published by the Class Journal Publishing Company, New York.

ture is the same during the several trials. This merely proves that all bearing metals will act the same provided the lubrication is effective and the question of anti-friction is of no account at all under such conditions, because it is the oil that does the work and the bearing merely serves to act as a sustaining member for the oil. It is important then that the metal be rigid enough to sustain the oil, hence the load, because the oil is pressed out by the load.

Looking at it in another way will tend to sustain this contention, *i. e.*, no matter what the anti-friction qualities may be, for any material extant, it is not claimed and it would be futile to claim that oil could be dispensed with. Experts who have given the question of babbitt metal the greatest attention claim that the best babbitt metal is that of the greatest tensile strength without any question, no matter what may be the anti-friction value of the product. This is but another way of saying, the metal with the most perfect chemical bond serves the purpose best, because it will be the most free from enmeshed foreign matter and the least likely to set up "intermolecular shear," which nomenclature the writer will have to "coin" to make his meaning plain.

An Analysis of the Matter of Stresses.

It is said that it matters not at all if the stresses are the result of a "sliding friction" or the product of a "dead pull," and it is easy to see why this is so, for it cannot matter how the thing transpires so long as it does transpire. On the other hand, it is not so easy to show how sliding friction can put stresses in the metal of the bearing, but the stresses are present and they can be figured out as follows:

$$J = \frac{\pi d^4}{32} = \left\{ \begin{array}{l} \text{Polar moment of inertia of the section} \\ \text{with respect to the axis.} \end{array} \right.$$

$$C = \frac{1}{2}d = \text{distance of the most remote fiber from axis in inches.}$$

$$P a = \frac{S J}{C} = \frac{\pi d^3 S}{16} = \frac{d^3 S}{5.1} = 0.1963 d^3 S$$

$$d = \sqrt[3]{\frac{5.1 P a}{S}} = \text{Diameter of the member.}$$

$$P a = \left\{ \begin{array}{l} \text{Pull in pounds at a distance (a) in inches} \\ \text{from the axis may be described as the} \\ \text{moment of the applied force in inch pounds.} \end{array} \right.$$

$$S = \left\{ \begin{array}{l} \text{Unit shearing resistance of the material} \\ \text{in pounds per square inch.} \end{array} \right.$$

All the above holds for a bearing of a given diameter if it is solid and round, but the journal box outside of the spindle is hollow and a different condition obtains. For such a case the formula should read as follows:

$$P a = 0.1963 \frac{d^4 - d_1^4}{d} S = \text{as before,}$$

and

$$d = \sqrt[3]{\frac{5.1 P a}{S \left(1 - \frac{d_1^4}{d^4} \right)}} S = \text{as before.}$$

These formulas are mere adaptations of the conventional torsional formula and must apply perfectly for the purpose, only it is not quite so easy to fix upon the value of *P*, the pull in pounds due to friction, although it can be measured on a dynamometer. The distance (*a*) is any distance of the applied force, and in this case would be equal to (*c*), and (*c*), as before stated, is half the diameter or the radius of the bearing.

It is plain that *S*, the maximum torsional shearing ability of the metal, is most favorable if high, and, from what the formulæ say, the claim of high tensile strength as being a desirable requisite is borne out because high tensile strength denotes high shearing resistance.

Besides the resistance to shear, the resistance to heat is taken into account in bearings and this property is expressed as the relative degrees of heat required to overcome molecular tension, considering the various metals. The crushing strength of the metal is also a factor, and it is said that the pressure in any case

should not exceed the square root of the crushing strength of the metal used. In considering the white alloys at any rate (the so-called babbitt products), their resistance to crushing, elastic limit and tensile strength all decrease as the temperature increases. This is rather disconcerting, and it looks as if a bearing can get into trouble without much effort and they generally do.

The anti-friction properties of metals are measured in a very simple way, *i. e.*, a polished steel plate is placed in a position to be tilted and a polished cube, of the metal to be investigated, is placed thereon. The plate is tilted until the unlubricated cube slides down the polished surface of the plate and the angle is noted. This is all very simple and serves the purpose perfectly, but with a film of oil, as before stated, all metals slide down the way with scarcely no difference of the angle. Therefore, to repeat, anti-friction qualities are secondary.

CHEMICAL COMPOSITION.		INFORMATION.
Components	%	THIS IS THE OLD STANDARD GENUINE BABBITT. The tensile strength, elastic limit and crushing strength are given in pounds per square inch. The temperature is given in deg. F. The angle is given in degrees. This product, while it is far superior to white metal as generally exploited, is not of the highest attainable value.
Tin	88	
Antimony	8	
Copper	5	
PHYSICAL PROPERTIES.		
Crushing strength	31,000	
Tensile strength	8,000	
Elastic limit	2,300	
Molecular temperature ...	674°	
Anti-friction quality	74°	

See XXII.

CHEMICAL COMPOSITION		
CARBON	TOTAL	
	COMBINED	
	GRAPHITE	
	FERRITE	
	PEARLITE	
CEMENTITE		
Cr.		Nl.
V.		W.
Mn.		Sl.
Al.		Cu. 5.0
S.		P.
Sn. 88.0		Zn.
Pb.		Sb. 8.0
As.		
PHYSICAL PROPERTIES		
T.S.	LBS. PER SQUARE INCH.	8,000
E.L.		2,300
EX.	PER CENT.	
CO.		
PROOF	DIAM. "	1.00
	LENGTH "	2.00
FRACTURE		
RATING	U.	
	H.	
TREATMENT CHEMICAL		

SUBJECT: BEARING METAL
NUMBER: XXII MARK: BABBIT

NEW YORK 4-17-07

CRUSHING STRENGTH 31000 POUNDS PER SQUARE INCH.
MOLECULAR TEMPERATURE 674° F. ANTI-FRICTION ANGLE 74° THIS IS THE OLD STANDARD GENUINE BABBITT.

CHEMICAL COMPOSITION.		INFORMATION.
Components	%	This product was used for crankshaft bearings of S. & M. Simplex motors, also for the connecting rod pins in the same motors. It is also used for connecting road pin ends of the Ellsworth motors and, as may be noted, it is superior to the original genuine babbitt product in every way, especially as regards destructive temperature.
Tin	90	
Copper	9.9	
Antimony	trace	
PHYSICAL PROPERTIES.		
Crushing strength	28,500	
Tensile strength	20,500	
Elastic limit	3,600	
Molecular temperature ...	1,000	
Anti-friction angle	77	

Test Record. See XXI (next page).

CHEMICAL COMPOSITION		
CARBON	TOTAL	
	COMBINED	
	GRAPHITE	
	FERRITE	
	PEARLITE	
	CEMENTITE	
Cr.	Ni.	
V.	W.	
Mn.	Si.	
Al.	Cu.	2.54
S.	P.	
Sn.	Zn.	20.19
Pb.	Sb.	
As.		
PHYSICAL PROPERTIES		
T.S.	LBS. PER SQUARE INCH	20,500
E.L.		3,600
EX.	PER CENT.	
CO.		
PROOF	DIAM. "	1.00
	LENGTH "	8.00
FRACTURE		
RATING	U.	
	M.	
TREATMENT	CASTING	

SUBJECT: BEARING METAL
 NUMBER: XXI MARK: FMH-194
 NEW YORK, 4-7-07 19__

CRUSHING STRENGTH 88500
 POUNDS PER SQUARE INCH
 MOLECULAR TEMPERATURE
 1000° FAHRENHEIT.
 ANTI FRICTION ANGLE 77°
 OF THIS METAL THE AUTHOR
 HAS USED ENOUGH FOR A-
 BOUT 150 CRANKSHAFTS
 MAKING ABOUT 1050 BEAR-
 INGS WITH GOOD RESULTS
 IN THE S. & M. SIMPLEX
 MOTORS.

IN CASTING IT SHOULD BE
 COVERED WITH CHARCOAL
 AND HEATED TO A DULL
 RED BEFORE "TEEMING".

There is one other phase of this bearing question that ought to have more attention, *i. e.*, no matter what may be the material of which bearings are made, they will not serve at all, especially in crankshaft work, unless they are carefully scraped to a full bearing.

Taking this fact into account and the further fact that with oil all metals have the same friction—the friction of the oil—and allowing for the fact that no metal will serve without oil, it looks as if hardened and ground steel bushings accurately fitted, with due allowance for the oil film, would serve even better than any white metal that can be devised. The hardened and ground steel bushing on hardened and ground spindles or pins, copiously lubricated, answers every theoretical requirement better by far than any white metal.

These bushings are now used to a limited extent and they work admirably where they are employed, and it would be no great surprise if they held out under conditions of service that would not be possible with any babbitt metal ever devised.

Besides white metal and hardened steel, other products are used as phosphor bronze. This product consists essentially of a copper-tin entectic and differs from the best white metals in that they are tin-copper. In the phosphor bronze the copper is the major portion, whereas, in the white metal the copper is the minor portion.

The property of the phosphorus is to deoxidize the copper and compact the micro-structure, but beyond this the phosphorus serves not at all.

PHOSPHOR BRONZE.

CHEMICAL COMPOSITION.	
Components%
Copper	..... 88
Tin	..... 11
Zinc	.....
Lead	.....
Iron	.....
Phosphorus	..... 1.00
PHYSICAL PROPERTIES.	
Tensile strength	..... 49,800
Elastic limit	..... 22,100
Elongation	..... 9.5
Reduction	.....
	H 6.33
Rating	.....
	H 75.68

This product is used for "armor" brasses into which the tin-copper white metal is run to serve as the anti-friction facing.

In this way the strength of the phosphor bronze is preserved, while the good qualities of the white metal are utilized.

See XXIII.

There are advocates of the three components—ternary-alloys are best, but all seem to agree that more than three components are undesirable. At all events lead and zinc are not desirable for any high speed bearing work, and if three components are used they should be copper, tin and antimony, much the same as genuine babbitt.

Edward R. Hewitt, in some of his work, proceeded as follows and realized most promising results: He melted good commercial babbitt in an iron pot and "salted" it with pure tin until it became "cold short." This excess tin imparted the desired rigidity and altered the molecular temperature point to a marked extent.

While it is not possible to say just what the other components were, the fact remains that the doctoring or "salting" process netted good results and more likely than not the end was a tin-copper antimony product, in which the right proportions were found by "rule of thumb." The writer has used this process and found no ill-effects from the use of the product. Indeed, products of this making worked exceedingly well in motor crankshaft bearings, but the white metal so made was backed up by phosphor bronze "brasses."

From what has been said it will be observed that an inferior babbitt will be more or less brought within reach of an acceptable standard by remelting the babbitt and adding pure tin up to the limit of the tin carrying capacity of the product. It will be known when this point arrives by trying the product from time to time until it breaks on bending. In other words, the tin added tends to render the product "cold short." This process can be carried too far, but to do so is wholly unnecessary, because it is easy to see when the metal is short enough.

Alloy Metals and Their Characteristics.

Tin is an especially desirable content in a bearing metal for one other reason besides the fact that it engenders rigidity, because tin is non-corrosive and a large tin content renders the whole immune from corrosive influences. While it is true the oil to use is that free from corrosive tendencies, yet even so it is hard to tell just what oil will do until the damage is manifest. Tin then in excess amounts to insurance as against the ills of corrosive oil.

In the production of bearing alloys in which copper is a component there is more or less difficulty involved because of the high melting point of the copper as compared with the remaining components. With copper the possibility of using a little nickel to lower the facing point has been considered and taken advantage of. The presence of the nickel is no detriment to the bearing metal, anyway a very small increment of tin serves the purpose, *i. e.*, 1 to 2 per cent. After the copper is molten, tin can be added in large percentages as required, and following tin lead will incorporate and cement readily. Lead is a softener, just the reverse to tin, which may be classed as an intensifier. It follows, therefore, that an excess of tin may be offset by the addition of lead, or an excess of lead will be corrected by the addition of tin.

Lead is a fairly satisfactory component since it possesses lasting qualities, although its friction coefficient is a little high.

Antimony is not a good metal for bearings because it has not the requisite wearing qualities, but it does harden the alloy, and when it is present the object sought is hardness. Excesses of antimony result in an open crystalline structure. Zinc, on the other hand, is merely a cheapener and should be found in low-priced products to the exclusion of tin. This sort of a thing is quite to be tolerated, if bearings are not required to do hard work; but zinc in the bearing alloy for motor bearings is not quite the thing.

Bismuth is valuable because it tends to reduce friction, assuming the quality is worth anything in a copiously oiled bearing. On the other hand, the bad qualities of bearing alloys as a rule are not traceable to the absence of bismuth, the presence of zinc or anything of that sort, but to the use of "junk." Junk will

not produce good bearing metal nor will a mixture of junk and good metal evolve good bearing alloys. What is wanted for good bearing alloys is all good pure metal, and even in the absence of a degree of skill fair success follows the use of good materials, whereas no amount of skill can produce the best results if junk is the foundation.

In general, the question of the skill required goes up enormously if the number of components to the alloy are many. The simplest alloy holds only two metals and there are enough, unless it is desired to use up junk. Indeed, that is the incentive for the use of more than three metals in a bearing alloy. The relative values of alloys should not be far from the following, assuming the use of new raw materials only:

RELATIVE VALUES.

1. Tin	Copper	
2. Tin	Copper	Antimony
3. Tin	Lead	Antimony
4. Copper	Lead	Antimony
5. Copper	Tin	Lead

Kent's Pocket Book, p. 33, quotes C. R. Dudley, Tour F. I., February and March, 1892, thus:

"Alloys are used as bearings in place of wrought iron, cast iron or steel, partly because wear and friction are believed to be more rapid when two metals of the same kind work together, partly because the soft metals are more easily worked and got into proper shape, and partly because it is desirable to use a soft metal which will take the wear, rather than a hard metal which will wear the journal more rapidly."

The underscores are by the writer with the idea of calling particular attention to the motives which can be put into other language just to see both sides. To begin with, it is said that soft metals are more easily worked, hence to use them makes the construction more easy. This is not to say soft metals are the best bearings, and again, soft metals will take the wear, but this does not say soft metals will make the best bearings.

So many of the old ideas have failed when they were applied to automobile construction that it would be no great surprise to discover that the soft metal idea is a fallacy as well; that is to say, in automobile work, with its high speed and low static pressure.

True, in crankshafts and connecting rods the bearings sustain a very heavy momentary load, but such loads are so instantaneous as not to press out the oil pad because the oil cannot be set in motion so quickly. In piston pins the instantaneous load may be as high as 1,200 pounds per square inch of projected area and no ill follows the use of hardened steel on steel. White metal would not do very well in this place, because white metal will not stand high temperature and high pressure as well, but for that matter none but the finest white metal mixtures will stand high pressure, and even then the pressure should be limited to the square root of the crushing strength of the metal.

In piston pin bearings phosphor bronze works if the bushings are very thin and backed up by steel in a most rigid way. The limit of thickness is about 3/32 inch, whereas, thicker bushing walls flatten and "run," leaving an elongated hole that soon declares itself.

Originally thin "brasses" were made for automobile work to reduce weight, but it was very quickly discovered they reduce wear, and this is a fortunate circumstance, for automobiles should be light.

Hardened steel on steel, to work nicely, should be "ground," allowing the proper bearing clearance as fixed in the "limits of tolerance" for the respective diameters; but in addition to being accurately "ground" the bearing should be worked in with "emery powder," beginning with a fairly coarse powder and ending with a comparatively fine product mixed with oil.

No attempt should be made to obtain a polished surface, for that would defeat the aim, because the emery, if the grinding process, if properly conducted, makes up a set of surfaces full of parallel grooves in which the grooves on the journal are in just position to the grooves on the hardened shell. When the bearings are so ground in, all large inequalities of surface are reduced

and the vast number of oil channels cut by the emery render it impossible to squeeze out more than the excess of oil, while enough oil remains in the grooves to satisfy the demand.

Mr. C. W. Hunt, who has given such a vast amount of attention, made it a practice to grind the shafts and spindles (of the engines and machines of various classes built by the C. W. Hunt Company) excepting at the bearings. The journals were left with the tool-marks on them, and Mr. Hunt claimed that to grind the journals was to render them unfit for arduous service. The writer served as "Executive Engineer" of this company for a considerable time, and had ample opportunity to note the results, and it is an assured fact that a bearing in trouble on a machine of any sort built by the C. W. Hunt Company is a most unusual occurrence. This plan of leaving the tool-marks is on the same principle as grinding in with "emery," but the emery is superior because it produces a vast number of very small grooves, not only on the journal, but on the shell.

The question of the loss of power in motors and transmissions is a matter that must in the long run become alive. Up to the present time (1907) most designers were wont to content themselves if only motors would run and cars would endure. Whatever troubles bearings in general are heir to, these troubles are intensified in automobile work for diverse reasons, as follows:

- (a) The machinery platform is unstable.
- (b) The rotation of the moving parts is not a constant speed.
- (c) The angular velocity is oftentimes very high.
- (d) The pressure on the projected area of bearings is variable and extreme.
- (e) The bearings are not rigid.
- (f) All kinds of foreign substances are likely to sift into the bearings.
- (g) The oil is not changed regularly, and frequently holds grit in suspension.

In general, then, bearings are hard to make and be sure of endurance, to say nothing of the question of the losses, but, as before stated, this matter must ultimately be given a due measure of attention.

Just what the distribution of losses is must depend upon the individual cars, nor can it be claimed that two cars of the same size and make would have the same efficiency of the transmission because the condition cannot be held a constant value.

In general the matter can be set down by way of a set of approximations, and as cars are perfected the approximate values will slowly advance in the direction of perfection. At the present time, for a plain bearing car, the distribution of losses will approximate as follows:

DISTRIBUTION OF LOSSES.

(Total power—100)

Delivered by motor.....	85
Delivered by clutch.....	83.3
Delivered by gear system.....	69
Delivered by sprocket chains.....	64.86
Delivered by wheel hubs.....	59.67
Delivered by tires to road.....	56.69

In thus lumping losses, it must be remembered that losses are due to many causes besides the bearing losses, and it would be a fallacy to assume that ball bearings for illustration would correct the major portion of this evil.

(This is for a direct on the high gear drive.)

(The indirect will have a different loss.)

To show that the question of losses is quite beyond the question of bearings only, it is but necessary to point out that the movement set up in the chassis springs is at the expense of power delivered by the motor or the friction in the distance rod joints sums up as a loss of motor power and so on. Indeed, every motion, every noise and every movement takes power, which to prove is very simple, as, for illustration, stop the motor and the noise, the motion and losses stop also.

AUTOMOBILE VERSUS HORSE DELIVERY

UNDOUBTEDLY the chief factor which deters the average small house from seriously considering commercial motor vehicles is reputed high cost, regarding which there appears to be an erroneous impression prevalent. To the tradesman or business house, whose delivery service is comparatively small, the first cost of a motor vehicle appears high as compared with that of horses, while his ignorance as to the expense of maintaining such an outfit does not place the latter in a favorable light. As a matter of fact, reliable data concerning automobile delivery as an investment compared with horses is difficult to obtain, so that it is not to be wondered at that the average business man knows so little of the subject and is inclined to be skeptical.

The following data has been compiled by the Logan Construction Company, Chillicothe, O., from a number of sources, as well as from their own experience with commercial motor vehicles, so that it may be taken as applicable to similar cases in almost any part of the country, though the figures given for horse maintenance will be found low in large cities. The figures representing the initial outlay will also be found very conservative. They are as follows:

Wagon	\$150
Horse	150
Harness	25
	<hr/>
	\$325
Stabling and shoeing, per month.....	\$20
Driver's wages	60
Repairs, replacements, etc.....	5
	<hr/>
	\$85

Thus a house which requires three horses and wagons to handle its deliveries, has in them an investment of \$975, and a monthly charge for upkeep of \$255. But horses must be laid off at intervals, not to mention incapacity from sickness, so that it requires 1 1-2 to 2 horses to keep a one-horse wagon on the road all the time. At a conservative estimate, it may be said that four horses are necessary to run three wagons. This brings the

investment up to \$1,125 and raises the charge for maintenance to \$275. As compared with the foregoing, statistics compiled from a number of sources show the expense of maintaining a light automobile delivery as follows:

COST OF CAR COMPLETE, \$1,000.	
Gasoline and oil, per month.....	\$12.50
Driver's wages	60.00
Repairs, replacements, etc.....	2.00
Tire depreciation	5.00
	<hr/>
	\$79.50

With proper care, the single automobile delivery wagon is the equivalent of the three single-horse wagons, so that there is a saving of \$125 on the investment at the outset, while a comparison of the cost of maintenance of the two reveals a difference in favor of the automobile delivery amounting to \$195 per month, or a total of \$2,346 yearly. To place matters on an even more conservative basis, it may be assumed that the automobile is only capable of doing the work of two single-horse wagons instead of three, in which case its superiority in cost of maintenance would still amount to \$110.50 per month.

The price of \$1,000 is that of a light two-cylinder car for average delivery work, some of the figures having been compiled from the service rendered in the case of bakers. Larger cars with greater carrying capacity and higher speeds are sold at \$1,500 and \$1,800, at which figures they compare very favorably with the expense of maintaining sufficient horse equipment to perform the same service. One of the chief points on which the average business man is ignorant is with regard to the expense of a driver. The makers of such cars have made them as simple as it is possible to do so and neither an expert technical man nor a skilled mechanic is necessary to run them. They must be given the care required by any piece of machinery, as their reliability depends not so much on the ability of the driver to repair broken parts as it does in giving proper care and attention at the right time which will prevent such accidents.

PRACTICAL GEAR CUTTING IN AUTO WORK.

The development of the automobile industry and the use of high-speed gears have developed new conditions and new problems in the manufacture of gearing in general, says *The Mechanical World*. Perhaps a person directly engaged in the commercial manufacturing of gears of many sizes and kinds appreciates this situation better than the average man in mechanical pursuits. It is my purpose, therefore, to treat briefly of a few of these practical points in connection with gear-making and to show the tendency of the art. The degree of accuracy required for most gears to-day is much greater than it was a few years ago. The increased perfection in building many lines of machinery has had its influence, as well as the advance of the automobile industry. The high-grade motor car demands gearing which shall run at a very high speed, under severe conditions of loading and shocks, and as noiselessly as possible. To meet these conditions, accurate gears are required. While we have been able to meet these conditions with quite a degree of success, I am looking for still greater accuracy and still greater perfection in manufacturing gears in the near future. A high-grade gear should be accurate not only as regards the teeth, but as regards all its other elements. The hole should be true and of proper size. The keyways should be of the proper dimensions and accurately located. The blanks should be turned true and of exactly the right diameter. These details are sometimes overlooked or slighted even in gears which are supposed to be of high grade. It is absurd to demand high-class cutting on a poorly-machined blank. Yet this is the condition which the gear manufacturer sometimes meets with.

IMPROVED ROADS AND THE AUTOMOBILE.

An event of a certain amount of importance in connection with the use of motor cars relates to the trials made during May on certain roads in Middlesex and Berkshire with preparations of tar and tar-spreading machines for the prevention of dust, says *The Mechanical World*. It appears that the judges' committee of the Roads Improvement Association have just made the awards of prizes for the machines which they consider to occupy the first and second positions, and also for the two best tar preparations, due regard being had to the condition of the roads since the tests were made on four days in May. As the committee consists of eight leading engineers and road surveyors in addition to members of the Association, it will be necessary to attach importance to their report on its forthcoming publication. At the same time it has to be borne in mind that the trials have been made in the interest of the motor car industry, and the real object is to secure improved road surfaces for the purpose of obtaining higher speeds with automobiles. But how would this work out in practice on the assumption that prospective legislation would abolish the existing speed limit, and that the roads were covered with a dust-preventing composition? Surely the answer is to be found in the experience already gained on the Brooklands racing track, where the cement surface not only gave way during recent racing, but the concrete foundation was disintegrated and thrown about the track. If this is possible with cement and concrete, the question is whether the ordinary roads would behave any differently when tar-covered and when autos were traveling on them at only half the speed attained on the racing track in question.

LETTERS INTERESTING AND INSTRUCTIVE

EISEMANN SYSTEM AS USED ON A PACKARD.

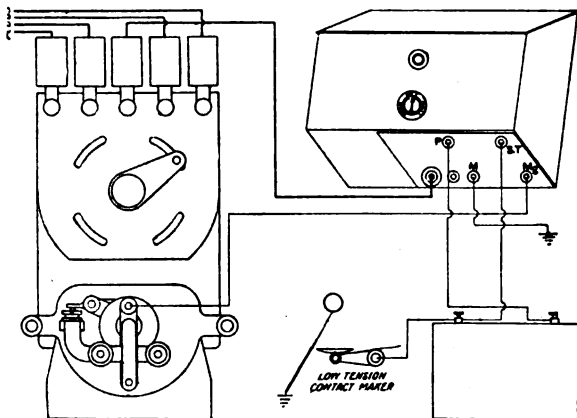
Editor THE AUTOMOBILE:

[901.]—Will you kindly publish in the next issue of "The Automobile," under the head of "Letters Interesting and Instructive," a wiring diagram of the Eisemann high-tension system of ignition as employed on the Packard car?

FRANK AVERY.

Kalamazoo, Mich.

As employed on the Packard car, the Eisemann magneto is interconnected with a second system utilizing a set of accumulators as a source of current supply. That is, when working, the magneto operates as a self-contained system, but the same set of spark plugs and the magneto distributor are utilized, as the components of the second system already referred to. The non-vibrator coil of the magneto is carried in a case on the dash which also houses a single vibrator coil for the battery side of the system. The current from the accumulators passes through a low-tension timer of the usual type to the single vibrator coil, thence through the magneto distributor, which is turning whether the magneto is working or not, to the plugs. This is shown by the accompanying diagram, which, however, does not illustrate the inside connections of the magneto itself. One side of the armature winding is grounded; the other is carried to the terminal *Mg* on the under side of the coil box; one side of the secondary is also grounded, while the other, electrically connected to the moving member of the distributor on the magneto, is carried to the terminal shown on the coil box by concentric circles from the central terminal shown on top of the magneto distributor, the



SKETCH SHOWING PACKARD SYSTEM OF WIRING.

other four being taken to the plugs. When working on the magneto the non-vibrator coil in the case is in action, while the battery operates the vibrating coil in the same case, the terminal *P* being its primary, and *M* signifying *masse*, the French for ground connection, one side of the secondary of this coil also being grounded as usual.

REGARDING PUBLICATIONS OF A. S. M. E.

Editor THE AUTOMOBILE:

[902.]—Inquiries recently received show that your readers are not aware that the publications of the American Society of Mechanical Engineers are for sale to the general public, and further, that none of its publications is copyrighted.

The second edition of "The Art of Cutting Metals" was brought out to fill orders for Proceedings, Volume 28, No. 3, which was almost immediately exhausted after the annual meeting. So great was the interest aroused that we expect to go to press a third time with this paper early in the fall.

To correct the above mentioned misapprehension we will appreciate your making note of this in your next edition.

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS,

29 West 39th St., New York City.

E. S. Whitaker.

ABOUT THE USE OF OXYGEN AND ACETYLENE.

Editor THE AUTOMOBILE:

[903.]—I have a Packard "30," and would like to have some light on a few things that perplex me.

1. Granted that the oxygen in the air is the active agent which combines with the gasoline vapor in the explosion, would it not be an enormous gain in power to provide a tank of oxygen just in front of the auxiliary air intake? Even if much of the gas thus escaping from the tank did not enter, would not the fact that the air thus inhaled was more or less diluted with pure oxygen in excess of its normal content, give a great increase of explosive power?

2. Or, how would it do to provide a supply of peroxide of hydrogen (H_2O_2), which gives off its oxygen, leaving water behind, contained in an atomizer just above the air valve of the carbureter, and spray the surrounding air with its vapor? Would the water thus given off, together with the oxygen, have any worse effect than the atmosphere on a rainy day?

3. Would there be any gain or loss of power if the contents of a Prest-O-Lite tank were allowed to escape under the hood, thereby compelling the carbureter to mix acetylene gas with the usual mixture?

4. On a car having a chain drive, taking the gear ratio as being 3 to 1, would it not be a saving of power to have both sprockets as

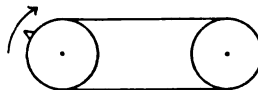


FIG. 1.

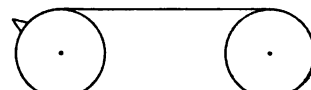


FIG. 2.

large as possible? Is there not more energy wasted in pulling the tooth on Fig. 1 than on Fig. 2? In other words, is not the lever in the sprocket of greater radius much longer, thus making the pull lighter?

AL. EISEMANN.

New York City.

1. The addition of oxygen in the proper proportions would naturally give a more powerful explosion than obtainable with its more dilute form as in the shape of air. In fact, there has been considerable controversy over the use of oxygen by racing cars on the Brooklands track in England, as giving those who employ it an entirely unfair advantage over their competitors not thus equipped. The manner of employing it that you indicate would be extremely wasteful and probably not productive of much good. Its use entails the risk of producing so powerful an explosion that the motor will succumb to it, probably with disastrous consequences. Motors are not designed for the use of fuels other than those commonly employed, such as gasoline, kerosene, alcohol, under ordinary conditions, and the introduction of such a mixture might well produce an explosion far exceeding the motor's factor of safety. There are other things to be considered beside a mere increase in power. The average up-to-date automobile is already very much over-powered.

2. Your second question is open to the same objections. The method is wasteful and extremely uncertain, so that there would be imminent risk of the motor wrecking itself. The water combined with the oxygen would be no objection, could the quantity of either be properly regulated. The admission of a certain amount of moisture rather benefits the motor than otherwise, and numerous experiments have been made in water-injection just about the time of explosion.

3. This would be far more objectionable and likewise far more dangerous than either of the foregoing expedients suggested. There would be every possibility of the escaping acetylene gas combining in the proper proportions with the air under the hood to make an explosive mixture, which would sooner or later be fired with serious consequences. The latter are also to be expected of the introduction of an acetylene mixture into the cylinder as the explosion obtained with this gas is extremely powerful and not safe to employ in even the best built motor

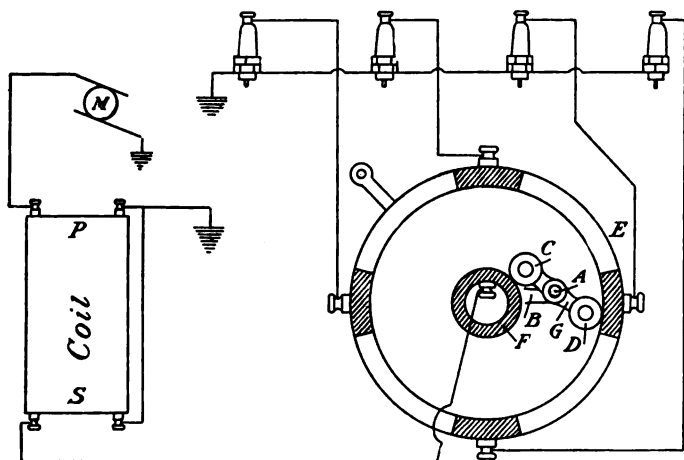
designed for gasoline. The method of employing the gas would also be equally wasteful and uncertain. Running such a combination would be about equivalent to sitting over an open barrel of powder and dropping matches into it from a little height. Most of them would go out before reaching it, but sooner or later it would go off.

4. Within certain limits larger sprockets save power and make the running much smoother, regardless of the gear ratio, by compelling the links of the chain to bend round a circle of large diameter rather than of one of small diameter which would necessarily cramp them more or less, as well as introducing a great deal of unnecessary friction. The leverage is better distributed.

ANOTHER NOVEL IGNITION SYSTEM.

Editor THE AUTOMOBILE:

[904.]—I have noticed the description of the new system of ignition being placed on the market as the "K-W" ignition, which employs what is known as a "master vibrator," but I have devised a system of ignition of my own which I think is superior. Instead of adding an extra coil and trembler to the four already in use on a four-cylinder engine, I see no reason why one coil and vibrator is not sufficient. I enclose a rough sketch from which you will see that the chief difference lies in the construction of the timer. The system, of course, requires the use of a magneto or dynamo as the primary current is not broken, as is the case with the ordinary timer in general use.



NOVEL IGNITION SYSTEM AS OUTLINED BY MR. BROWN.

To explain the sketch, the rollers C and D and their connecting link G, are insulated from the engine frame. The timer has the usual outside contact points corresponding to the spark plugs, but it also has an inside collector ring F, insulated from the engine frame, and stationary. The rollers C and D form an electrical connection between the ring F and the segments of the timer. Means are provided for rotating A at the speed of a camshaft and for holding C and D in their relative positions.

Will you kindly give me your opinion of this ignition system and state the objections you think it may have? DAVID L. BROWN.
Otto, N. Y.

There are numerous objections to your proposed system of ignition which have been sufficient to condemn its use when tried in the past—that is, its fundamental requirement of employing a continuous current. This needs a direct-current generator or a magneto which is run continuously at such a speed that its output will be of practically a uniform intensity. That is, its periodicity must be so high, such as the 60 or 125 cycle alternating current used for incandescent lighting, that there will be no interval of excessive drop in the current value at any particular point, as should the latter coincide with the time of contact the plug connected with the latter would not spark. The type of magneto generally utilized for automobile ignition does not produce such a current, but is usually synchronized with the motor and only produces a current impulse at a point corresponding to the time of firing in each cylinder. To do this, its armature is usually short-circuited upon itself and only opened twice per revolution in the

case of a four-cylinder engine. The details of the various systems of magneto ignition differ considerably, but they are all based on synchronism and could not be employed for such a system as you contemplate.

The objection to the use of a magneto generating constantly, such as that previously referred to, is the same as that attaching to the use of the direct-current generator. Its speed must not alone be high, but it must be, as nearly as possible, uniform. A governor is required to prevent exceeding a set maximum, while any excessive drop such as frequently occurs in the speed of an automobile engine puts the whole system out of commission, as its mainstay—the generator—no longer produces sufficient current to operate it. Moreover, a trembler coil of the usual type would never operate satisfactorily with a current of such constantly fluctuating value. The slightest hesitation of the governor to function properly would sooner or later result in the destruction of the coil, while subjecting it to continuous use would be productive of endless trouble with the trembler. These are a few objections that strike us at first sight; doubtless those who have tried similar systems in earlier days can recall others.

MANAGEMENT OF SPARK AND THROTTLE.

Editor THE AUTOMOBILE:

[905.]—1. With car standing, ignition system O. K., spark retarded and throttle closed, the engines occasionally misfire. I am told that this is not an infrequent occurrence, and that, so long as there is regular firing at higher speeds and under load, this misfiring has no significance. I wonder whether this is correct. Does it not indicate either that the carburetor is not, or that it cannot be, accurately adjusted for the best service?

2. In adjusting a carburetor and the spark lever for the minimum service (i.e., spark retarded and throttle closed), is there any general rule as to the number of revolutions of the motor under these conditions? Should the adjustment under these conditions be such that the motor runs "as slowly as possible?" Or, assuming the maximum speed of the motor to be ... r. p. m., what should be the minimum?

3. Should the minimum adjustment as in No. 2, for best general results, be such that the motor will do some work under load? For instance, should this adjustment be such as to enable the motor to move the car on the level at minimum speed? Or is it better to figure on the motor doing no actual work except with some advancement of the spark or some opening of throttle?

4. Instructions are given, on the one hand, that the preferable operating practice is to run with advanced spark rather than with opened throttle and late spark; and, on the other hand, we are told, and we often find, that misfiring results from first advancing the spark and later opening the throttle, but not if the throttle leads and the spark follows. So much depends upon the proper manipulation of spark and throttle that I would like light upon this. If there is a general rule applicable to all gasoline motors I would like to know it, and try to work to it. If each motor and outfit must be treated as an independent proposition in this respect, I would like to know that.

5. Automobile makers often hold out the idea that a touring car will run twenty miles or more on a gallon of gasoline. I read of operators who claim to do 50 per cent. better than this. Working in the hills and using the lower speeds a great part of the time, I very often seem to get no more than eight to ten miles per gallon. When I try to work with less throttle I lose power. The question with me is not so much the cost of the gasoline, as whether I am awkwardly opening too much and getting my engines too hot. I do not know how much heating is normal when running in the hills. Water in my radiator, thermosiphon system, often boils in this work. Can you help me out on this? If so, doubtless there are others who also will benefit by it.

TENDERFOOT.
Cambridge, Ohio.

As you say, this is a more or less frequent occurrence, but nevertheless it should not be. The motor should run regularly at as low a speed as it can be throttled down to, though with some carburetors it is found impossible to obtain satisfactory service at higher speeds, if adjustments be made to have the motor run without misfiring at very low speeds. In other words, the carburetor's range of adjustment is not co-extensive with that of the motor's speed range. Such cases would seem to be rare nowadays, however, and doubtless the majority of them could be remedied. It is customary in adjusting a carburetor to a motor

to set it so that it will run the latter regularly at as low a speed as possible, subsequently modifying the adjustment in order to obtain similarly good results at high speeds and under load. The adjustment need not be a great deal out of the way to cause this misfiring at low speeds, as it will readily be evident that a slight excess opening of the gasoline nozzle that would not be particularly noticeable at higher speeds when the auxiliary air-valve was also open, might pass entirely too much fuel for low speeds, as a motor will misfire on an over-rich mixture as on a very lean mixture; in fact, the case can be reversed, the extra suction of the engine at high speed drawing sufficient gasoline, and not enough when throttled down.

2. Not that we know of. It is customary to adjust the carbureter to run the motor as slowly as it can be made to do so without misfiring. As you do not supply any figure for your assumption we do not know what you had in mind, but, taking 1,500, which is probably a usual maximum speed for automobile motors having a normal speed of 1,000 r.p.m., the minimum would be about 300 r.p.m., maybe less in some cases, but not a great deal, and higher than this in a great many.

3. This adjustment is very frequently made so that the motor will move the car on a smooth, level surface, such as a garage floor, with little or no opening of the throttle. But by "this adjustment" we do not refer to that of the carbureter nozzle, but to the opening of the throttle. The latter will be found to have a stop in the majority of cases, which prevents its entire closing, and this stop is usually set to give the engine sufficient fuel to move the car on the level. As already referred to, the nozzle adjustment is usually made to run the engine at its minimum.

4. The better practice is, as you say, with advanced spark and half-closed throttle, rather than otherwise, as under such conditions the fuel is burned to much better advantage. Misfiring results from advancing the spark without opening the throttle, as the motor literally runs away from its fuel, *i.e.*, it speeds up as the result of advancing the spark and cannot then draw sufficient fuel through the restricted opening. It is good practise to either open the throttle and follow with the spark, or advance both simultaneously, as some drivers do. With magneto ignition, now very general, the spark lever position is not disturbed much, except for starting, control being entirely by throttle. This is coming to be very general practise. To a certain extent, each motor is a law unto itself and its peculiarities must be learned, otherwise general rules apply.

5. "Touring car" is too indefinite. There are thousands of touring cars which never do 15 miles on a gallon of gasoline even under the most favorable circumstances, owing to the great size of their motors, weight of the car, and the like, and many do not go much above 10 miles to the gallon. In hilly districts or heavy roads this would be less. The skill of the driver plays an important part in fuel consumption. An 18-20-horsepower car, in good condition, and under favorable circumstances, should average about 20 miles to the gallon, but frequently will not do this owing to poor adjustments. The question is not one of throttling alone; tight or poorly aligned bearings anywhere on the car will cause a great loss of power. As the size of the motor decreases, the mileage per gallon increases, single-cylinder motorcycles doing as high as 90 miles or more to the gallon. Given good conditions, it is simply a question of engine size and car weight. The fact that you are using so much gasoline and that the water boils, would seem to indicate an excessive opening of the spray nozzle, giving too rich a mixture.

OVERHEATING IN ENGINE AND GEARCASE.

Editor THE AUTOMOBILE:

[906.]—Will you kindly tell me through "Letters Interesting and Instructive" how to clean my radiator? My engine overheats quickly and I find the water in the tank has a very rusty appearance. Am not sure that the cooling system is at fault, but probably matters will be improved if I clean out the radiator. Why does my gearcase

(planetary) overheat? I find it difficult to keep grease in same. The bands are not dragging, yet the case gets hot. C. G. MOORE.
Sharon, Pa.

It is not altogether certain from the few particulars you give that faulty water circulation is the cause of your engine overheating. It may be that, through neglect in filtering, foreign matter has been allowed to enter the radiator and one of the tubes is choked. This can be removed by sending a strong flow of water through the radiator by means of a powerful pump. If incrustations have formed on the tubes or the radiator is greasy, it should be washed out with an acid solution, being thoroughly flushed with water afterwards to remove all trace of the acid. Details of how to do this have frequently been given in THE AUTOMOBILE; in last week's issue one correspondent tells of a preparation he used with success to clean out a defective radiator. While you are doing this work it would be wise to verify the working of your pump. It may be that you are simply running on too rich a mixture and will find that a simple carbureter adjustment will remedy matters.

By opening out your gearcase you will doubtless at once discover the cause of overheating and the remedy will be apparent. You do not give any particulars, but we should imagine that, possibly through neglect, one or more of the pinions are not running freely on the studs. Are you sure that you are using the right kind of grease, and that proper attention has been given to lubrication?

LONG TRIP ON KEROSENE AND GASOLINE.

Editor THE AUTOMOBILE:

[907.]—As an experiment, myself and my two sons recently undertook a tour in which we relied entirely upon a mixture of two fuels, kerosene and gasoline, in the proportion of 3-4 of the latter to 1-4 of the former. The car is a four-cylinder, air-cooled machine, and we averaged 15 miles to the gallon throughout the distance, of about 500 miles, which is good going for the roads to be found through Indiana and Ohio, over which we traveled. We found that there seemed to be less heat, less vibration, better lubrication, and apparently more power. In fact, we have been so pleased with the outcome of the experiment that we have no doubt there are many readers of "The Automobile" who would like to learn of it.

Columbus, Ohio.

CHARLES L. BELL.

SOMETHING FURTHER ABOUT THAT GREASE.

Editor THE AUTOMOBILE:

[908.]—In reply to a letter of inquiry (No. 887) about gear case compound, signed C. S. Welmer, printed in your issue of September 5, I am quoted as saying that I used Albany grease on the Locomobile racer in 1905. While this statement of itself is correct, yet, taken in connection with the inquiry of Mr. Welmer, it is misleading. Albany grease was used on the machine only for lubricating the water pump shaft. The gear box was lubricated with Havemeyer Gear Compound, which proved thoroughly satisfactory for the purpose.

To prevent any misunderstanding on the part of the readers of your "Letters Interesting and Instructive," will you please publish this letter in your next issue?

New York City.

JOSEPH TRACY.

AT LAST ON THE RIGHT TRACK.

Editor THE AUTOMOBILE:

[909.]—Answering my own inquiry, No. 887, I desire to thank you for putting me on the track of the lubricant. The Havoline Oil Company have communicated with me, and they are the company from whom I can secure what I wish. I have sent them an order to-day.

For my own satisfaction I have hunted up the ad., which I remembered having seen in "The Automobile," and I found it in the Thursday, October 19, 1906, issue, on page 28, a full-page advertisement of the Havemeyer Oil Co.

Lebanon, Pa.

C. S. WEIMER.

There were 27,026 automobiles in use in Germany at the beginning of the present year. Of these Prussia alone had 16,084, and the province of Brandenburg, which includes Berlin, 4,028. Berlin itself had 1,976 cars registered.



MODEL J, 40-HORSEPOWER PULLMAN TOURING CAR, FULLY EQUIPPED.

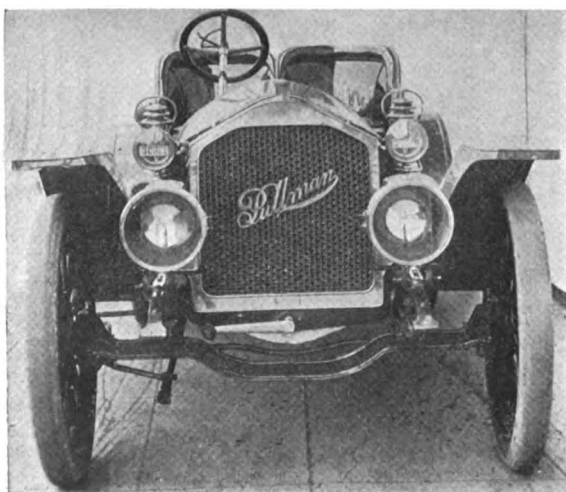
WITHIN the past few years the automobile industry as a whole has become more or less sharply divided into two large classes of manufacturers; those who devote their entire attention to the construction of a single model, and those that find it more profitable to appeal to a wider range of buyers by presenting a line of models. An instance of the latter is to be found in the case of the York Motor Car Company, Inc., York, Pa., this firm planning to market a line of not less than five models during the season of 1908, two of which will be distinctive, while of the others one will be the runabout counterpart of the touring car type, one is a special six-cylinder roadster and the last a low-powered car. They will be known as Models I and J touring cars, and Models 4-40 and 6-30 runabouts, the fifth being a 20-horsepower car, the details of which are, as yet, not forthcoming.

The Yorke Pullman cars, as they are known, embody numerous distinctive features of design, which are, however, substantially reproduced in each of the different models, so that a description of the Model I, five-passenger, 40-horsepower touring car will suffice to give an idea of the construction of all. The motor is distinguished by the use of independent cylinders which, however, are cast with large rectangular flanged openings in the water jackets. When the motor is assembled these flanges are bolted together, thus combining the water jacketing of all four, insuring a uniform temperature. At the ends the jacket openings are covered by plates, as shown by the illustrations of the motor. This form of construction also has the advantage of anchoring the independent cylinder castings together firmly, thus minimizing vibration and rendering the motor much stronger as a whole, while still permitting the easy removal of any one of the cylinders. In fact, from the viewpoint of the user, it has all the advantages of a four-cylinder unit casting, with none of the latter's disadvantages. It also greatly simplifies the circulation piping as the water enters the rear cylinder jacket and progresses forward through all of them. Both cylinders and pistons are ground to .001 inch on an improved Heald cylinder grinder and a special piston grinding ma-

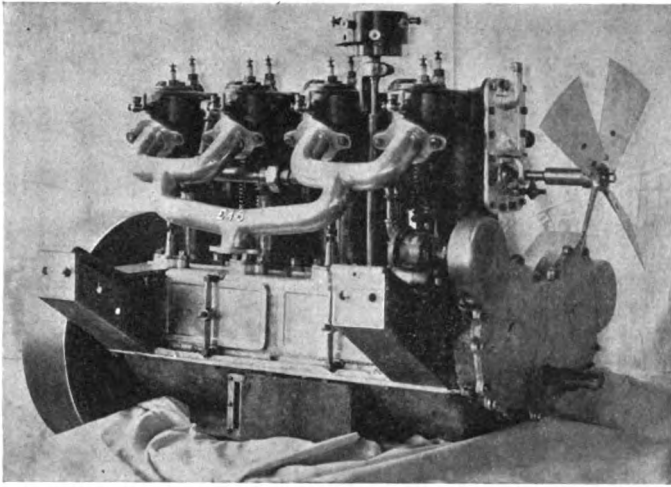
chine, the pistons being tapered from the lower ring to allow for expansion. Three compression rings and an oil ring are fitted, while an oil groove distributes the lubricant and oils the wrist pin.

The valves are oppositely disposed and mechanically operated; they are interchangeable and are die-forged from solid bars of nickel steel. The crankshaft is machined from a solid billet of high-grade steel and is offset from the cylinder centers, reducing the side thrust on the cylinder walls during the explosion stroke. Cramp's special bearing bronze is used for the wrist pins, and Parson's white brass for the main bearings. The connecting rods are I section drop forgings. The engine base is of an aluminum alloy of high tensile strength and carries the five main bearings. Four liberal-sized inspection plates are provided, while the casing for the timing gears is cast separately and bolted on. The bottom pan is also an aluminum casting and is divided into four oil compartments of the proper height, a sight gauge cast integral with the base serving to show the oil level.

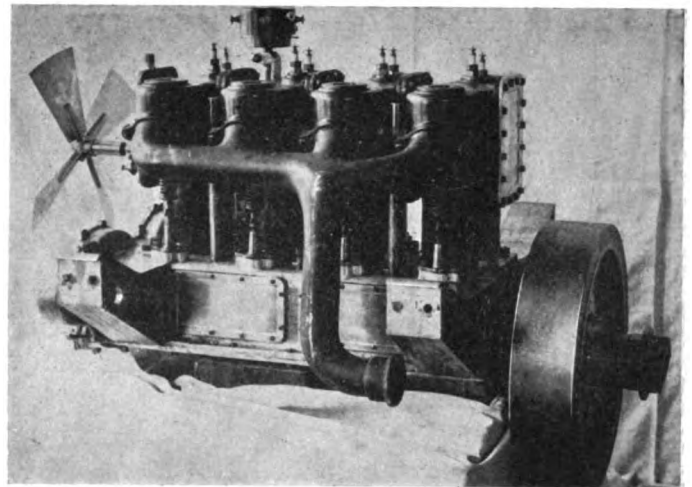
A six-feed oiler takes care of the lubrication and is conveniently mounted on the dash, four of the feeds going directly to the cylinders, while the remaining two are branched to the five bearings and their surplus serves to maintain the level in the crankcase. The oppositely placed camshafts are also offset from the valve centers, reducing both the wear and noise to a minimum. The timing gears are of manganese bronze and of large diameter, and have a center insert of hard fiber. Cooling water circulation is by means of a centrifugal pump situated directly back of the radiator and bolted to the I-beam supporting arm of the engine base. It is gear-driven at the same speed as the crankshaft and has a capacity of eight gallons per minute at a speed of 1,000 r. p. m. It receives the water directly from the radiator and delivers it through a single pipe to the jacket of the rear cylinder. The radiator itself is of the vertical, flat-tubed type, the tubes being separated and supported by horizontal fins; it is mounted directly on the cross girder of the frame and has no connection with the side members, thus avoiding destructive torsional stresses. The fan consists



THE PULLMAN AS SEEN FROM THE FRONT.



INTAKE SIDE OF 40-H.P. 4-CYLINDER PULLMAN MOTOR.



VIEW OF MOTOR AS SEEN FROM THE EXHAUST SIDE.

of a manganese bronze hub with sheet aluminum blades, the whole being mounted on adjustable ball bearings.

The ignition is of the high-tension type employing a single coil and combined timer and distributor. The coil is mounted on the dash, while the distributor is placed between the first and second cylinders, its bottom being flush with the top of the engine. It has but one adjustment and one contact for all four cylinders and runs in oil, being housed with a glass cover. The drive is by bevel gearing from the camshaft, the spindle running in bronze bearings and being lubricated from the splash in the crankcase. A set of six-volt, 60-ampere hour accumulators forms the current supply with a set of six dry cells as reserve.

A conical, leather-faced aluminum clutch is employed as the first step in the transmission of the power, the leverage of the clutch pedal being compounded so as to render its disengagement easy. It is interconnected with two automatic brakes, which bring the clutch to a stop and facilitate gear-changing without possibility of clashing. The gear set provides four forward speeds and reverse, the direct drive being on the third with the reverse idle on all the forward speeds. Shifting is on the selective plan, a movement of the lever to the right or left picking up one of the shifting levers and automatically locking the remainder. Both the pinions and their shafts are of chrome-nickel steel, the latter being supported on imported ball bearings of the non-adjustable type and the whole running in oil. The housing is of cast aluminum supported by four integral arms carried on the pressed steel sub-frame. A universal is interposed between the gear set and clutch, while two more universal joints are embodied in the cardan shaft; all are automatically lubricated and thoroughly protected from water, dust and dirt.

The rear axle is of the floating type fitted with adjustable Timken roller bearings throughout, the taper of the latter taking care of the side thrusts of the gears as well as the weight of the load.

The driving shafts are one and one-half inches in diameter and are squared at the differential end, thus permitting of their withdrawal without removing the axle, and also making the gears and bearings accessible. The inner Timken bearings take all the side thrust of the bevels and provision is made for the adjustment of the latter by small plates lo-

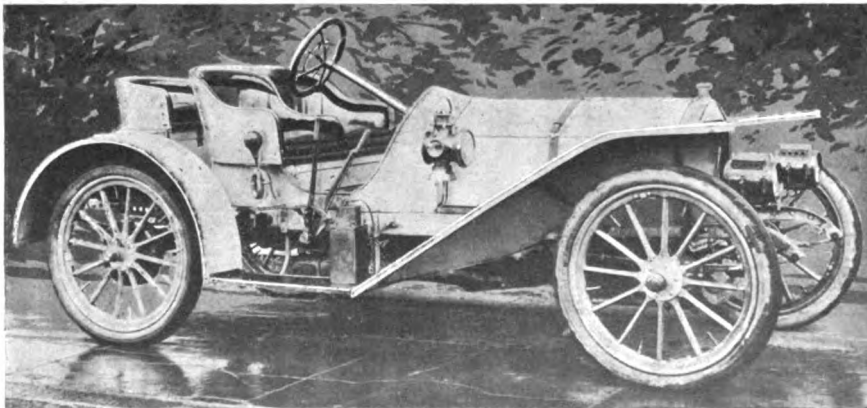
cated in the housing, made accessible by the removal of a single bolt. The axle is trussed under center of differential housing.

The front axle is one-piece forging of chrome nickel-steel, the steering knuckles being fitted with roller bearings. The frame is of the standard channel section, pressed steel type, carried on 41 by 2 1-4 inch semi-elliptic springs forward, direct connected in front and suspended by plates at the rear, and on a three-point platform spring suspension at the rear; the springs are clipped at the third leaf, each leaf having aligning flanges. The running gear consists of 34-inch wheels, fitted with quick detachable rims to take any standard American tires, the front being 34 by 4 and the rear 34 by 4 1-2.

A double set of internal expanding and external contracting brakes housed in drums on the rear wheel provide for this important essential. The steering gear is of the screw type with ball bearing cone to take up lost motion. The steering gear is mounted on one of the I-beam arms of the engine case and is suspended by a bearing on the dash. The latter is an aluminum-casting curved at top and sides and is bolted directly to the frame. The wheelbase is 118 inches and the tread 56 inches. The bodies are of wood and are made complete in the home plant. With complete equipment, the Model I lists at \$3,250. The chassis of the Model J is identical, but the motor is equipped with a magneto, having two separate ignition systems, even to the plugs. The body has an unusually large tonneau fitted with two comfortable extra folding and revolving seats, and the car has, in addition to its ordinary equipment, a lined cape top, with side curtains, and a folding glass front. It lists at \$3,750. The Model 4-40 runabout is built on the same chassis as the foregoing with a three-speed gear set, has 108-inch wheelbase and carries a magneto as regular equipment. The weight is about 2,400 pounds, and the selling price is \$3,000. Model 6-30 runabout is a special 40-horsepower six-cylinder roadster having smaller cylinders. The

wheelbase is 104 inches and it is lighter throughout. It carries a magneto as regular equipment and lists at \$2,750.

Thus, ranging up from a 20-horsepower four-cylinder car to a 40-horsepower touring automobile, the York Motor Car Company obtains five models, with which they can appeal to a wide range of present and prospective users.



SIX-CYLINDER 30-HORSEPOWER PULLMAN RUNABOUT.

IN THE MAKING OF A STEAM CAR.

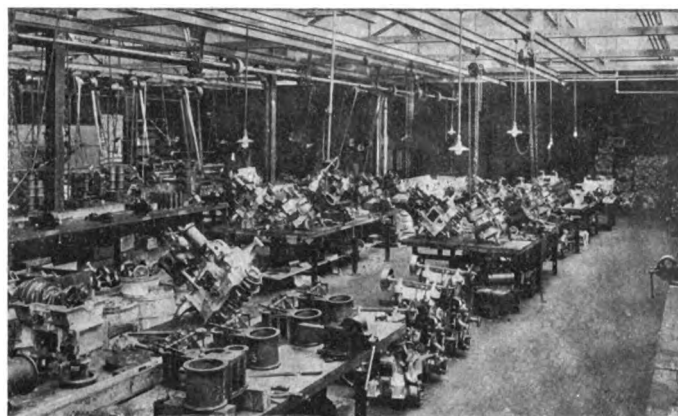
With 35 years' experience in the manufacture of machinery on a large scale back of it, as a foundation upon which to build, the White Company would naturally be expected to embody in the construction of its new plant at Cleveland, O., the result of that knowledge gained through a long period of apprenticeship such as few other automobile manufacturers have had the advantage of. That the opportunity thus afforded has been fully availed of goes without saying; unhampered by any restrictions whatever, free play has been granted the architect, engineer and factory expert, to co-operate in the production of a plant that should lack no detail which could possibly contribute to the efficiency of production or the welfare of the operatives. The most modern ideals have been followed and the buildings are not only of single-story, fireproof construction with that most effective method of light distribution—the saw-tooth roof, but they are laid out according to a well-defined unit system with an eye toward facilitating present intercommunication and future expansion without disturbing the plant's well thought out symmetry as a whole.

Efficiency in production consists not only in having up-to-date machinery with skilled operatives to handle it, but involves as one of its chief factors what may be termed speed of progression. In every modern factory, the product advances step by step, though the various operations are carried on simultaneously and the finished product of each department is never mingled with that of another until it reaches the assembling room. But many parts must necessarily progress through various departments and it is the facility with which the raw material can be brought in and the parts in process transferred from one department to the next that has a very important bearing on the plant's capacity as a whole. In this respect, the White factory is certainly unique. Each building has a basement of its own length and 60 feet wide beneath it with which communication is had by means of electric elevators large enough to accommodate a loaded truck. In these basements, raw material is stored as well as parts, that, for some reason or other, must progress in advance of the requirements of the next department. The bodies of the White cars, which are built from beginning to end in the home plant, are an example of this, as they require eight weeks for their completion, while the plant has a capacity of ten finished cars a day, so that the body-building department's chief requirement is storage room. But one of the most decided novelties in factory construction designed solely with a view to facilitating intercommunication to the utmost, is a dividing corridor running the length of the buildings which branch from it on either side. This great artery is 600 feet long by 30 feet wide—the dimensions of a pretty fair-sized factory in itself, but it is used solely as an avenue of communication between the various departments. Its floor is of smooth concrete for the entrance of loaded trucks which may go directly into any of the departments, or from which heavy pieces may be lifted by an overhead traveling crane. Steel, concrete and glass form the chief materials of construction, wood being employed for flooring to a limited extent and for window frames, so that the buildings are considered fireproof to an extent where the company carries its own insurance risk.

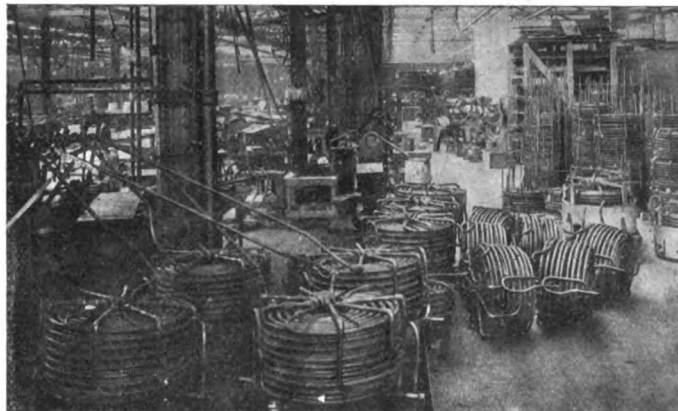
So much for the buildings themselves. With the six-story administration building of imposing proportions and the independent power plant, they constitute a group covering an impressive amount of ground as well as representing an investment that strikingly illustrates the faith of their owners in the permanence of the automobile. But it is naturally the machinery and the methods of handling the cars to be in the process of construction, that are of the greatest interest. At present the power-plant consists of a 750-horsepower Erie, compound engine, direct-connected to a 500-kilowatt direct-current generator, and a pair of 300-horsepower boilers fed by automatic stokers, coal from the railway cars being dumped directly into the storage bins. Space



WELL-LIGHTED ROOM WHERE THE WHITE CARS ARE ASSEMBLED.



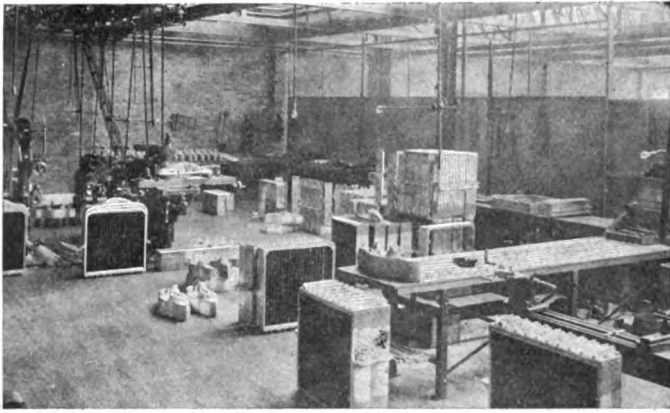
ENGINE ASSEMBLING ROOM EQUIPPED WITH TRAVELING HOISTS.



WHERE THE GENERATORS ARE ASSEMBLED AND TESTED OUT.



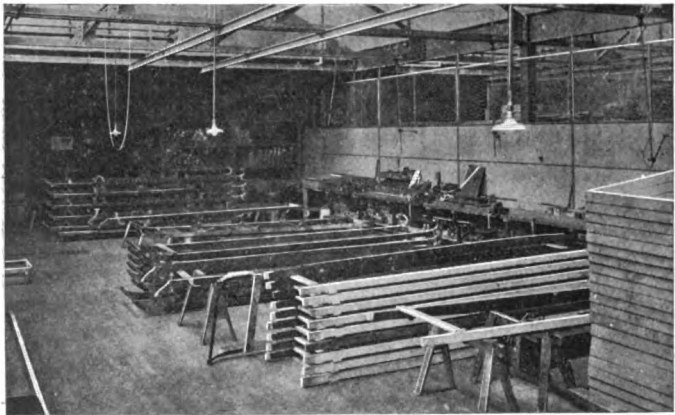
LINES OF IMPROVED MACHINES THAT HANDLE SMALL PARTS.



CONDENSERS ARE ASSEMBLED IN THIS DEPARTMENT.



SPACIOUS ROOM WHERE THE TANKS ARE MANUFACTURED.



WHERE THE REINFORCED WOOD FRAMES ARE PUT TOGETHER.



ONE OF THE BASEMENTS WHERE THE BODIES ARE STORED.

has been provided for two additional power units of the same size and another set of boilers of the same capacity. Electric motors are used throughout for driving, being directly coupled in the case of small machines, and placed in the center of each section of line shafting for driving groups of machines. This shafting is symmetrically arranged throughout the plant and so fixed that it can be removed or shifted in a few hours, this also being true of the corrugated sheet metal partitions of the various departments, to permit of rearrangement consequent upon growth, so that remodeling of the plant to suit changing needs can be accomplished as often as the latter become manifest. The overhead steel work is utilized for trackage for small hoists, as illustrated by their use in the engine assembling department. The saw-tooth roof construction renders artificial lighting unnecessary in any part of the plant, except the basement, during the day, a liberal provision of group and single incandescent lights being made for night work. Each department has its own locker room, every possible provision being made for the employé's welfare.

Given unlimited space and abundant light, the next requisite is the machine tool equipment, and it is needless to add that not alone the most modern, but the most accurate and time-saving machines thus far produced have been installed. Every detail contributing toward rapid and accurate production has been carefully studied out with the result that each machine is a law unto itself. For example, the double milling machine which faces the engine cases, once set for this particular duty, will probably cut an entire season's supply before altering its adjustment. Then there is the multiple spindle drill which bores eight holes in the rear axle housing at one operation, the specially devised machine for cutting the burner slots and a multitude of others, each of which performs a special task. One of the most important departments is the hardening room, in which there are three furnaces heated by natural gas. Here the steel, bronze and aluminum entering into the make-up of the White car undergo special treatment. After passing through the various departments producing the finished parts, the visitor comes to the assembling room which typifies the whole establishment. There are exactly so many parts and exactly so many cars to be made from them; each operation is done in the same way and on the same part of the assembling floor, and, having progressed to the end of this, the cars go to the testing rack, where the power output at the rear wheels is measured by a dynamo and rheostat in the shape of a bank of lamps. They are then taken in hand by the road testers and on the completion of this important operation are fitted with bodies, which marks the close of their factory careers.

VALUE OF THE AUTO TO THE FARMER.

Just what the farmer can accomplish with the aid of the automobile has been shown by an enterprising individual who was an autoist before he was a farmer. H. E. Hesseler, a hardware merchant, resident in Syracuse, N. Y., recently came into possession of a farm located in the neighborhood of Cazenovia, and he has found that his Franklin car is an immense help in farming operations. He can carry a crew of laborers out the five-mile trip in the morning without starting over early or wasting any time; can pull loaded hay wagons, horse rakes and hay tedders in a manner to make the most up-to-date farmer open his eyes in wonder. If anything has been forgotten or is needed in a hurry, it is only a matter of a short time to go in and be back with it from the village. As an instance of the auto's value on the farm, it may be said that the crop of hay from 75 acres was harvested in a few days and at a rate hardly conceivable by the old-timers.

Endurance runs are frequently pretty strenuous affairs in this country owing to the abominable nature of the roads, but what must they be in Germany, where, in spite of the fact that no difficulties are encountered on this score, one must be able to emit *Zuverlässigkeitsfahrt* every time he wants to refer to the performance? The Teutonic tongue is certainly strenuous.

Fashion's Autoing Fads Up-to-Date

By LAURA R. SEIPLE.

EDICTS from the oracles that dominate the automobile sartorial world set forth so many fascinating styles in coats and accessories that it is difficult to choose any one model that is "smartest." During the last few months it was evident that designers of apparel for use with the motor car were striving to give the enthusiast diversified models so that each and every woman shall be attractively and becomingly attired when she automobiling goes. There are, if possible, more stunning garments for the pastime than ever before. New materials have been introduced by enterprising manufacturers, and designers have supplied a wide range of charming models from which to choose. In fact, everything points more nearly to perfection in the way of comfortable clothing than ever before. With these facts staring us in the face and high prices for correct habiliment a consequential condition, it is the marked simplicity that is in noticeable contrast with the more bizarre fashions of a year ago.

Automobiling in the first cool days of Autumn promptly suggest change of raiment for heavier materials. Between seasons furs and fur-lined garments are uncomfortable, even on coolest nights, and this is the time attention should be turned toward clothing of proper weight, which mistake far too many persons make in the effort to economize on the seeming unnecessary extra expense of a "between-season" coat. Another between-season

is coming, if they would only think of it, and the styles are now so well crystallized that it is possible to make a light or medium weight garment do service two or even three seasons if the style be excellent in the beginning. The essential factor is to patronize a reputable outfitter at the start; the price may be a trifle higher than that asked by the man who does not make a specialty of certain lines of goods, but the satisfaction received more than pays for the few extra dollars spent with the dealer who knows his business.

The capital coat for automobiling is shown in one of the accompanying illustrations. Fashioned of brown and tan plaid homespun, the model is as well cut as it is practical. Biscuit-colored leather decorates the collar and cuffs, giving



enough tone to the tout ensemble to make it radically smart. Nothing could be jauntier than the little French felt "college" hat accompanying it, with its matching brown and tan plaid scarf. These hats are vastly becoming and well liked by the young contingent of automobilists. They may be tied as snugly over the head as desired without injury, and when the veil is removed the shape resumes its original lines or may be bent to suit individual taste.

With the general acceptance of the closed motor for going to and from evening functions, the automobile cloak de luxe is in order. A stunning one in rich dahlia-red rubberized

silk is exquisitely embroidered with self-colored soutache braid and heavy silk threads. The sleeves are joined with narrow bands of hand embroidery and the collar, cuffs and cunning little cravat ends adorning the front are wonderful examples of needlecraft as it is being exploited in Paris. A short time ago the idea of lace or fancy needlework of any description on automobile toggery was unheard of, but with the growth of garish fashions in all classes of dress there is no telling where elaboration will cease.

Other coats of the same material are found in a large range of lovely colors, including all the new shades brought out this season, among which are Caledonia green, Laurier green, copper, pomino (old rose), elephant gray, dove gray, purple and kindred ecclesiastical tones that are fast gaining precedence over all other fancy shades. Some of these floral hues are as rich as the natural petals from which their colorings were borrowed. Another note that is an innovation of the season is the touch of foreign color added to nearly all outer garments. For instance, one of the recently unboxed cloaks now on exhibition at a fashionable outfitter's is in elephant gray Skibo serge, with touches of burnt orange velvet introduced in the collar and cuffs. The effect is strikingly pretty and so out of the ordinary that it places the garment in a class by itself.

One of the cleverest models in leather is in Caledonia green Scandinavian leather, lined with Burgundy colored silk. The length is three-quarters and the front and back are cut in a solid panel effect,



COAT OF SCOTCH TWEED



FOR THE THEATER VIA AUTO.

forming the yoke, which narrows a trifle as it descends towards the bottom of the garment. The sleeves are made with deep cuffs, to be worn turned back to form three-quarter length sleeves, or turned down to wrist length. Bands of leather and leather-covered buttons decorate the front, the high rolling collar is finished with leather frogs, and may be worn in storm effect, turned half way down, or in cape fashion, as preferred. A coat of this character is a good investment for the woman who uses her automobile for all purposes. The lovely shade of green is universally becoming and the model is dressy enough for almost any occasion.

Quite wonderful is a great coat of Irish frieze, lined with fur and outwardly decorated with stitching and strapping, a huge roll collar and deep cuffs of opossum fur in the same soft tones of the cloth. There is a strap around the waist that can be so adjusted as to completely transform the appearance of the coat, making it a tight-fitting model. The coat, as a whole, is an altogether invaluable possession for auto-mobiling. Another charming cloak for warmth and one that is not weighty is made of cheviot-tweed in tobacco brown, with indistinct tracings of dark red threads. The body of this comfortable garment hangs in ample folds from a broad yoke, which relieves all possible crushing of the gown, also the absence of heavy dragging at the knees when the wearer is seated, which is a sad fault with so many long garments.

In the realm of millinery for auto-mobiling there was never such diversity in styles and never such becoming shapes in small hats as the present season has brought with it. For long journeys there is a nobby little capotelette with slightly "tammed" crown, upturned brim at the back and sides and visor effect in front, which may be worn either up or down, according to individual fancy. Another popular shape is the cavalier, in soft felt. Over either model veils can be perfectly arranged, and both models are generally becoming. A chic little hat in Kentong silk, that heavy Japanese weave resembling old-fashioned poplin, is in the natural dust shade. The crown is full, being shirred, as it is, to the flexible brim, which is decidedly peaked in front to break the wind. A curtain and shield protecting the back of the head and ears is held in place by elastic bands covered with shirrings of silk. The principal advantage of Kentong silk is that rain and dust have little or no effect upon it.

When it comes to the automobile veil, which comprises, these days, the useful ones for riding and driving in more ways than in automobiles, there is wide choice. The washable silk mousselines of chiffon finish with crinkled or satin striped borders, which come in all colors and from two to five yards in length, are perhaps the most practical. Besides these, there are some wonderfully attractive ones in chiffon with more elaborate borders and others covered with velvet dots both in self tones and contrasting colors. Automobile veils with shirred ring and divided at the back are a wise choice for actual automobile service. A capital veil that is creating a sensation just now is in white silk mousseline shirred on a long spring that may be adjusted to any style hat. The face has mica inserted over the eyes and a mouthpiece of Oriental lace. An inexpensive veil that is liked by many women and bids fair to become a popular favorite, is in white

and pastel shades of single mesh veiling, with graduated size chenille dots sprinkled over the entire surface. This is sold by the yard, as is also a new double width maline decorated with small chenille dots. The long chiffon scarf has lost none of its former favor. Very lovely ones are being imported from the other side gorgeously decorated with gay flowers and rich Persian patterns. These are liked by women who prefer goggles to a veil when they are pressed into service mainly for the purpose of holding the hat in place. For evening wear the bizarre scarf is much in demand. The illustration on page 403, showing evening coat with hood arrangement, is fashioned of a long scarf formed in two little knots at either side of the forehead to give fullness over the hair, the back is caught with a long veil pin and the ends tied in a fetching bow at one side. This arrangement is a splendid one for going to the theatre; it covers the hair without disarranging it and offers ample protection in coldest weather.

Among the accessories there are some wonderfully practical items that have recently made their appearance. A black silk petticoat lined throughout with chamois skin is a capital idea, carried out by an enterprising manufacturer of automobile apparel. A chamois lined waistcoat is another practical garment being exploited; besides this, there is a very sensible shield or chest protector, with high collar, offering absolute warmth to the throat. These garments may be worn under various light-weight wraps with every comfort. Cloth leggings and high-topped boots are essential features in the well-ordered automobile wardrobe. They come in Scandinavian leather, suede and velvet, with fur trimmings; also finished simply with straps and stitching.

Long gloves that reach the elbow are fleece-lined and trimmed at the tops with otter fur. These are advised both for long and short sleeved coats, when they afford protection to the arms in either case, being worn, as they are, under the sleeve of wraps with wrist-length cuffs and meeting the lower edge of three-quarter lengths shown in evening wraps. The automobile glove par excellence is the white doe-skin gauntlet, while chamois-skin gloves of various lengths follow close seconds. Big buttons that are easily fastened are noticed on smartest light gloves, while on others the inserted elastic across the wrist proves most satisfactory to the wearer.

Of masks there are many and varied forms. The photograph showing face mask represents one of the most approved styles. The shape is so designed that the entire face is protected; an extra piece inserted over the nose leaves ample opening for breathing and the goggles are framed with chenille to make them rest comfortably against the face. The same style mask also comes with extra ear muffs, which will prove a boon in very cold weather. Silk and leather are equally liked for this shield, though the former is perhaps most desirable, since it is more porous than leather yet of sufficient thickness to thoroughly protect the skin from cutting winds and dust.

A knitted woolen jersey for women automobilists is among the latest fall productions. It is made perfectly plain and without a belt, and extends below the waist line. It has a becoming wide collar, to turn down, that may be fastened at will about the throat, and the cuffs are shaped and turned back. This garment makes a very cozy wrap under a large coat.



CALEDONIA GREEN LEATHER COAT.
Courtesy of Scandinavian Fur and Leather Company.

CLUB NEWS FROM THE COUNTRY OVER

UNIVERSAL LIGHTS ADVOCATED IN NEW JERSEY.

NEWARK, N. J., Sept. 16.—Secretary H. A. Bonnell, of the New Jersey Automobile and Motor Club, which now has a membership of 850, has sent a letter to each member urging them to work in unison for the enactment of a universal lights law, and increase the membership of the club, so that it will still have greater influence in defeating the passage of unjust laws aimed at automobilists. At present drivers of horse-drawn vehicles are not compelled to carry lights at night, with the result that very few do. The absence of lights has resulted in some bad accidents since automobiles became numerous and there have been many narrow escapes, in which the bright rays from acetylene lamps were all that enabled motorists to avoid running into horse-drawn vehicles that were either in the middle of the road or on the wrong side of it altogether. Another reason why the Newark club wishes to add to its membership list is the fact that the Automobile Club of Buffalo is making a strong canvass for members with the plan of becoming the second largest automobile club in the country, and Newark aspires to that honor.

There is some talk of the New Jersey Automobile and Motor Club holding races at the Waverley track on election day, November 5, but as yet nothing has been officially decided upon.

CHICAGO CLUB TO TEST SPEEDOMETERS.

CHICAGO, Sept. 16.—During the course of the coming Chicago automobile show in December next manufacturers of speedometers will be given an opportunity to put their instruments through their paces. The show is to be held during the week of November 30 to December 7, and arrangements were completed by the Chicago Motor Club at its meeting last week for the holding of a contest of this kind. At least twenty different makers of speedometers are expected to enter the trials, which will be the first of their kind in the annals of Western automobiling, if not in this country. The tests will consist of freak runs, speed matches and the like, besides a number of stunts calculated to thoroughly test the abilities of the little instruments in doing their duty under adverse conditions. The club also announced its intention of holding a stag affair for visiting autoists and tradesmen during the week of the show.

CALIFORNIA FORMS STATE ASSOCIATION.

OAKLAND, CAL., Sept. 13.—California now boasts a State automobile association affiliated with the American Automobile Association, and through the medium of the latter will be kept in touch with automobile organizations all over the country. The new association was recently incorporated, some of the moving spirits being such prominent California autoists as L. P. Lowe, Samuel G. Buckbee, Charles C. Moore, Herbert E. Law, E. R. Dimond, R. B. Hale, J. A. Britton and Oscar A. Cooper. The dues will be nominal, not exceeding \$5 for the first year, this sum consisting of \$2 for initiation and \$3 for the annual dues. It is confidently anticipated that the association will have a long membership roll in the near future, as its objects in upholding the interests of the sport appeal to all autoists.

ALBANY CLUB POSTPONES ITS ROAD RACE.

ALBANY, N. Y., Sept. 16.—Owing to its inability to complete proper arrangements for the holding of its proposed 100-mile road race this month, the Albany Automobile Club, at a meeting held a few nights ago, decided to postpone the race until October. It is planned to hold the race on a circuit of roads south of Albany and the original plans called for holding it in September, but it was found impossible to do so.

ALABAMA CLUB TO BUILD PALATIAL CLUBHOUSE.

BIRMINGHAM, ALA., Sept. 16.—Interest in automobiling in this city as represented by the Birmingham Automobile Club is growing apace. An informal meeting was held in the office of R. S. Munger a few nights ago for the purpose of discussing automobiling prospects throughout the south in general, and in this city in particular, during the course of which it was announced that 21 life memberships had been enrolled at \$1,000 each and that the required number of 30 would be made up within a short time. With the sum of \$30,000 thus collected work will immediately be undertaken on the construction of the clubhouse to be erected on the Mount Pinson road. The building will be a commodious establishment, fitted up with every modern facility, and will doubtless do a great deal to aid in fostering the activity now shown by the club in maintaining the enforcement of the law governing speeding, as well as advancing the interest of the automobilist in many other ways.

LOUISVILLE CLUB TO PROMOTE RACE MEET.

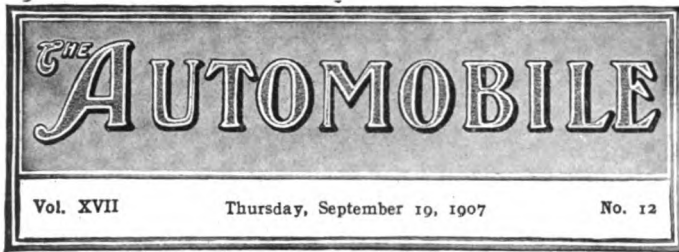
LOUISVILLE, KY., Sept. 16.—At a meeting of the Louisville Automobile Club a few days ago it was decided to have an automobile parade and hold a race meet on "Louisville Day," September 18, at the Kentucky State Fair. The arrangements were placed in the hands of a special committee appointed by President G. H. Wilson. The parade will be for the purpose of showing the extent of the automobile activities of the club to the rest of the inhabitants and will be participated in by all the members. It will pass through the principal streets of the city and will disband at the Jockey Club, where the race meet will be held. An appropriation was made for prizes and all the expenses will be borne by the club treasury. The committee on parade management is composed of Eugene Strauss, chairman; Charles Chreste, J. F. Ross, Dr. H. E. Tuley and Louis H. Wymond, while the racing committee consists of Dr. J. W. Clark, chairman; Albert Reutlinger, H. Moore, J. B. Newman and Charles Mengel.

KANSAS CLUB ELIMINATES SOCIAL FEATURE.

WICHITA, KAN., Sept. 14.—Forty autoists gathered in the parlors of the Commercial Club last night for the purpose of forming an automobile organization. It was at first proposed to organize a body on social lines, but the proposition was voted down. W. B. Throckmorton was elected temporary chairman and appointed a committee of five on permanent organization, consisting of F. A. Amsden, Thomas Arnold, Horace Williams, Scott E. Winne and Dr. Wilson. The committee decided that the name of the new organization should be the Wichita Motor League. A board of governors consisting of nine members was then elected as follows: W. B. Throckmorton, George Walker, F. A. Amsden, Scott E. Winne, S. W. Hess, C. L. Davidson, Thomas Arnold, Coler Sim and R. L. Millison.

ATLANTA CLUB IS FLOURISHING.

ATLANTA, GA., Sept. 16.—For the first time since its organization about three months ago the Atlanta Automobile and Good Roads Association held a regular meeting, which took place one evening last week at the Piedmont hotel. Matters of general interest to autoists were discussed, as well as those of purely local importance, and the meeting was voted a great success. The club now has almost 100 members on its roster and the number is constantly being increased. Its officers are: F. L. Seeley, president; J. P. Stevens and E. H. Inman, vice-presidents; W. P. Andrews, secretary; Asa G. Candler, Jr., treasurer. A clubhouse, centrally located, will be the next thing considered.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
LOUIS R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00

To subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Iliffe & Sons, Limited, 20, Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.
The Automobile is a consolidation of The Automobile (monthly) and the
Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October,
1903, and the Automobile Magazines (monthly), July, 1907.

Copies printed in 1905, - - - - -	730,000
" " in 1906, - - - - -	791,000
" " This Issue - - - - -	17,000
" " Since January 1, - - - - -	621,650

Moderate-Power Cars Com- From producing ridiculously un-
ing into Their Own. derpowered and overweighted ma-

chines that could scarcely drag themselves up the easiest of grades, manufacturers have gone as far as possible toward the opposite extreme. Naturally, there has been a demand for such cars, or they would not have come into existence: the number of 50 to 60 horsepower cars now in use amply proves this. When first taken up, the plan of providing a certain percentage of excess power was found valuable to enable the car to take ordinary hills without changing gear and to pull itself out of bad places without assistance. Twenty-horsepower was thought to represent a figure sufficient for all ordinary uses, so making 30-horsepower about a standard provided a liberal factor of safety in this respect.

But then there arose a demand for a car that could take extraordinary hills on the direct drive, as the result of which a sort of modern road locomotive has been developed. It is quite as evident that such cars can never represent the ideal machine for the average autoist as that steam yachts are not for the average man. Casual observation would seem to show the day of the moderate car—both in power and price—to be further off than ever, for the majority of makers are devoting attention to the production of larger and more costly cars—six-cylinder types, in short. While this is quite true, it is equally apparent that with few exceptions these six-cylindered cars are, in the great majority of instances,

mere bids for the rising tide of popular favor shown this type. Not one maker in twenty will rely for the bulk of his business on high-priced models alone during the coming season, and to a large extent this was true during the past year. "Oh, yes, we are building a number of those *large* cars, but our principal demand is for the lighter model," was a frequent answer by the maker regarding this season's output, usually meaning a 30-35-horsepower car as compared with one of 50-horsepower or over. A 20-24-horsepower car can go anywhere and do practically anything that one of twice its size is capable of, without carrying around a superfluous ton of weight to use up gasoline and tires. Both the autoist and the manufacturers are coming to recognize this, so the day of the moderate car may be said to have dawned.



Depreciation of the Pres- If there be any one quality for
ent Day Automobile. which the automobile has been

maligned more than any other, when regarded in the light of an investment, it is its factor of depreciation. That a car but a season old should command scarcely more than fifty per cent. of its original selling price would seem to place it almost in a class by itself in this respect, and, indeed, such was the case in its earlier days when the value of a car dropped to about the same extent as does a piece of millinery of the year before in the face of a radical change in style. The actual mechanical depreciation in these old cars was seldom proportionate to the great tumble in their market value, as witness the number of them still in active service. The exceptions consisted of those cases in which cars had simply been done to death by careless and reckless owners who rendered them fit for nothing but the scrap heap.

To a certain extent, the same holds good to-day; there are still autoists who ruin their cars in a fraction of the time they would last with reasonable care, but the general increase in knowledge, and far more than this, the vast improvements that have been brought about, principally in the materials employed, has made such cases rare. The modern automobile does not depreciate to anything like the extent that is true of a piece of machinery of any other class, and of the same value.

That some of the best-known cars apparently are still offered second hand at ridiculously low prices would seem to support the belief that things have not changed in this respect. This is far from being the case, as an investigation of the majority of these wonderful bargains reveals the fact that most of the subjects are only fit for the scrap heap or are very much out of date. Instead of 50 per cent., 20 to 25 per cent. is now a more usual drop, except where the reduction is due to the circumstances of the seller rather than the condition of the car, and it is now uncommon to find two or three-year-old cars in good condition selling at half their original prices.

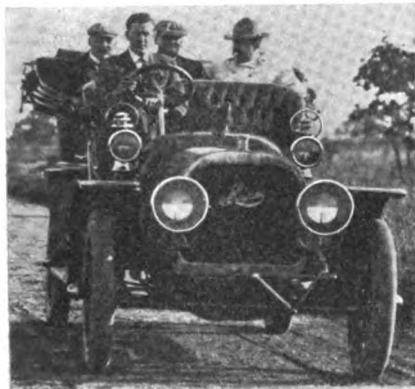


A Lesson in Preparedness If forewarned is forearmed, cer-
from the Other Side. tainly early preparation for any

event, whether it be an automobile race or contest or any field of human activity whatever, is a certain guarantee of success. French automobilists, who have never been guilty of arranging their competitions with that haste which some authority has declared to be of the devil, have surpassed themselves this year. Instead of drawing up the 1908 programme during the last days of December, the Racing Board of the national club has announced the conditions and date of its only event for next year almost before the echoes of the previous race have died away. Now the A. C. F. Contest Committee, concerning itself with the more utilitarian aspect of the industry, issues its programme for 1908 before autumnal leaves have begun to fall. Thus the main lines of touring and racing in 1908 are laid down months in advance, with an advantage to the manufacturer, the dealer and the general public which needs no elaboration. There is a lesson here the learning of which by the proper bodies would benefit the American automobile industry considerably.

NO STOCK CAR RACE FOR LONG ISLAND.

There will not be any road race on Long Island this October for stock touring cars. At the meeting of the Board of Supervisors of Nassau County, held Monday afternoon, the application of the Metropolitan Automobile Association for a grant of the roads, October 16 and 17, was not presented. The exact reason



THREE WHO WANTED THE RACE.

Deputy Foster, Sheriff Gildersleeve, and Mr. Krug, of Krug's Corners, assisted in picking out a route in Nassau County.

may never be known, but it is probable that a combination of circumstances figure in the situation. T. F. Moore, president of the disappointed organization, insinuates that the promoters of the Long Island Motor Parkway had something to do with the change of opinion on the part of the supervisors; others assert that these same supervisors had not been convinced of the stability of the Metropolitan Automobile Association and its ability to conduct such an event in a satisfactory manner and protect the county from damage suits, etc. At any rate, there will not be a race, and naturally there is disappointment among those who advocated the holding of a contest, though some of these admit that the time was short to prepare properly for a successful race.

Sheriff Gildersleeve and Under Sheriff Foster, in conjunction with Mr. Krug, of Krug's Corners, lent considerable assistance to the Metropolitan Automobile Association in its preliminary efforts. Supervisors Cox, Christ and Painter first said that it would be impossible to secure sufficient oil to put the roads in proper shape for the contest. But this excuse didn't hold water any better than oil would mix with it, and the reason must be searched for in other quarters.

GOOD ROADS AND GOOD LAWS CONVENTION.

Representatives of the automobile clubs of New England, as well as from clubs in New York, New Jersey and Pennsylvania, will assemble at Springfield, Mass., September 24 and 25, on which dates, under the auspices of the Automobile Club of Springfield, there will be a good roads and good laws convention. A notable array of good roads talent is assured, including the highway commissioners of most of the States, and the director of the Division of Roads of the Department of Agriculture at Washington. Of course, Robert P. Hooper, chairman of the Good Roads Board of the American Automobile Association, will be present, and accompanying him will be Highway Commissioner Joseph W. Hunter of Pennsylvania, and his deputy, R. D. Bremen. Commissioners MacDonald of Connecticut, Sergeant of Maine, and Edwards of Rhode Island are other State highway officers who will participate in the good roads session September 24.

In the afternoon good laws will be the subject discussed, and it is hoped that either President William H. Hotchkiss, of the A. A. A., or Charles Thaddeus Terry, of its Legislative Board, will present the views of the national automobile body on federal registration. In the evening will come the banquet at Cooley's Hotel, and it is promised that the speechmaking will be brief and entertaining rather than long and instructive.

Wednesday will be devoted to unfinished subjects and embrace an auto tour of Springfield and vicinity. The club expects that the affair will be the first annual of the kind, to be held each year in that city, and duplicated in other parts of the country.

NEW HOME FOR PIERCE IN NEW YORK CITY.

Pierce Great Arrow has secured a new and more elaborate New York establishment, quitting the homestead at Broadway and Fifty-ninth street for a handsome dwelling at 233-237 West Fifty-fourth street, between the Automobile Club of America and Broadway. Salesroom and executive offices occupy the first floor; the second floor is for chauffeurs and sundry stock; the third is given over to minor repairs, fitting of tires and bodies, and at the top is one of the most complete repair shops in existence, with tools and appliances necessary for the most extensive work. With the 60-foot frontage and four floors, the Harolds Motor Car Company believe they will have all the space necessary for present needs of the Pierce. General Manager Robert D. Garden has with him R. W. Slusser and R. D. Willard as salesmen. The sale and repair of Pierce machines only will be undertaken in the new premises, no cars being taken in storage.

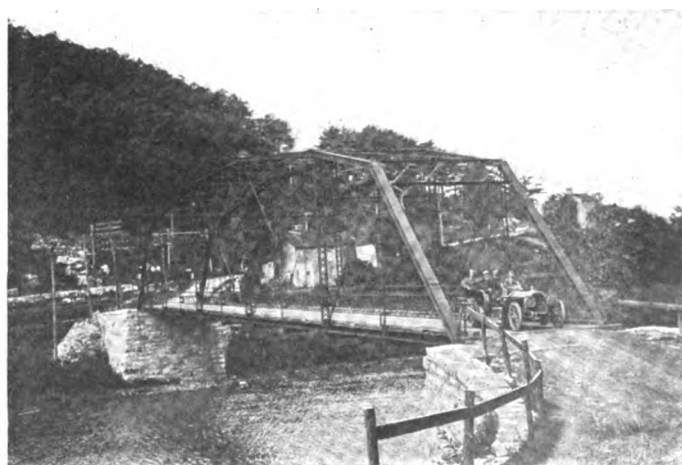
JENKINS MOTOR CAR CO., OF ROCHESTER, N. Y.

ROCHESTER, N. Y., Sept. 16.—The Jenkins Motor Car Company have filed papers of incorporation with the County Clerk. The incorporators are J. W. Jenkins, Lewis H. Whitbeck, George W. Todd, Alexander M. Lindsay, Jr., and Ira M. Ludington. The company, which is capitalized at \$100,000, will manufacture high-grade automobiles of from 40 to 45 horsepower, which will be known as Jenkins cars. The company is building a plant on University avenue, near Culver road, two stories in height, and will contain about 20,000 square feet of floor space. Additional buildings are to be constructed from time to time on the two acres of ground which the company owns. About seventy-five workmen will be employed at the start. The election of officers will take place in a few days.

THE FLIGHT OF THE PEERLESS SIX.

CLEVELAND, O., Sept. 16.—Following the flight of the new six-cylinder car from Cleveland, on a demonstrating trip through the East, most enthusiastic reports have been received at the factory over the interest displayed in all the cities through which this car passed. E. H. Parkhurst, vice-president of the Peerless Motor Car Company, accompanied the party as far as Boston. He returned to the factory Thursday, and expressed great satisfaction with the showing made by the new car on this trying run.

The route selected by the party was over the roads made famous by the Glidden tour of this season. No effort was made for any remarkable speed, the trip being made purely as a pleasure and demonstrating trip. Interesting statistics are now being compiled regarding the showing made by the new six-cylinder car, which will be ready for publication on the return of the car to the factory. C. H. Burman is driving the car.



PEERLESS "SIX" CROSSING BRIDGE AT LIGONIER, PA.

BOSTON DEALERS ARE OPTIMISTIC AS TO TRADE CONDITIONS

BOSTON, Sept. 16.—More or less of a hue and cry has been raised in some sections of the country about so-called "depression" in the automobile trade, the sacrificing of cars by their owners, who have been pinched in the money market, and other things which would lead the outsider to believe that because four or five manufacturers are temporarily embarrassed the whole automobile industry is in a bad way. Now, Boston people have been hit as hard as anybody by the current state of the stock market, for they are large holders of copper stocks, and the raiding of these securities has been felt here very widely. But as for depression in the automobile trade, it is not apparent in Boston; in fact, the local trade is decidedly optimistic and looking forward to a busy season with the 1908 models.

As usually happens between the end of the selling season and the arrival of the new models, there is in progress a considerable rearrangement. Agencies for cars that have not been successful are being dropped or changed, while new agencies are being placed, and there is a kind of between-seasons uneasiness. But the dealers who have well-trying cars to sell and who have fixed up their plans for 1908 are all pretty busy, and those who have had the trial cars of the new product in town are kept on the jump following up customers, who appear to be as plentiful as ever. What is more to the point, leading dealers state that their outstanding accounts with old customers are less than usual, and new customers are buying more extras for their cars than ever before, indicating that they are not obliged to curtail.

It is not improbable that many owners will run their this year's cars another season, but that is not on account of financial stringency. It is merely a sign that the cars have become so perfected that the owners of good machines see no reason to change for a new model and they take pride in keeping their present cars going for another season. They do not fear the depreciation in their cars that has caused them to change in the past, as soon as the new models were on the market.

One of the most successful dealers in Boston is Alvan T. Fuller, who handles the Packard and the Cadillac. He has secured an increased number of cars for 1908 and is decidedly optimistic for the new season. He says: "Neither last year nor

this have we noticed what has been called depression. Already we have sold 117 Packard 1908 cars, and not only have we obtained the regular prices, but our customers have ordered more in extras than ever before. Recently we took an order from a Fall River man for three cars, costing him \$16,000. Another recent order was from a lady, who bought two cars costing her over \$10,000."

F. A. Hinchcliffe, manager of the Winton branch in Boston, has already had many inquiries about the new Six-Teen-Six, and he expects a good demand for these cars. He says: "We have noticed no falling off. People are not so crazy to ride all the time as they used to be, but they are coming to regard the automobile as a necessary means of transportation. If curtailment is necessary, automobilists will curtail in other directions before they sell their cars. We have not heard of any Boston people selling their cars at a sacrifice because of so-called hard times."

The New England situation is well sized up by John L. Snow of the Peerless branch, who has just made a trip through New England, visiting agents. He is satisfied with the outlook and believes that there will be a larger demand for real high-grade machines than ever before in this territory. "People are learning," he says, "that it is not profitable to buy a cheap car of unknown merits and they are now demanding first-class machines. This may result in trouble for some of the manufacturers and agents who have been getting their experience in automobile building and selling at the expense of the public." President J. H. MacAlman of the Boston Automobile Dealers' Association and manager of the Columbia branch sees good prospects ahead and says he has as many orders as usual for this season.

The above are merely examples of the expressions of opinion by the Boston dealers. Here and there one is to be found who is pessimistic, but he is usually more troubled about the other fellow's chances than about his own. New Englanders as a rule do not buy cars until they feel pretty certain that they can afford to own and maintain them. When they have made up their minds on that point it takes more than the manipulation of the stock market to scare them out of it, all of which is a tribute to the stern Puritan characteristics that predominate.

NEW MANAGER FOR WAYNE COMPANY.

DETROIT, MICH., Sept. 16.—At the directors' meeting of the Wayne Automobile Company, held last week, C. R. Wilson and B. F. Everitt, of the Wilson Body Company, were elected to the directorate of the company. This change was brought about largely through the death of Roger J. Sullivan, formerly an active member of the firm. Officers were then elected, as follows: President and general manager, B. F. Everitt; chairman of the board and secretary-treasurer, Charles L. Palms; vice-president, J. B. Book; consulting engineer, William Kelley.

Mr. Everitt is known to almost every man in the trade, and is well liked and highly competent. Mr. Palms has been unable to give the Wayne company the time it deserved because of his duties in the management of the vast millions of the Palms estate, of which he is the administrator. Mr. Palms retains the same financial interest he has always held in the Wayne company, and will devote all the time he can to the general work of the company.

New agencies that will handle the "Wayne Thirty" have been closed as follows: A. L. Stanfield, Edgar, Ill.; J. L. Mott Company, Trenton, N. J.; T. S. Everitt Land Co., Redfield, S. D.

Savannah, Ga.—The Wilson Auto Company has opened a new garage at 349 Bull street. M. Ed Wilson heads the concern, which will take the agency for several lines of cars.

ANNUAL MEETING OF ROYAL MOTOR CLUB.

CLEVELAND, O., Sept. 16.—At the annual meeting of the stockholders of the Royal Motor Car Company, held September 10, the old board of directors was increased by the election of George H. Worthington, president of the Cleveland Stone Company, and F. L. Alcott, vice-president of the Diamond Portland Cement Company, the old members re-elected being Daniel Shurmer, E. D. Shurmer, S. F. Haserot, H. A. Kelley, K. F. Gill, W. J. Gawne, E. S. Reese, K. V. Painter and T. F. Newman.

At the meeting of the board following the stockholders' meeting, the following officers were elected for the ensuing year: President, E. D. Shurmer; vice-president, Daniel Shurmer; chairman, S. F. Haserot; secretary and treasurer, A. D. Hatfield; engineer, Robert Jardine. The company has just completed moving into its new plant.

A CORRECTION AS TO APPERSON PRICES.

In the issue of THE AUTOMOBILE of September 5, the price of the Apperson Model M, 30-35-horsepower car, was erroneously stated in the firm's announcement on page 66 as \$2,500. It should have read \$2,750. A similar error was made in the price of the 50-55-horsepower touring car which should have been \$4,200 instead of \$4,000.

Last Act in Europe's

1907 Race Program

CAGNO, ON ITALIA, SPEEDING TO VICTORY IN EUROPE'S CLOSING RACE OF THE SEASON.

BRESCIA, ITALY, Sept. 7.—Europe's big racing program for 1908 has been brought to an end, so far as events of the first water are concerned, by a double Italian victory in the Brescia meet. Minoia, piloting an Isotta Fraschini 294.2 miles at an average of 64.7 miles an hour, was victorious under the German Emperor rules limiting cylinder area to eight liters; under Grand Prix conditions limiting fuel supply to one gallon per 9.59 miles, Cagno on an Itala took first place over the same circuit with an average of 65.3 miles an hour.

Brescia being too small to lodge all the interested spectators gathered together from all points of Europe, those unable to find a bed curled themselves up in their cars, if they possessed them, in railroad carriages, or in any other place that offered the little protection needed from the mild night air. The electric lights around the grandstands and the little patronized betting booths gave way to the sun, record crowds flocked to the track, the animated buzz of conversation was hushed as the crack of a pistol rang out, and Ceirano opened the game by driving off on his S. P. A. at 5:30 o'clock. Demogeot followed on Darracq, the others starting at intervals of 30 seconds with perfect regularity until Fitz Earle, on a Benz, closed the list of 34 competitors from four different countries.

Demogeot was first to finish the initial round of 37.7 miles, followed by Trucco's Isotta Fraschini, Ceirano's S. P. A., Durlacher's Wolsit, Viton's Rochet Schneider, Cagno's Itala, and Minoia's Isotta Fraschini. The fastest time on this first round was made by Minoia's Isotta Fraschini at an average speed of 67.1 miles an hour. The second round was slightly faster.

At the end of the second round Minoia's Isotta Fraschini was still leading, with Vincenzo Florio's Darracq, driven by Airoldi, a good second; the others in order being: Cagno on an Itala, Viton on a Rochet Schneider, Hemery on a Benz, and Demogeot on a Darracq. Several accidents occurred during the third round. Hieronymus, who drove in a daredevil manner, broke his nose through a collision with another machine; Durlacher, the driver of the Wolsit, dropped off the railroad bridge and had to be carried to the hospital; Hemery's mechanic fell from the Benz near the grandstand, rolled over several times, but was not seriously hurt.

At the end of the fourth round, half time, Minoia's Isotta Fraschini was first, a Rochet Schneider second, Demogeot's Darracq third, Hanriot on a Benz fourth, Darracq fifth, and Isotta Fraschini sixth.

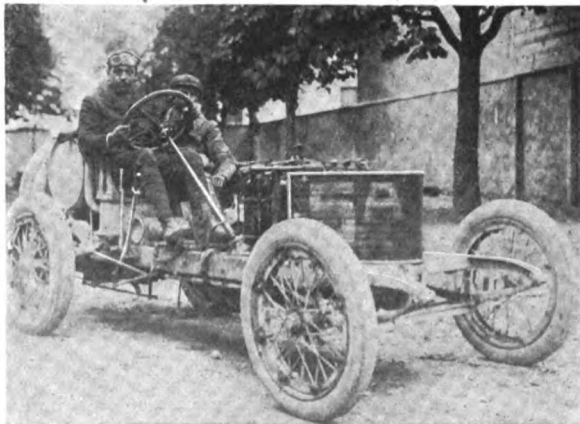
Out of thirty-four starters, only eighteen remained on the course. All news came in from outside during the fifth round. The steering gear of Baron de Martino's Züst broke when traveling at high speed, killing the unfortunate driver on the spot.

Although Minoia lost a little of his speed during the last two rounds, he was never seriously menaced for first position, his lead at the end of the 302 miles being ten minutes over Hemery's Benz and nearly eighteen minutes over Hanriot's machine from the same factory. About a year ago Isotta Fraschini was bought by Lorraine-Dietrich, the Italian car which won the race being identical with the Dietrich from Luneville, with the exception of the radiator and the hub caps. On these grounds the French claim the victory as theirs. Michelin, who equipped the winner with rims and tires, has a performance to be proud of, the Isotta Fraschini starting and finishing the last race with the same set of tires. Second, third, fourth, fifth and sixth machines were also shod by Michelin and fitted with his dismountables.

Although France provided two of her best drivers for the second and third arrivals, the first position taken by an out-and-out French production was fifth place by a Rochet Schneider. Sixth place also went to Rochet Schneider and Darracq took seventh and eighth positions. Itala was unfortunate throughout. Henry Fournier went out on the first round. Cagno disappeared on the second round, and Fabry joined him on the fourth round. Bianchi might have done better had not Hieronymus collided with the firm's best driver.

Twenty shaft-driven and fourteen chain-driven machines started in the race. The proportions in which chain and cardan finished was 58 per cent. for the former and 30 per cent. for the latter. Military not being obtainable to guard the course, volunteers performed the service in a manner that gave entire satisfaction. Although there was a record crowd the track was never invaded at any time. Last year the Brescia meet had to be abandoned owing to the refusal of the Minister of War to give aid.

The same starting point, the same crowd, the same enthusiasm, and again an Italian victory. For the second day of the Brescia meet Grand Prix conditions had to be observed, seven of the machines being those which had actually taken part in the big race on the Dieppe circuit last July. Cagno, unfortunate the previous day, came out victor at the end of this 302-mile race by driving his Itala car for 4:37:36 in pouring rain at an average speed of 65.3 miles an hour. There were



DEMOGEOT, WITH GRAND PRIX DARRACQ, CAME SECOND.

fourteen starters, half of them French and half of them Italian. The French had the enormous advantage of all having run in the Grand Prix; the Italians, including the Itala on which Cagno secured his victory, were all being tried out for the first time.

It is a severe blow to the French industry that in only one speed contest this year has she been victorious. All along the line Italy has won in such a convincing manner that it is impossible for the most patriotic supporter of the "national industry" to deny the importance of the success. Michelin equipped the winner with anti-skid tires—the heavy rain made the use of the steel studded band imperative—and, as on the previous day, supplied one set which held up from the beginning of the first to the end of the eighth round. That two cars should each cover over 300 miles at an average speed of more than 64 and 65 miles an hour without a moment's tire trouble is a wonderful performance. Demogeot, who came second on a Darracq, three minutes behind the winner, had four Dunlops which started and finished the race.

Cagno's compatriots were not fortunate, all of them dropping out of the race—most of them on account of mechanical defects—before half time. Two French machines failed to finish. Duray, driving a Lorraine Dietrich, skidded seriously on one of the turns, when leading by five minutes, and damaged his steering

gear. After a hurried repair he set out again, led the Itala at the end of the fifth round, and appeared a certain winner when his car took fire and he had to abandon. E. Fitz Shepard, on a Payard-Clement, was second, three minutes behind Duray, at the end of the fourth round, when his course was brought to an end by the car jumping over the Montichiari bridge. Six machines were left to finish, their order being Itala (Cagno), Darracq (Demogeot), Dietrich (Rougier), Dietrich (Gabriel), Bayard-Clement (Alezy), Bayard-Clement (Garcet). In addition to winning the race, Cagno made the fastest round, at an average speed of 71.9 miles an hour. In the French Grand Prix Wagner made an average of nearly 75 miles an hour for one round, driving a Fiat.

THE SPEED TROPHY.

Grand Prix Rules.

Itala, Cagno.....4:37:36
(Average 65.3 miles per hour.)
Darracq, Demogeot4:40:43
Dietrich, Rougier4:45:31
Dietrich, Gabriel4:50:35
Bayard-Clement, Alezy...4:53:58
Bayard-Clement, Garcet.4:59:22
Those which failed to finish included Dietrich, Diatto A. Clement S. P. A. (3), Itala (2), Bayard-Clement.

FLORIO CUP.

German Emperor Rules.

Isotta Fraschini, Minola.4:39:53
(Average 64.7 miles an hour.)
Benz, Hemery4:49:49
Benz, Hanriot4:57:47
Isotta Fraschini, Trucco.5:06:56
Rochet Schneider, Vitton.5:06:55
Rochet Schneider, Thieu-
lin5:07:25
Darracq, Demogeot5:10:43
Also finished: Darracq, Bianchi, Benz, Gaggenau, Junior, Woisit.

PROGRAM COMPLETE FOR FRENCH 1908 CONTESTS

PARIS, Sept. 9.—Meeting for the first time after the Coupe de la Presse, the Competition Committee of the Automobile Club of France has drawn up its program for 1908. Next April there will be an industrial vehicle competition, and in August the Coupe de la Presse will be run again on exactly the same basis as this year. It depends on the attitude of the government whether the preliminary touring event, forming a part of the Press Cup contest, will be over open roads or not. Should permission be refused the tour will have to be held on a guarded circuit. Body dimensions, weight limits and amount of fuel per 100 kilometers will remain unchanged. These two events will be the only utility contests organized directly by the A. C. F. The Racing Board having given full particulars of date and

conditions of the Grand Prix, the only event it will undertake, manufacturers are able to lay their plans for next season's public performances with assurance.

On the proposition of the Marquis de Dion the Commission has decided to consider the question of a permanent closed circuit in some mountainous district. Conditions required are about 25 miles round, several 10 per cent. grades not less than a kilometer in length, wide and well-made roads. The permanent circuit will not be in any sense an autodrome; twenty-five miles of good road in the Alps, the Vosges, or the Cevennes would answer the purpose. This project is independent of the one under consideration by the Racing Board, the requirements of that body being something in the nature of the Dieppe circuit.

LOZIER LINE TO INCLUDE A SIX-CYLINDER.

For the past twelve months the builders of the Lozier have been planning the addition of a six-cylinder car to their line for 1908, and it has finally been decided to add a 50-horsepower, shaft-driven car of this type to the Lozier family for the coming season. It will be known as Type I and will be practically the same as the new Lozier recently described in detail in THE AUTOMOBILE. The only exception will be found in the motor, which will consist of six cylinders cast in pairs, their dimensions being 4 5-8 inch bore by 5 1-2 stroke. Under the recently adopted A. L. A. M. formula, which the Lozier company has been one of the first to adopt officially for all their ratings, the output of the new six is slightly over 50 horsepower, and it has been given this designation. Under previous ratings it would have been called a "60," and it will have a speed of something like 70 miles an hour.

The motor will have a ball-bearing crankshaft, double ignition system, using a Bosch magneto, and set of accumulators, as well as all the other distinguishing features of the Lozier motors of the four-cylinder type. The wheelbase is 131 inches and the radiator is placed directly over the front axle. With touring car body and equipment the new six cylinder will list at \$6,000, the other members of the line being a 40-horsepower four-cylinder, chain drive, and a 45-horsepower, four-cylinder, shaft drive.

The recently organized B. & H. Motor Company, 147-151 West Forty-ninth street, New York City, has been admitted to membership in the New York Automobile Trade Association.

DETAILS OF THE RAINIER FOR 1908.

In announcing the specifications of the new Rainier for 1908, the builders call attention to the fact that its construction will be characterized by an entire lack of castings in places where the latter have usually been employed, such as for brake drums, differential housings and the like, lighter and stronger die-forgings of steel being used instead. Other features of note are the greatly simplified and improved low-tension ignition system using a Bosch magneto; the multiple disk clutch with cork inserts and a new and original type of automatic carbureter with air control on the dash. The gear-set provides four speeds forward, working on the selective plan of operation with the direct drive on the third, the shafts of the gear-set as well as the differential and wheels, all being mounted on F. & S. non-adjustable ball-bearings. The main motor bearings are of white babbitt enclosed in bronze cases. The rear-axle unit is the same as on previous models but has been considerably strengthened and provided with a double torsion rod, while the propeller shaft brake has been done away with, both sets of brakes now being of the internal expanding type and are located in hubs on the rear wheels, the latter now being 36 inches in diameter, shod with 4-inch tires front and 4 1-2-inch rear. The motor dimensions are 5 by 5 1-4 inches bore and stroke and the rating is 45-50 horsepower, lubrication being by means of a McCord force-feed oiler, gear-driven. A compression release is fitted to facilitate starting. The general appearance of the car remains the same, a seven-passenger aluminum body being fitted; the weight, all on, is 2,800 pounds.



TRUCK PREPARED FOR THE START ON ITS LONG TRIP.

MITCHELL MOTOR TRUCK'S LONG TRIP.

A Mitchell motor truck is now engaged upon a trip from Chicago to New York, carrying a load of 3,000 pounds of freight. The trip is made wholly for the purpose of determining the reliability of the truck under such a strenuous program, and the economy of operation. The schedule does not call for an average of over 80 miles per day.

The motor truck is of the regular one-ton pattern, and the large overload of 50 per cent. above the regular rating is carried to prove that the efficiency of the rating is not exaggerated. Careful account will be kept of the amount of gasoline and lubricating oil used during the trip, and the result is confidently expected to demonstrate the practicability and the economy of this method of transportation. It is not expected that the truck will equal a railway train in the time consumed between terminal points, but it is believed that it will demonstrate that a load of merchandise may be hauled within a practicable time limit and at a minimum of cost.

The route to be followed lies along the lines of the Lake Shore and New York Central, and stops are scheduled at such cities as Toledo, Cleveland, Erie, Buffalo, Rochester, Syracuse, Utica, Albany and Poughkeepsie.

VYING WITH THE SIDE SHOW AT RURAL FAIRS.

At the Michigan State Fair a friction-driven Cartercar took a turn with the freaks in amusing the crowd of spectators, and while it was doing its stunt the pink lemonade, the South Sea Islanders, the snake charmer and all the other weird attractions, each with its barker howling his very loudest, had to take a back seat. Even the "gap of death," the "death defying demonstration of absolute desperation" and more to the same effect from the human megaphone and the posters had to fade by comparison with the man who did tricks with the automobile, for this was something new.



PANORAMIC SCENE AT MICHIGAN STATE FAIR, WHERE THE CARTERCAR SEEMED TO BE THE POPULAR FEATURE.



NEW HOME OF THE JONES SPEEDOMETER IN NEW YORK.

ANOTHER ADDITION TO AUTOMOBILE ROW.

New York's long and constantly increasing line of automobilizing establishments that are daily going up further north along Broadway received a notable addition with the recent formal opening of the Jones Speedometer building at the corner of Seventy-sixth street and Broadway, in which ceremony the newspaper scribes duly assisted by punishing the buffet luncheon. The photograph illustrates the façade of the building, facing on Seventy-sixth street, as well as the end giving on Broadway, and it will be noted that the walls are largely composed of glass, while the building as a whole presents a pleasing exterior.

CORBIN BUSY ON NON-STOP DEMONSTRATION.

At 6 P. M. on Monday, September 9, a Model 8 24-horsepower air-cooled Corbin motor was cranked up at the Corbin Motor Vehicle Corporation's showrooms, 1892 Broadway, and left to run under public gaze. A week later, at 1 A. M., on Monday, the 16th, the car was run out of the garage with orders to reach Boston. Before going, however, its high gear was sealed in by E. V. Stratton, of the New York Automobile Trade Association.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

Work is being rushed on the new plant of the Chadwick Engineering Works, at Pottstown, Pa., and the company expects to have same in operation by November 1.

The Jackson Automobile Co., Jackson, Mich., has purchased the plant of the Jackson Vehicle Co., that city, and will use the buildings as a factory. The property has an assessed value of \$115,000.

Walter Christie's circular track record of the mile in 52 seconds, made at Minneapolis, September 7, adds another to the list of Diamond wrapped tread tire achievements. All of Christie's racing for the past two years has been on these tires.

Changes have been made in the headquarters of the F. N. Motor Club of America, which will hereafter be located at 2234 Broadway, New York City, instead of at 2208 Broadway. Alfred G. Hanke has been elected treasurer and a director of the club, in place of F. V. Littlefield.

In the recent boulevard straightaway races at Wildwood, N. J., a stock Great Chadwick "Six" covered a mile in 52 seconds, which was a course record for gasoline cars. The Chadwick captured the touring car championship of the meet, and defeated a couple of Stanley steamers and several high-powered runabouts in another event.

King Edward VII of England has just ordered a fine pair of 10-inch Rushmore headlights for his new 60-horsepower English Daimler. The lights, which have just been shipped, are of the plain front type, nickel-plated and very handsomely finished. The Rushmore Dynamo Works has also shipped a pair of 9-inch Rushmore lights for Prince Louis of Battenburg.

The Knox Motor Truck Company, Springfield, Mass., has delivered three Model B 3-ton trucks to the Model Transfer Company, of Hackensack, N. J., and New York City. These trucks are run on regular daily trips between the metropolis and Ridgewood, N. J., for suburban deliveries, covering 50 miles per day, each doing the work of four double teams.

The manufacturing facilities of the B. L. M. Motor Car Company have been greatly increased by the acquisition of a building adjoining its present factory in Brooklyn, N. Y., which gives a total floor space of over 45,000 square feet. In addition, a building 60x100 feet is being erected in the rear of the present building, which will be used for assembling. It has been decided to limit the output of B. L. M. cars for 1908 to 250, despite the fact that the company's agents have already asked for a larger number than this.

The White Company announces that this year White steamers will be exhibited at the show of the Association of Licensed Automobile Manufacturers, to be held in the Madison Square Garden, November 2-9. The White Company, being entirely independent of and indifferent to the Selden patent situation, has always been in a position to go with either the licensed or unlicensed group. For the last two years the White steamers have been exhibited at the unlicensed show, but this year it has decided to exhibit with the licensed cars.

"On the Art of Cutting Metals," by Frederick W. Taylor, M.E., Sc.D., which was

the presidential address presented at the last annual meeting of the American Society of Mechanical Engineers, has been printed and bound in cloth by the society, price \$3.00. This or any other publication of the society may be had by addressing the secretary, 29 West Thirty-ninth street, New York. It is not necessary to send orders through members. None of the publications of the American Society of Mechanical Engineers are copyrighted.

Word has gone out to all of the representatives of the Thomas cars that hereafter cars made by the E. R. Thomas Detroit Company will be known as the Thomas Detroit instead of the Thomas Forty. The change is made, it is explained, primarily for the purpose of avoiding the confusion between the names Thomas Forty and Thomas Flyer that has been apparent during the past year. Both cars are distinctive in design and outline, and are made in separate plants—the Thomas Detroit in a new steel and concrete building in Jefferson avenue, Detroit, and the Flyers at Buffalo. The Detroit Thomas cars are, however, marketed by the E. R. Thomas Motor Company, of Buffalo.

The Aerocar Company, with factory and headquarters at Detroit, having been adjudicated bankrupt by the United States District Court, the Detroit Trust Company was appointed receiver, and on September 10 was unanimously elected trustee in bankruptcy for the concern. Realizing the importance of an early sale, so as to secure to the purchaser the 1908 business, which will soon be under way, the trustee has secured an order to sell the entire plant and property of the Aerocar Company at public auction September 24, either in parcels or in bulk. The inventory and appraisal of the plant amount to approximately \$192,000, and the property consists of land and buildings, conveniently situated on railroad, and full lines of machinery, tools and appliances; a large stock and partly manufactured product and some complete machines; a large amount of automobile parts, patterns, patents and trade marks, and accounts receivable.

RECENT BUSINESS CHANGES.

With a view of securing more convenient and commodious sales quarters, the New York branch of R. M. Owen & Company has leased the property at 1759 Broadway, which was formerly occupied by Smith & Mabley. The Owen Company will move from its present quarters on or before October 1.

The Harry S. Houpt Co., the well-known Eastern representatives of the Thomas line, with headquarters in New York City, has succeeded the Autovehicle Company, of Newark, N. J., as representatives of the Thomas line in New Jersey. The Newark salesrooms will be maintained at the old address, with George T. Cole as resident manager.

President Bailey, of the York Motor Car Company, of York, Pa., has decided that the growth of the company's business in Philadelphia has warranted the establishment of a branch house to succeed the Pullman agency, which has been in existence for about a year at 205 North Broad street. The new deal goes into effect at once, the branch occupying the old agency quarters.

A. M. Spear, Jr., has resigned his position as manager for the business of J. A. Dowling, Portland, Me., and will start for himself in the automobile business in that city. Mr. Spear has leased a salesroom on Exchange Street, has secured the agency for a fine line of cars and expects to be in readiness to receive customers by October 1.

PERSONAL TRADE MENTION.

Frank C. Thomas, for some time press representative of the Cadillac Company and later of the Pope Companies, is to be the automobile editor of the new Boston *Tribune*. An up-to-date department is to be conducted.

John R. Bensley has been appointed manager of the commercial vehicle department of Fairbanks, Morse & Company, Chicago. Mr. Bensley has been identified with the auto trade in Chicago for some years, and brings an extended experience with him.

The Hills Motor Car Company, Royal Tourist agents in Philadelphia, has been strengthening its selling force. Last week it added to its list of salesmen Robert W. Blake, former manager of the Knox branch, and W. C. Middleton, who has been connected with the Titman & Leeds Company, Matheson and Studebaker agents.

NEW TRADE PUBLICATIONS.

A booklet of great typographical beauty, which may rank as one of the most comprehensive publications on the 1907 Glidden Tour, has been issued by R. M. Owen & Company, the general sales agents of the Reo car, whose executive offices are in New York and factory at Lansing, Mich. Among the good features is a series of clear and accurate maps showing the route of the 1907 Glidden Tour, the towns passed through in each of the seven States, and the principal towns covered in the 500-mile official non-stop run of the 16-horsepower Reo No. 33, from New York to the Jamestown Exposition, after finishing the Glidden Tour with a perfect score. The booklet will be interesting to all automobilists, and particularly useful to those who contemplate visiting Jamestown before the close of the summer touring season.

The wording of the title page of the latest Stevens-Duryea publication, "A catalogue of the Stevens-Duryea automobiles, with especial reference to the six-cylinder cars," does not do justice to the work of the compiler and printer. Elegantly bound within stout boards, printed in black and colors on high-grade paper, illustrated with line drawings, half-tones and full-page color prints, the book is far above the ordinary range of trade catalogues. The subject matter, too, is of a nature to interest and instruct all who are interested in automobiles, diagrams and concisely written text telling in a logical manner the story of the Stevens. The usual specifications are given, but do not occupy the major part of the book. A further quarto publication from the Chicopee Falls, Mass., factory deals pictorially with Stevens-Duryea limousines. A series of handsome half-tones are mounted on hand-made paper, given just sufficient text to make them explicit, and bound in a green cover. They form an excellent presentation of the firm's line of elegant limousines.

THE AUTOMOBILE

Auto "Heavy Weights" by the French Army Being Tried

PARIS, Sept. 17.—"Heavy-Weights," as the French designate commercial vehicles, are again playing an important part in the Southwest army maneuvers, and attracting considerably more public interest than ever before. The army possesses its own fleet

of eight vehicles bought after long competitive tests from De Dion Bouton, Mors, Turgan, Darracq-Serpollet, Gillet-Forest, and Delahaye. In addition seventeen firms have responded to the invitation of the army authorities with 32 machines: Berliet furnishing six, Dietrich two, De Dion, Panhard, and Mors two each. The eight machines owned by the government are naturally operated by picked men from the army automobile corps; the machines lent for the maneuvers are driven, as far as possible, by mechanics from the maker's factory, who have thrown off the blue overalls to spend twenty-eight days under the flag. Such an arrangement is pleasing to the men, who naturally prefer a continuance of factory duties—though under military rule—to handling a rifle and performing fatigue duty, insures reasonable care of the vehicle, and gives the best service to the army.

Excepting the Darracq-Serpollet steamers, all the vehicles are operated by internal-combustion motors of the four-cylinder type, engine carried forward, and are fitted with bodies suitable for the transportation of provisions. One Mors has a special tank body for carrying water to distant camps and along with the troops when under marching orders. Dietrich has a six-wheel chain-driven wagon which attracts considerable attention. As indicative of the greater interest now being taken in commercial vehicles in France, it is interesting to note that a large number of engineers from the leading factories are following the troops in order to closely observe the performance of the automobiles.

No better test of automobile transport could be had than these three weeks under military rule. The machines are working in teams: in one are grouped the slower vehicles with metal-shod wheels, carrying three to five-ton loads; several more rapid teams take the lighter loads up to three tons. At 5 o'clock each morning the teams are loaded up, provisions and water are carried out to the troops in the field, and the return journey is made empty. Order of march is the usual military one by convoys at a fixed speed of seven to



ten miles an hour, according to the order of the officer in charge.

This year the service has been performed in a remarkably regular and efficient manner, the automobile convoys being equal to the horse-drawn teams in reliability, with the enormous advantage of greater power and speed. One day

per week each wagon is accorded leave of absence for adjustments or repairs. These latter, however, have been very rare, Purrey's big factory at Bordeaux, placed at the disposal of the army corps, not often being called upon to render help.

One of the minor difficulties in the operation of the wagons is that of speed. Each driver, confident in the ability of his charge, is anxious to push forward at a higher rate of travel than prescribed by the officer in charge. Breakdowns, whenever they have occurred, have been traceable in most cases to the endeavor of the driver to obtain the maximum speed from his motor.

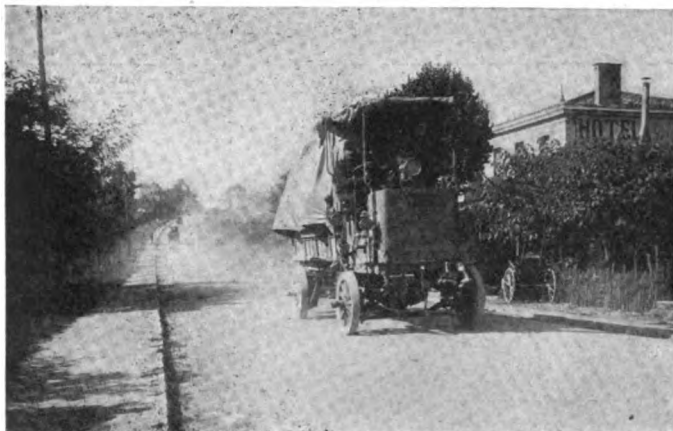
Road surfaces around Bordeaux are good, though hilly, but in following after troops on the march it is not always possible to stick to national highways. Frequent excursions over rough lanes and at times across country provide strenuous tests for men and machines.

Last year automobile vehicles were employed exclusively in transporting drinking water to the army corps engaged in the maneuvers at Langres. The task was not one of the easiest, for the district in which the troops were operating was entirely destitute of water, and every drop had to be carried in the special tanks fitted to the automobiles. During this severe test, where the breakdown of a single vehicle would have caused considerable inconvenience to officers and men, the automobiles gave entire satisfaction, all journeys being made regularly and without accident.

When the southwest maneuvers were being planned, it was decided by the Etat-Major to employ automobiles exclusively for carrying provisions from the army base at Bordeaux to the two corps in the field. The experiment was not a rash decision, for the Army Service Corps had during previous years watched closely the work done by automobiles in army work, and in addition had followed with the closest attention all the commercial vehicle competitions held by the French club. The army itself was but meagerly equipped for this work with a Delahaye, a De Dion Bouton and a Gillet-Forest bought at



UNLOADING PROVISIONS FOR THE TROOPS.



ONE OF SIX BERLIETS IN ARMY SERVICE.



DIETRICH SIX-WHEELER CAN HANDLE BIG LOADS.

the end of the 1906 military competition, and two Darracq-Serpollets, a De Dion Bouton, a Mors and a Turgan obtained at the close of this year's commercial vehicle competition. These eight were handled by military automobilists taken from the first company of artillery workmen. With the 32 wagons of all kinds supplied by private firms, a very important fleet of automobiles for transport service was obtained. An indemnity of about 17 cents per horsepower and per day is paid by the Government for each vehicle. Fuel, oil and grease are provided by the army authorities.

At the commencement of the maneuvers the forty vehicles were divided into two classes. At daybreak of the first day one division set out from Bordeaux loaded with provisions to be delivered at the camps indicated, somewhere within a radius of seventy miles. Traveling in convoy at a speed of from seven to ten miles an hour, the provisions could not be discharged before two or three o'clock in the afternoon. Their mission for the day accomplished, the convoy would reach some town or village about twenty miles nearer Bordeaux, their base, and pass the night there. The next morning an early start would be made for Bordeaux, that city being entered about noon. After the trucks had been loaded up, each one would proceed to the military garage, where the drivers would carefully examine their vehicles in order to be in perfect condition for an early morning start the next day. An officer in charge of this garage had strict orders not to allow any vehicle to leave unless it was apparently in a condition to accomplish its journey.

This two-day program, repeated throughout the grand maneuvers, brought twenty wagonloads of provisions to the fighting line each day. The two divisions were subdivided into classes,

according to the average speed they were able to maintain, and an officer was placed in charge of each of these.

Although a circle of seventy miles was fixed as the limit of action for the automobile wagons, as the troops moved away from their base this distance was frequently increased, some of the vehicles covering 160 miles in one day. On several occasions, too, the roads to be traversed to reach camp were far removed from the standard of *routes nationales*. Nevertheless, the work was done in an excellent manner, the provision wagons undertaking the double duty of carrying back the wounded—more frequently those suffering from minor ailments—on their supposedly empty return journeys. Two only of the forty automobile wagons had to be withdrawn as the result of mechanical troubles before the end of the maneuvers; not a single case of late arrival has been reported, nor have the troops ever been held back because of a slow working Army Service Corps.

Apart from the "Heavy Brigade," reservists called to the regiment have in a score of cases brought their automobile and placed it at the disposal of staff officers for twenty-eight days. Captain Genty, known to the public as De la Touloubre, the racer, transports a number of staff officers from point to point in a Panhard; General Picquart uses a Dietrich, with a Berliet following in attendance; Lieutenant Taffoureau, in charge of one of the convoys, follows his vehicles in a 15-horsepower De Dion, lent for that purpose; Lieutenant Petitet has a 60-horsepower Aries, also loaned, with which it is possible to run up and down the line of march. In addition to "heavy weights" and touring machines, a number of motorcycles are employed, carrying orders from headquarters to distant points. It is quite possible that motorcycle brigades will supplant the existing cycling corps.



WAITING FOR ORDERS—A ROADSIDE SCENE DURING FRENCH SOUTHWEST ARMY MANEUVERS.

Britain's Commercial Vehicle Trials

evening. This has been necessary owing to the wide range of vehicles entered and their consequent varying speed. Eight one-day exhibitions have been arranged at Bristol, Birmingham, Liverpool, Manchester, Leeds, Sheffield, Nottingham and Bedford, thus giving business men of the most prominent towns traversed an opportunity of inspecting and obtaining information concerning the vehicles. The daily runs are sufficiently strenuous to be of some value in demonstrating the relative value of the machines engaged, but the event is probably more of a traveling exhibition than a competition. The routes have been laid out to give participants the greatest amount of exhibition in the shortest time, and in this respect England, with its closely adjoining towns, is an excellent field of operation. Expert salesmen accompany the tour. With entries limited to two per firm for each class, it is a valuable proof of the wide extension of the commercial vehicle in England that such a large number of



COMMERCIALITIES LEAVING CHISWICK ON FIVE WEEKS' EXHIBITION TOUR AND TEST.

LONDON, Sept. 16.—British advocates of commercial motor vehicles have been rewarded for their long wait by a competition and demonstration of such magnitude that good results are bound to accrue to the industry as a whole. A joint committee from the Royal Automobile Club, the Society of Motor Manufacturers and Traders and the Commercial Motor Users' Association drew up the regulations, the carrying out of which are entirely in the hands of the national club. Load carrying capacity has been taken as the basis of classification, seven classes being provided, capable of taking loads from 1,120 pounds to 6 1-2 tons. No attempt is made to group vehicles into mechanical classes, gasoline, steam, and gasoline-electric running together on a commercial basis of load carrying power.

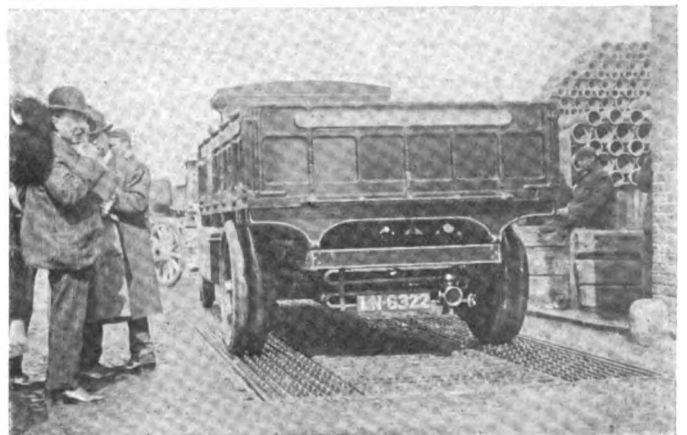
Of the 62 vehicles which entered, no fewer than 56 started from Thorneycroft's yard at Chiswick, near London, on September 8 for their five weeks' tour. With the exception of the 5 1-2-ton class, which only obtained one entrant, who had to be transferred to the higher category, each division was well represented, the three-ton class being the strongest. From Chiswick the run will be along the Thames valley to Reading, then westward to Bristol, northwards to Gloucester, Worcester, Birmingham, Stafford, and Liverpool; the busy manufacturing district through Lancashire and Yorkshire will be traversed in almost every direction and a southward run to London made by a more central route. A feature of the arrangement is that the different classes will take different routes, but will meet at one given point each

competitors should have been obtained. Further, passenger vehicles are barred, thus keeping out a few firms having only 'bus bodies on their chassis. British firms have the largest representation, the list including practically every home factory of importance; France has eleven vehicles sent by Turgan, De Dion Bouton, Unic, Darracq, and Darracq-Serpellet. Germany's representatives are seven Milnes-Daimler vehicles. Italy contributes a couple of Fiat five-ton trucks. With the exception of Darracq-Serpellet, all the foreigners send internal combustion motors. The Britisher's love for steam appears to be losing ground slightly, as internal combustion motors have become more and more perfect. In the 5 1-2-ton class steam and gasoline are numerically equal; for all vehicles carrying a lower load gasoline is unmistakably supreme. The only structural features in which there is marked uniformity among the competing vehicles is in final drive and mode of ignition. Fifty per cent. have double chain drive; seven per cent. employ the cardan, the remainder comprising single chain, worm gear, and internal gears of special types. Low-tension magnetos are employed in the proportion of 45 per cent., high-tension magnetos are used on 28.5 per cent. of the motors, and storage batteries in the proportion of 26.5 per cent. Thirty per cent. have batteries as a standby.

Road regulations call for an average speed varying from twenty to five miles an hour in the different classes. The load carried primarily determines the running schedule, but tires also have their influence. Thus for one class calling for twelve miles



EDITORIAL SANCTUM ON A MILNES-DAIMLER CHASSIS.



TAKING THE WEIGHT OF A THREE-TONNER.

an hour a reduction is made to eight miles when metal shod wheels are used; the five-mile-an-hour class has to furnish twelve miles if soft or elastic material is used in place of metal shod wheels. During the five weeks the fastest vehicles will travel 1,540 miles, being an average of about seventy a day. Those limited by legal restrictions to twelve miles an hour will cover 1,210, 1,100 or 880, according to the load carried. The heavy steamers with trailers attached will cover less than 700 miles, police regulations forbidding them to move faster than five miles an hour. Speeding is forbidden under penalization. An observer appointed by a rival firm is carried on each competing vehicle, with instructions to record all incidents of the road. Arrangements are made by the club for a supply of fuel at all stages along the route. Covered parking stations being impossible at

every point, competitors must carry their own tarpaulins or whatever protection they may consider necessary for open-air storage. In determining awards the judges will take into consideration accessibility, adequacy of platform area and convenience of loading, adhesion (loaded and light), ease of manipulation, finish and workmanship, freedom from nuisance to public, brakes, condition after trial, cost per ton-mile, hill climbing, maneuvering, quiet running, repairs and replacements. One man only is allowed on the vehicles in addition to the observer, except in the case of steamers, where a stoker is allowed. To encourage punctuality a special prize of \$20 is offered to the driver most regular in arriving and leaving control according to his official schedule. At the end of the tour the vehicles will be taken to the large Vanguard Motorbus Company's garage in London.

U. S. GOVERNMENT TESTS ALCOHOL AS FUEL

WASHINGTON, D. C., Sept. 23.—An exhaustive report on tests of internal-combustion engines on alcohol fuel has just been completed for the Department of Agriculture by Prof. C. E. Lucke, of Columbia University, and S. M. Woodward, one of the Department's experts. Recently in this country a widespread interest has developed in the possibilities of alcohol as a fuel. The question of a possible substitute for the petroleum fuels will become of increasing importance as time goes on. The supply of crude oil to be obtained in the United States must ultimately diminish, and the history of the past indicates that a constant increase in price of kerosene and gasoline may reasonably be expected.

The tests made by Prof. Lucke and Mr. Woodward were carried out in New York City, chiefly in the mechanical engineering laboratories of Columbia University, between October 1, 1906, and February 1, 1907. Most of the engines used were loaned by their makers for the purpose of the tests. Each of the eight engines was run on alcohol as well as gasoline or kerosene for which it was designed. The engines used were: 15-horsepower, 2-cylinder, vertical, 4-cycle gasoline engine; 6-horsepower, horizontal, 4-cycle gasoline engine; 6-horsepower, horizontal, 4-cycle gasoline engine; 6-horsepower, vertical, 4-cycle gasoline engine; 6-horsepower, horizontal, 2-cycle kerosene engine; 40-horsepower, 4-cylinder, automobile gasoline engine; 40-horsepower, 4-cylinder automobile gasoline engine; 2-horsepower, vertical, 2-cycle marine gasoline engine. The following general conclusions were drawn as the result of the investigations:

Any gasoline engine of the ordinary types can be run on alcohol fuel without any material change in the construction of the engine. fuel.

The only difficulties likely to be encountered are in starting and in supplying a sufficient quantity of fuel, a quantity which must be considerably greater than the quantity of gasoline required. When an engine is run on alcohol its operation is more noiseless than when run on gasoline, its maximum power is usually materially higher than it is on gasoline, and there is no danger of any injurious hammering with alcohol such as occurs with gasoline.

For automobile air-cooled engines alcohol seems to be especially adapted as a fuel, since the temperature of the engine cylinder may rise much higher before auto-ignition takes place than is possible with gasoline fuel; and if auto-ignition of the alcohol fuel does occur no injurious hammering can result. The consumption of fuel in pounds per brake horsepower, whether the fuel is gasoline or alcohol, depends chiefly upon the load at which the engine is being run and upon the setting of the fuel supply valve. It is easily possible for the fuel consumption per horsepower hour to be increased to double the best value, either by running the engine on a load below its full power or by a poor setting of the fuel supply valve.

These investigations also showed that the fuel consumption was affected by the time of ignition, by the speed, and by the initial compression of the fuel charge. No tests were made to determine the maximum possible change in fuel consumption that could be produced by changing the time of ignition, but when near the best fuel consumption it was shown to be important to have an early ignition. So far as tested the alcohol fuel consumption was better at low than at high speeds. So far as investigated, increasing the initial compression from 70 to 125 pounds produced only a very slight improvement in the consumption of alcohol. It is probable that for any given engine the fuel consumption is also affected by the quantity and temperature of cooling water used and the nature of the cooling system, by the type of ignition apparatus, by the quantity and quality of lubricating oil, by the temperature and humidity of the atmosphere, and by the initial temperature of the

EDGE MAKES COMPARATIVE FUEL TESTS

LONDON, Sept. 16.—With a view to testing the capabilities of British fuel for automobiles, S. F. Edge has been making a number of tests recently under the control of the Royal Automobile Club. The most recent of these was a comparative test of gasoline put on the market under the name "Shell" spirit and benzol. With a 40-horsepower Napier, a couple of 200-mile journeys were made from London to Grantham and back, "Shell" spirit being used on the one trip and benzol on the other. No adjustment or alteration was made to the carbureter for the benzol, though it was of much greater specific gravity than the petrol; obviously, some alteration should have been made to get the best results, but even using it under the adverse conditions the result was excellent.

"Shell" spirit gave 19.96 miles to the gallon, and on benzol the mileage was 19.27 miles to the gallon. The weight of the car with

four passengers being 3,870 pounds, the test showed that for one ton carried on "Shell" spirit the automobile ran 34.48 ton-miles to the gallon and on benzol 33.303 ton-miles to the gallon. The difference between the two results is really negligible, and had the carbureter been adjusted to benzol the car would probably have run further on that fuel than on "Shell" spirit, the best gasoline procurable.

The comparative tabulated results of the two tests, as certified by the Royal Automobile Club, conditions being identical on each occasion, are as follows:

	Gasoline	Benzol
Ton-miles	345.52	345.52
Ton-miles per gallon.....	34.48	33.303
Gallons per ton-mile.....	.0289	.03002

Edge states that he intends later to carry out tests with benzol only, with the carbureter adjusted properly to suit it.

AN AUTO'S ADIRONDACK INVASION.

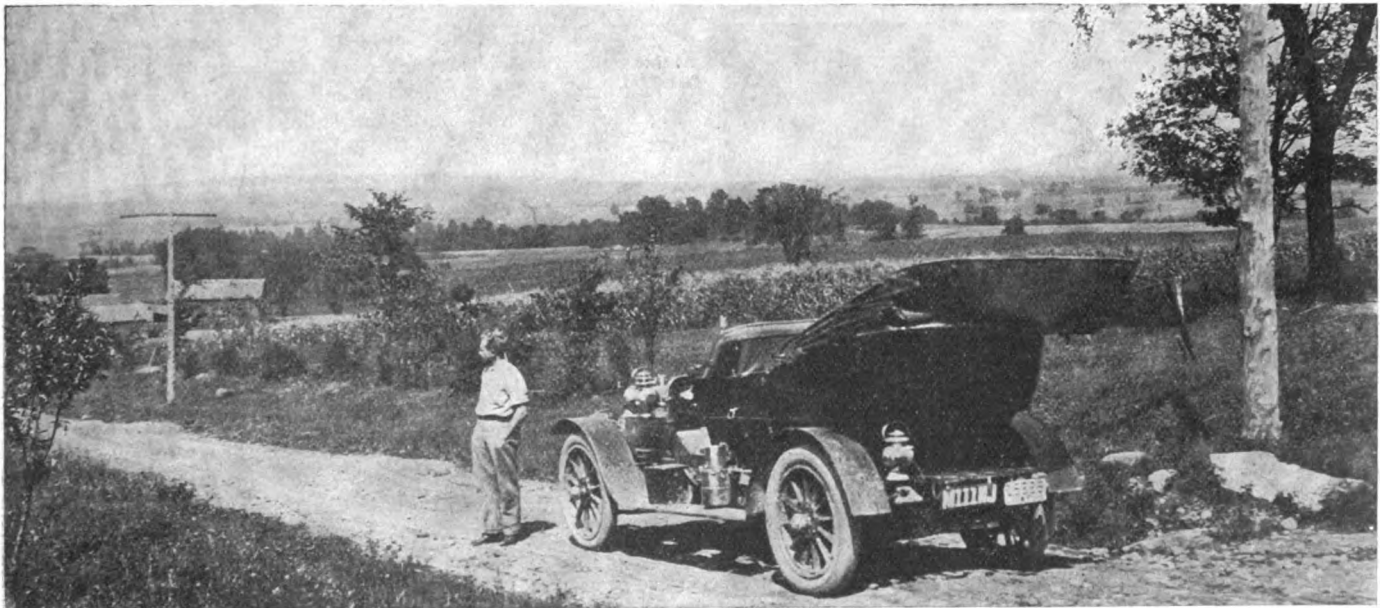
That there are some places where an automobile cannot travel, goes without saying, but that the number of them is constantly being decreased is also a matter of such common knowledge as hardly to call for comment. The members of the Adirondack League Club are fully convinced that the number has been reduced by one at least, and will no longer regard the 1,300-foot climb on the 20 miles of road separating Forreestport from Lake Honnedaga in the Adirondack mountains as an impossibility. Up to a short time ago the members of the club were in the habit of abandoning their cars at Forreestport in favor of the stage coach which carried them the remaining twenty miles of the journey to the camps along the chain of lakes in the club's 100,000 acre reservation. Lake Honnedaga is 2,300 feet above sea level and 1,300 feet above Forreestport, and there were good reasons for doubting the impossibility of making the trip by automobile, for it had been tried before and the fifteen-mile stretch where there is no road at all, had proved too much for even the best intentions.

So thoroughly convinced were the club members that the feat could not be accomplished, that they never expected to see an auto make the trip and were not loath to issue a *defi*, which was promptly accepted by Manager R. D. Garden, of the Harrolds Motor Car Company, and New York representatives of the George N. Pierce Company, of Buffalo, N. Y. Negotiations were concluded through Robert W. Slusser, one of Mr. Garden's salesmen, and a 40-horsepower Pierce-Arrow was sent by boat to Albany and driven over the 120-mile stretch intervening between the capital city and Forreestport. The car was in charge of John Williams—the boyish-looking, quiet little chap who always ornaments the wheel seat of a Pierce every time a car of that make is entered in a competition of any kind in the vicinity of New York, for Williams knows the Pierce from beginning to end; he knows what it can do and, more than that, knows what he can do with it. He is one of those drivers who goes along steadily, minding his own business and without any attempt at grandstand plays along the road for the benefit of a few "rubes" or the discomfiture of the occupants of another car, so that he is always in front at the finish with his car and himself and passengers far cleaner than any other outfit in the competition. His work in the A. A. A. 1,500-mile mud-plugging match last summer was something that came in for considerable comment, so that Mr. Garden was safe in concluding that Williams in a Pierce was a combination that could be relied upon in an emergency.



TOP OF A BAD HILL HALF WAY FROM THE LAKE.

Williams arrived at Forreestport on schedule time, and just to show that a few more or less made no difference, took along some members of the club and Uncle Sam's representative in the person of the mail carrier. Just one hour and thirty-one minutes were required to make the climb, and in their enthusiasm at the successful achievement of the hitherto impossible feat, the club members decorated the car with a sign to the effect that it was the first automobile to enter the region. The return trip was made in 1:12, and then the car was sent back and forth over the route several times to demonstrate that it was not a matter of being able to accomplish it once as a herculean effort, but was easily within the capacity of the car. On each occasion the mail carrier and some of the club members were taken along, though the nature of the going, whether up or down, was hardly such as would entitle the trip to be called "joy-riding." Williams was quite certain that there was nothing in the whole two-week road nightmare of the three A. tour that could hold a candle to the Adirondack climb, and was naturally proud of his achievement in succeeding where others had failed.



ON THE LITTLE FALLS AND NEWPORT ROAD, WHERE THE UNDULATING HILLS PRESENT A PICTURESQUE SCENE TO THE TOURIST.

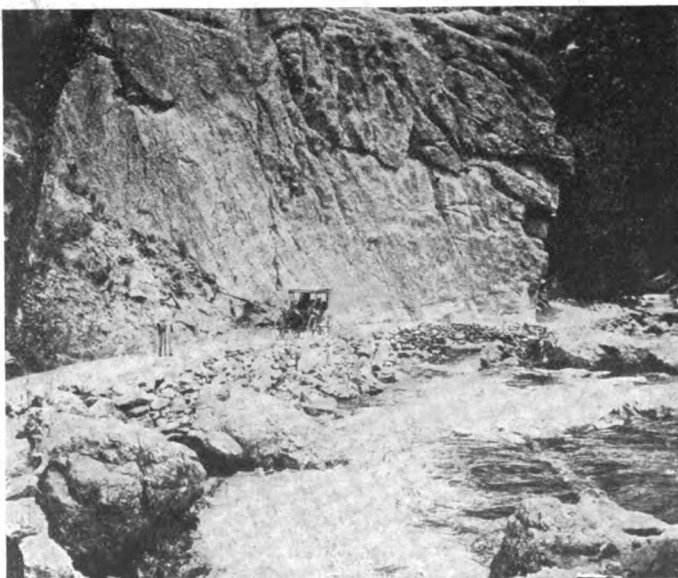


ENROUTE VIA STAGE ROAD FROM ESTES PARK TO LYONS.

A PARTY of four of us started from Colorado Springs for a two weeks' tour of Colorado in a Holsman surrey. We carried a hundred pounds of luggage and some extra supplies and emergency parts. We found that we needed every pound of our luggage, but did not need the parts, as we did not have a single repair on the whole trip. This is quite remarkable, since we encountered some of the worst roads in the State, as well as some of the best.

We spent two days driving about Colorado Springs, visiting the Garden of the Gods, Cheyenne Canyon, Manitou, etc. The roads around Colorado Springs were delightful and the finest we found on the whole trip. One afternoon we drove to Palmer Lake, twenty-five miles, where we stayed over night. There are a great many hills on this road, and as Palmer Lake is 2,000 feet higher than Colorado Springs, there is a considerable climb all the way. Palmer Lake is a beautiful place and we really regretted that we must make our stay there so brief.

The next morning we drove to Denver, about fifty miles down grade and fine roads. After a ride through some of Denver's beautiful parks we started at noon for Boulder, thirty-five miles. There are a good many hills on this trip, but the roads are excellent, except where we were directed over a short cut the latter half of the way. This proved to be a coal road and was



ALONG THE CANYON OF THE BIG THOMPSON RIVER.

full of chuck holes, which made progress slow and riding any-thing but enjoyable.

Boulder, although one of the oldest, is one of the most up-to-date and attractive of Colorado's smaller cities. The State University, the Chautauqua, and the Battle Creek Sanitarium are among the features of interest.

A night and a forenoon in Boulder and then on to Loveland, thirty-four miles, Saturday afternoon. The road to Loveland passes through some of the finest agricultural lands in the country. Almost every crop is grown here in abundance, owing to the fine system of irrigation and the prevalence of sunshine. Sugar beets are raised in such quantities that beet sugar factories are located about fifteen to twenty miles apart throughout this entire part of the State.

Sunday forenoon we drove to Estes Park over the new automobile stage road, thirty-five miles. This was the most enjoyable and the most picturesque ride on our entire trip. The road follows the cañon of the Big Thompson river for about twenty-five miles. The foaming river and the precipitous cliffs lend an enchantment that at times is not unmixed with awe. There are some steep pitches, but the road as a whole is excellent.

Estes Park is one of the newer of the Colorado pleasure resorts, but is fast becoming one of the most popular in the West.



SIGNS THAT ARE FEARFULLY AND WONDERFULLY MADE.

Its altitude of 7,500 and 8,000 feet insures a cool and invigorating atmosphere, and it is not yet blighted by the depressing effects of too much civilization. The park comprises about 8,000 acres of beautiful valleys, surrounded by pine covered mountains and traversed by streams of water that go dashing down to join the "Big Thompson" that forms the outlet of the park. Perpetual snow is in sight on all sides and "Long's Peak," the king of Colorado peaks and the goal of the more hardy and ambitious mountain climbers, is in full view and easily reached from the park. Our stay here was at the "Rustic," a most attractive inn surrounded by rustic cottages, which are for the accommodation of guests of the hotel only. The view from this place is the best in the park and is one of the finest I have ever seen.

After a few days' sojourn in Estes Park we took the return trail to Denver, which ended our tour. This time we took the shortest route out of the park, which is via the stage road to Lyons. But although this route is shorter than the Loveland route, it is so cut up by the stage and the heavy supply wagons that it took us longer to go down than it did to go up the other way. Part of the Lyons route has been improved by a new road and I understand that more extensive improvements are to be made on this line. However, the Loveland route will continue to be preferred by autoists on account of its grander scenery and its freedom from the heavy traffic which is so hard on mountain roads.

HOW THE A. A. A. IS DOING ITS NATIONAL WORK

WHAT the American Automobile Association is accomplishing for the general good of automobiling was made substantially apparent at the quarterly meeting of the Board of Directors, held at national headquarters, No. 437 Fifth avenue, New York City, Thursday, September 18. The reports of the Legislative, Good Roads, and Touring boards told of much progress and of a kind most helpful to members and the pastime and industry as a whole. Preceded by a session of the executive committee, the full board met with the following present:

President, W. H. Hotchkiss, Automobile Club of Buffalo.
 First Vice-President, L. R. Speare, Bay State Automobile Association.
 Treasurer, George E. Farrington, Automobile Club of New Jersey.
 W. K. Vanderbilt, Jr., Automobile Club of America.
 Sidney S. Gorham, Chicago Automobile Club.
 A. G. Batchelder, New York Motor Club.
 Colgate Hoyt, Automobile Club of America.
 Robert P. Hooper, Automobile Club of Germantown.
 Paul C. Wolff, Automobile Club of Pittsburg.
 Stanford L. Haynes, Automobile Club of Springfield, Mass.
 W. H. Chase, Wachusett (Mass.) Automobile Club.
 J. H. Edwards, Automobile Club of Hudson Co., N. J.
 G. A. Post, North Jersey Automobile Club.
 A. R. Pardington, Brooklyn, N. Y.
 Frederick H. Elliott, Secretary.

According to the report of Secretary Elliott, the total membership of the association at the present time is 18,550—made up of 16 State associations comprising 109 clubs, 15 clubs unaffiliated with State associations, and 550 individual members. During the present administration the membership of the association has more than doubled, and the number of affiliated State associations has been trebled. Applications are expected from four recently organized State bodies in the South and West.

Provision was made for a Technical Board to which will be referred all matters of contests of a technical character.

A special committee representative of the various trade interests was appointed to consider the advisability of sanctioning track races in future. This committee, after conferring with the representative national bodies of manufacturers and with the affiliated A. A. A. clubs, will report at the directors' meeting in November. The committee consists of President W. H. Hotchkiss; Jefferson DeMont Thompson, and Ira H. Cobe, of the Racing Board; Charles Clifton, Association of Licensed Automobile Manufacturers; Benjamin Briscoe, American Motor Car Manufacturers' Association; Percy Owen, Importers Automobile Salon.

The directors approved of the position taken by the donor of the Vanderbilt Cup and the Racing Board in deciding to hold no race this year for the cup over public highways unless the course could be properly guarded by troops.

The amendments to the by-laws were adopted, providing for the annual meeting of the Association to be held in November instead of December. The fiscal year was also changed to begin November 1 instead of February 1. There will be quarterly meetings of the Board of Directors hereafter to be held in February, April, September, and November.

The Finance Committee was authorized to audit the annual report of the Treasurer for the current year and to draft a suitable financial policy for the future.

Treasurer Farrington's report showed a balance of \$6,602.14 on hand, with other assets available which will increase the total beyond ten thousand dollars. A budget for the next year, most conservatively outlined from the point of assets, showed how the organization need have no apprehensions as to its financial future. Nevertheless, President Hotchkiss enlarged upon the need of a greater revenue if the association is to accomplish quickly the extensive work that has been drafted out.

The invitation from the Springfield Automobile Club to name delegates to attend the Good Roads and Good Laws convention to be held in Springfield, Mass., September 24-25, was accepted, and the following delegates were named: Wm. H. Hotchkiss, L. R. Speare, A. G. Batchelder, Robert F. Hooper, C. T. Terry and F. H. Elliott.

The directors adopted a resolution which was recommended by the Executive Committee of the Racing Board providing that any club, a member of the A. A. A., which associates itself in any way, wholly or partially, with the promotion of a race meet shall become responsible for the delivery of the prizes as stated on the entry blank, and also for the enforcement of the rules of the Racing Board of the A. A. A.

It is proposed to hold a general convention of the A. A. A. during the touring season next year at some central point, with a program including technical contests, etc., the matter being referred to the Executive Committee.

Exhaustive Report of President Hotchkiss.

Complete and exhaustive was the report of President Hotchkiss, a few extracts of which are herewith given:

Legislative Board.—By far the most important work of the Association is committed to this board, and it is fortunate in having an active executive committee and a most efficient chairman, Mr. Terry. It is perhaps proper to say, however, that it has assisted the legislative committees of several of the State associations in bringing about a better condition of motor legislation in their States during the past year. Its work has, however, but been begun, and its activities from this time on will be devoted chiefly to the passage of the Cocks bill, introduced during the closing days of the last session of Congress, and to be reintroduced at the opening of the 60th Congress in December. The whole country is being circularized and congressmen interviewed in favor of this measure. Further examination of the authorities merely emphasizes the contention that such a bill will be constitutional. Once passed, it will for the non-resident tourist do away with the most grievous provisions in many of the State laws, namely, those requiring multiple registration, licenses, and the like. I bespeak for the legislative board the co-operation of every motorist in the campaign for a federal registration bill which is now beginning. No one measure can do more good for the cause.

Touring Board.—The secretary of the Touring Board has, during the summer, been in receipt daily of inquiries as to roads, maps, hotel charges, and the like, and has, as promptly as possible, responded to the same. During this period, he has gathered together much valuable information, which is now being thoroughly subdivided through a filing system, and will be considerably increased during the fall and winter. This branch of the work of such board is, however, yet in its beginnings; indeed, cannot be made very productive on the limited revenues of the Association. Some of us hope that, when these revenues are what they ought to be, the Association can do for its members what other national bodies do abroad. At the same time, it must never be forgotten that foreign national bodies deal not merely with old countries, having a well developed road system, but with relatively small territories; whereas our road system is just beginning to develop, and our territory is practically continental.

Good Roads Board.—The most difficult task in the association is that committed to this board. Indeed, about all it can do is to co-operate with other bodies interested in the same subject. During the past few months such co-operation has not been behind the scenes, but, in the open; the time having, it is thought, been reached when the motorist can, even to boards of supervisors in agricultural territories, come out emphatically for good roads.

Racing Board.—Much has been said in certain quarters of late as to this board and its so-called inefficiency, particularly with regard to the Vanderbilt Cup race this year. Members of the Association who knew anything of the facts discounted the criticisms. To those who did not the following statement is due.

Every reasonable and proper effort was made to have a Vanderbilt Cup race this fall. The donor of the cup and the chairman of the racing board were determined that the race be not held unless the course was policed by troops, and they were undoubtedly right in their position. Representatives of the Association waited upon the President of the United States and asked him to permit

the use of federal troops. This he seemed entirely willing to do, if within his authority, though the gathering of sufficient troops at a central point like New York City would have been at a very considerable expense to the association. The War Department, however, intimated that our appeal should be made to the State, and the Governor of New York was then urged to promise State troops. This he was unwilling to do. An effort was then made to accomplish the same thing in New Jersey, which failed, through no fault of the active officers of this Association. While suggestions were made that, if the race was held in other States, troops could be furnished, they were either so vague in their character, or the proposed courses were so remote from our motor manufacturing centers, that a successful and well policed race seemed out of the question. Hence, the race was given up for this year.

This action of the racing board, captained by its acting chairman, Mr. Pardington, was, in my judgment, not merely wise, but the only action which could properly be taken, and were the sources of the criticisms and the somewhat questionable methods of the critics not understood by the motoring world, I should feel that such criticisms should be discussed here, and not dismissed with the contempt that they deserve.

Comprehensive Efforts of Legislative Board.

An enormous amount of work is being done by Chairman Charles T. Terry and his Legislative Board, a few details of which are herewith given:

With regard to the Federal Automobile Bill, your committee, with the very efficient co-operation of Mr. Elliott, has had printed one thousand copies of the proposed letter which was embodied in our last report and has sent copies of that letter to all of the State associations and to all the individual members of the three A's appearing upon the books of the association, accompanied by a particular request on the part of the secretary of the three A's that the officers of each State association take immediate action in pursuance of the letter and report back to him what they had done. Already replies have begun to come in showing the widespread interest in the Federal Automobile Bill which this association has in hand. It will be noted that it is stated in the circular letter just referred to that the association will furnish further literature to those who wish to use it, in case they are not willing to prepare further letters of their own to send to congressmen, or in case they do not care to use copies of the letter which was sent to them as above described. In order that the association may have in hand ready for distribution, as occasion may require, a circular containing the chief point of argument in favor of the bill and what points will be likely to induce congressmen to lend their aid, the chairman of the committee has prepared a letter to be addressed to each particular congressman, and sent to him, not only from the office of the three A's, but also by all the people in the respective district of each particular congressman who can be induced to take up the matter, and sign and mail a copy of such letter to their particular representative in the national body.

With regard to the Uniform State Motor Vehicle Law, your committee has redrafted it in the light of a new study of the question, and also, after consideration of all the suggestions which have been received from every source with reference to it. It is suggested that the Board of Directors pass a resolution instructing the Legislative Board to have the proposed draft of a uniform state motor vehicle law printed and distributed by the secretary of the association, accompanied by a letter from the chairman of the Legislative Board, requesting suggestions and criticisms respecting any or all of the provisions of the said proposed uniform state motor vehicle law, or in the alternative approval of it in the form in which it is distributed, so that we can get a wide expression of opinion with reference to the merits or demerits of the proposed act.

If the bill should be approved substantially in the form in which it is now drafted, we recommend that formal action be taken upon it by the Board of Directors of three A's, at its next or some succeeding meeting, and that at that time further instructions be given by the board with reference to efforts to secure the enactment of the bill in the various State legislatures at their ensuing sessions.

Substantial Results of Good Roads Board.

Chairman Robert P. Hooper, of the Good Roads Board, supplied a report which indicates the era of highway improvement which is dawning throughout the country.

The active work of your Good Roads Board has been transferred from the office of the chairman to the subsidiary committees which we have formed in most all the States affiliated with us. I am pleased to state to you that, through the formation of these local committees, we have succeeded in arousing enthusiasm in a number of States, not only for the interest of good roads, but

for the interest of automobiling in general, and have arranged for the formation of State associations in Virginia and in Georgia.

We are arranging now to form a Good Roads Committee in North and South Carolina. The men interested in the formation of these committees are now pushing a movement to build main highways from the seacoast through the States to Atlanta as the center point. If we meet with the success that we have every reason to believe we will, within a very short time, we will have a highway built by the States in conjunction with each other, connecting principal points in North and South Carolina and Georgia, which in itself will give an impetus to automobiling in the South such as it can secure in no other way.

Chairman M. C. Moore, in Wisconsin, reports that through the efforts of his committee they have had a Good Roads Convention in Milwaukee, at the State Fair, at which there were over 2,000 representatives, consisting of road supervisors and others interested in bettering the condition of the roads. They induced W. O. Hotchkiss, chairman of the State Geological Department, to construct a piece of good road on the grounds while the Fair was in session to illustrate to the road supervisors how the work was carried on. Already they have a movement on foot to introduce into their next legislature a liberal bill for State aid.

Frank W. Buffum, chairman of our committee in Missouri, reports that through their efforts an active campaign has begun to build a State highway from St. Louis to Kansas City, and that there is a most absolute certainty that they will be able to accomplish this within the next year, although it will of course take longer than that to build the road.

From Minnesota we have a report from our chairman, G. M. Palmer, that through the efforts of his committee they have aroused an interest in this movement all over the State, and that the farmers are actually joining hands with them in this work. Unfortunately, a large portion of the State is unable to secure the stone for road material, and they have to depend on dirt roads, but they are securing splendid results from the King road drag, and the towns are liberally coming to the front to pay one-half of the expense of working these drags to put the roads in good condition.

I could give reports like this from many States all over the country that would astonish were it possible to embody them in this short sketch of your committee, but I wish to emphasize one thing which is becoming more apparent to me every day, and that is that the farmers all over this country are at last realizing that there is a good side to an automobilist, and that with a very little work on our part we can secure their co-operation. If we can only convince them that we are willing to give our time to this work, with their interest before us as well as our own, we will have solved the problem.

There is to be a meeting of the executive committee of the Good Roads Board in New York on the 20th, to push the formation of a National Association of Associations. The work of the national body will be far more comprehensive than anything that we could expect from our own board, because of the fact that it will embrace such bodies as the National Grange, National Letter Carriers' Union, National Carriage Builders, Road Implement Association, Automobile Associations, both manufacturers and users, and in fact all bodies of men in this country that would be at all interested in the building of good roads. The purpose of the association when formed is to at once take up an active campaign to secure government aid for the building of national highways.

PITTSFIELD AUTOISTS TO ORGANIZE CLUB.

PITTSFIELD, MASS., Sept. 24.—As the result of an informal gathering at the Park Club last night, which was addressed by L. R. Speare, president of the Bay State Automobile Association; J. Fortescue, secretary of the Massachusetts Automobile Association; F. H. Elliott, secretary of the three A's, and A. G. Batchelder, editor of THE AUTOMOBILE, on the benefits accruing from the formation of an automobile club, it was decided to organize a local body, bringing together some 200 or more owners in the Berkshires. Dr. F. H. Brandow presided as chairman of the meeting, which chose former Mayor Daniel England, Samuel G. Colt and Robert J. Parker as a committee on organization.

OHIO'S AUTO LAW IS CONFUSING.

TOLEDO, O., Sept. 23.—The arrest of Harold W. Fraser, a prominent local attorney, for violating the Toledo speed ordinance will probably result in a legal controversy, the outcome of which will be of vital importance to all automobile owners in Ohio. Mr. Fraser has announced his intention of fighting the case through the court of last resort.

THE FRICTION CLUTCH IN AUTOMOBILE PRACTICE.

By FORREST R. JONES.

ONE of the problems in automobile construction is to produce a satisfactory friction clutch for use between the motor and transmission mechanism. A friction clutch is, of course, absolutely necessary for starting and stopping a car driven by a gasoline motor, unless friction gears are used. The latter have not yet been extensively adopted.

It is very evident that it is extremely desirable to have the clutch take hold without jerking and producing heavy stresses in the transmission, or spinning the road wheels with the consequent distortion of metallic parts and injury to tires.

One needs only to watch the action of cars when starting to be convinced that many of the clutches in use do not meet the requisite conditions. There are several, however, which, *when in good condition*, act with a very fair degree of satisfaction. But the good condition is difficult to maintain, and there are frequently undesirable properties inherent in the types of clutches used. Some of the principal ones form the basis of this article.

The Difficulty in Securing Smooth and Even Action.

The variation of the ease with which the rubbing surfaces slip over each other is one of the most serious obstacles to be met in the production of a smooth-acting friction clutch. In other words, the variation of the coefficient of friction makes it difficult to secure the desirable smooth action.

The friction surfaces which rub together to transmit the turning force from one to the other are either both of metal or one of metal and the other some substance such as leather, wood fiber, wood, etc. When metal to metal surfaces are used, they must be lubricated to prevent abrasion, cutting and scoring. It has been demonstrated by numerous experimenters that metallic surfaces slip over each other quite freely so long as a thin layer or film of oil lubricant is retained between them, but as soon as the film is broken so as to permit the metals to touch each other they develop a sudden and vastly greater tendency to cling together. If the pressure between them is great, and the speed of rubbing high, they will sometimes even weld together. This tendency to suddenly cling together is easily demonstrated by rubbing a knife over an oil-stone with oil on it and pressing the blade hard against the stone. Or by rubbing the knife, or some similar flat piece of metal, over another smooth plane surface of metal. In these examples, as well as in the clutch itself, there is generally enough lubricant retained in the minute depressions of the surfaces to prevent their serious wearing away. But this cannot be relied upon under the conditions of operation existing in the friction clutch.

When the rubbing surfaces become completely dry through excessive slipping or neglect, both of which are not uncommon in automobile practice, the coefficient of friction becomes many fold higher than that which must be taken as the basis for determining the amount of force to be used in pressing the friction members together.

The closing force must be sufficiently great to cause the desired amount of turning force and torque to be transmitted when the oil is only partly removed from between the friction surfaces. The closure spring or springs, commonly used in automobile clutches, must be set to exert a clutch-closing force great enough both to squeeze most of the oil from between the friction surfaces quickly so as to transmit the maximum uniform torque of the motor while the surfaces are still well enough lubricated by the remaining oil not to abrade when slipping over each other.

The thickness, or, more correctly, viscosity of the oil varies with the temperature. In cool weather, when the oil is more viscous than in warm, the clutch will not take hold as quickly as in the warm weather, because the thicker oil squeezes out more slowly. Even when the atmospheric temperature remains con-

stant, that of the oil and friction parts is raised when there is much slipping, as when driving through a crowded thoroughfare or over bad roads where frequent variations of speed are made.

Under the conditions mentioned, metal to metal friction clutches are liable to grip suddenly and hard on account of the surfaces coming into closer contact than usual, even to the extent of abrading and scoring.

Leather Facings and Other Non-Metallic Materials.

Leather-faced cone clutches, and those using other non-metallic materials for one of the friction surfaces, are subject to the same idiosyncrasies in a general way. When the leather is properly prepared and new, the coefficient of friction between it and the metallic surface is fairly constant and the clutch behaves well. But the heat generated by the slipping which must of necessity occur when starting and changing gears ultimately burns and chars the leather so that it loses its elasticity and also causes a variation of the gripping capacity. This is not the most serious factor to deal with, however. The most undesirable and troublesome feature is getting oil on the friction surfaces. This is hardly preventable in automobile use. The oil causes the clutch to slip easier, especially when the parts have been somewhat warmed by starting the car, etc. The closure spring must be set harder to meet this change of condition. This, in itself, is not seriously objectionable. Unfortunately, however, the frictional resistance is not by any means the same when the surfaces are cool as when warm, as has been already stated for metal to metal surfaces. After the car has been standing some time, or running without slip in the clutch, the gripping capacity becomes greatly increased when the leather is oily. This often manifests itself very decidedly, sometimes even to the extent of breaking some part of the transmission system when the clutch takes hold instantly so that the inertia of the parts suddenly set in motion, in conjunction with the resistance of the road wheels to slipping, offers a resistance in excess of the strength of the parts.

Cork is not so seriously affected by the frictional heat of slipping as leather. Its elasticity remains practically unchanged.

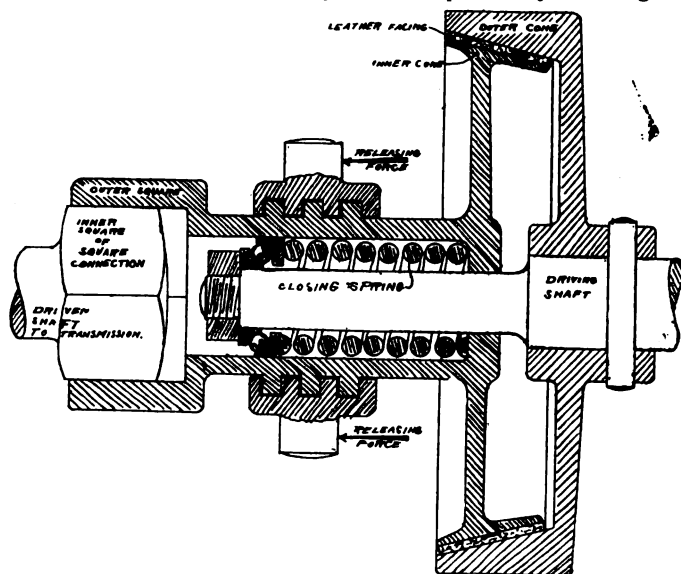


Fig. 1.—Cone Clutch.—When the driving shaft and outer cone are rotating, and the inner leather-faced cone is brought into frictional engagement with the outer one by gradually reducing the releasing force, the pressure is increased between the outer and inner members of the square connection to the transmission shaft by the action of the torque. Considerable longitudinal force is necessary to slip the outer square forward over the inner one. When the slipping at the square joint starts, the parts jump forward suddenly because much less power is required to keep the parts slipping than to start them, and, as a result, the pressure between the cone surfaces is suddenly increased to an extent sufficient to cause the clutch to jerk. By enlarging the square joint, the resistance to longitudinal slipping between the inner and outer squares is reduced, but it cannot be eliminated.

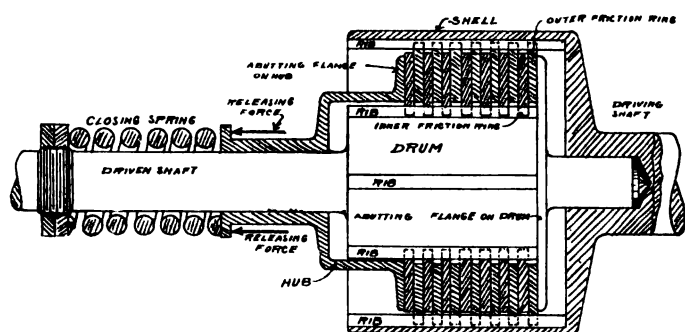


Fig. 2—Multi-Disk or Multi-Ring Clutch.—As the releasing force is reduced the hub and its abutting flange forces the disks toward the right so as to bring them into contact. As soon as they press against each other when the driving shaft is rotating, and the driven shaft is stationary or rotating at a different speed, generally slower, the frictional turning force acting on each disk causes it to press against the ribs, which prevent its turning in the shell, or on the drum, as the case may be. The frictional resistance to sliding along the ribs is approximately proportional to the turning force acting on each disk. The force necessary to move them when working up to nearly full capacity is considerable. The pressure for moving the disks must all be transmitted from the hub flange to the disk next it, and that disk transmits it to the others, all but what it takes to move it along the ribs, and so on, with a gradual reduction of pressure between each successive pair of disks to the drum flange. As a result the left-hand disk does more work than any other when closing the clutch. When it begins to slip along the rib it starts the others, and they all are suddenly brought to bear harder against each other. The result is a jerk. By increasing the diameter of the friction rings, both inside and outside, and decreasing their number, the jerking action can be reduced. This magnifies another seriously objectionable feature, however, in automobile use, namely, increase of inertia of the parts of the clutch that are attached to the transmission shaft, connecting to the speed change gears.

Oil and grease, however, are objectionable factors that must be contended with in its use, as they change its character totally.

The ready compressibility of cork and the use of springs under the clutch leather both act to reduce the liability to sudden gripping.

Friction of Rest Greater Than That of Motion.

There is also another cause of gripping inherent to the usual types of cone and multi-disc clutches. In these types of clutches the closure and release are effected by moving the friction parts in a direction parallel to the axis or shaft of the clutch. In the cone clutch, the shifting cone member slides along the part with which it engages to transmit the torque to the transmission. The sliding of the clutch member over that of the transmission is accomplished while there is considerable pressure between them due to the torque transmitted. This pressure is proportional to the torque. When closing the clutch the shifting member reaches its final position by a series of quick, short movements, with full stops between them from the time the friction surfaces first touch each other, as the pedal or hand lever force is gradually released. This is in accordance with the well-known law that the friction of rest is greater than that of motion. It applies here to the sliding motion of the shifting member over the transmission part. This action causes sudden, intermittent increases of pressure between the friction surfaces and corresponding variation of the torque. It is in counteracting this jerky sliding that the elasticity of the cork or of the springs beneath the leather is beneficial.

In the multi-disk clutch the disks must slide along the feathers, ribs or bars that support them as the clutch closes. There is considerable pressure between each disk and the ribs which prevent its rotation from the time torque begins to be transmitted until the clutch is in complete engagement. The same series of intermittent movements parallel to the clutch shaft occurs here, as in the cone clutch. Various methods of counteracting the effect of this uneven motion, and for forcing the disks apart to release the clutch, have been put into use. The chief ones are the use of springs between one set of disks or crowning the disks themselves. It is clearly evident that such devices can only mitigate, but not eliminate, this undesirable feature.

The injurious effects of the sudden seizure of a clutch are not generally immediately noticeable, except in such extreme instances as the breaking of some part and the well-known injury

to tires. A gear is sometimes stripped of its teeth, a chain snapped, the jaws broken from a positive clutch, a shaft bent, or a coupling torn apart. All these have come under the writer's notice in different forms at one time or another.

Destructive Results of Jerky Gripping, and a Remedy.

The more usual result of the gripping, aside from destruction of tires, is injury to some of the parts, which takes some time to develop. Thus, when ball bearings are used in the transmission, the extremely high pressure, or overload, brought upon them by the jerk, injures the surfaces which bear against the roll over each other. This injury does not manifest itself immediately, but after a time a flake of metal will loosen from the surface of the ball or race. After this occurs, deterioration is rapid, and complete destruction soon follows. The same is true of hardened gears. The sudden strain distorts the supporting parts, for all materials are more or less elastic, and causes the pressure between the intermeshing teeth to become localized at an end or a point of the tooth. The material is thus overstressed locally and, as with the ball bearing, a flake will be worked loose after awhile, and the rough surfaces, as well as the loose flake itself, begins its work of destruction. Keys, pins and feather keys used to transmit torque from one part to another are worked loose, and, when play backlash is once established, the shock of parts bringing up against each other works their destruction.

The remedy up to this writing has been to make the transmission parts much stronger, and consequently heavier, than would be required if the clutch could be closed with certainty that the torque could never exceed a certain accurately predetermined amount. This amount would naturally be taken about the maximum that the motor is able to develop on a steady pull, as when ascending the steepest hill the car can climb.

Such a clutch has recently been constructed and thoroughly tried out over hundreds of miles of bad and hilly roads, with gratifying results. The writer hopes soon to have the privilege of presenting to the readers of THE AUTOMOBILE a description of it, together with a history of the road trials and laboratory tests.

In it the turning force or torque is transmitted through a large number of small springs of the simplest form, each of which takes its proportionate share of the load. At a predetermined deflection of the springs the pressure between the friction parts is reduced and they are allowed to slip over each other while still transmitting the predetermined maximum torque. Oiliness or dryness of the friction surfaces does not appreciably affect the maximum torque. The elasticity of the springs also prevents shock and hammering of the transmission parts.

JERVIS ON A FUTURE PHASE OF THE INDUSTRY.

A. N. Jervis, one of the publicity experts of the Licensed Show, has the following in some of his recent press matter:

"It was natural enough that in producing a motor vehicle the motor should be first placed in the ruling type of carriage and that the shaftless buggy should be the pristine automobile form. It is natural again that when the demand arrived for the lowest-priced motor vehicle possible, the automobile engine and driving mechanism, having been developed to a high state of efficiency and reliability through the building of heavy and powerful cars, should be found adaptable in their advanced forms to the primitive type of horseless carriage. It seems now probable that this revised pattern of motor-driven buggy, minus hills, appealing to the greater number within whose means it comes, will outnumber in a few years all other forms of automobile."

RARITAN BRIDGE OPEN AGAIN OCTOBER 1.

PERTH AMBOY, N. J., Sept. 23.—The long constructed bridge over the Raritan river, connecting Perth and South Amboy, will be thrown open again to the public October 1. It has been in process of repair during the entire summer.



A "STABLE STREET" IN NEW YORK.

In the foreground are the modern private garages of Payne Whitney and the late Randolph Guggenheimer, East Sixty-sixth street.

WITH buildings rising as much as forty stories above the ground and with cellars, subcellars, and sub-subcellars under the ground, with subways ramifying in many directions and tunnels criss-crossing in the depths below, the Island of Manhattan is becoming a very concentrated piece of real estate on which every square foot is expected to do its full duty in the way of supporting rental values. Given the ground valuation, the highest rent obtainable and the cost of construction by which this highest rent may be realized, it would be a question of precise mathematics to determine how many stories there should be erected on a building lot, if only the conditions existing at the time the calculations were made could be guaranteed to be permanent. But they are ever-changing and hereby the philosophy of real estate operations and building operations becomes very much more complicated. Changes in population, in industries, in commerce, and in politics are to be considered.

As far back as 1868 the advent of the elevator began to change the possibilities for high structures radically. Subsequently structural iron, working hand in hand with improvements in fireproofing methods, introduced new factors, which in turn became subject to varying estimates, according to fluctuations in the prices of iron and steel and of labor. Modern concrete and iron construction has again brought modifications. The natural conservatism of boards of underwriters restrains the skyward movement of buildings, and then suddenly, by the rescinding of old rulings or the passing of new ones, releases it.

Were it not for all these changing factors and the unequal opportunities for procuring capital as well as the varying estimates of what the future may bring in rise of values, it should be an unusual thing to see low and

probably erect buildings of a more ornamental character than those usually seen, which reflect little credit on their sense of luxury and elegance, if their choice were not in reality dictated to them and mostly due to some special difficulty in getting revenue from property including a private stable or garage.

This special difficulty is easily traced to the unalterable objection which particular people entertain against the idea of "living over a stable," especially if that stable is not their own. Throughout the movement which has sent buildings up high over the ground which they occupy, this objection, well founded upon the odors and flies that accompany horse establishments, has been strong enough to neutralize all effects of rising values and improved building methods in those residence districts where private stables or garages must be located to the extent of render-



EARLY ATTEMPT TO COMBINE PRIVATE GARAGES AND APARTMENTS ON EAST 75TH ST.



AN ARTIST'S STUDIO SURMOUNTS THIS PRIVATE GARAGE

This garage, which is located at 109 East Sixty-third street, is the property of Mr. Blair. Brownstone dwellings in background remodeled for garage purposes.

ing almost one-half of this area is, in a measure, unprofitable. Modern sanitation in stable buildings and improved methods in the care of horses have removed some of the reasons upon which this extremely costly objection against living apartments over a stable is founded, but the objection continues to live partly because the reasons for it are not everywhere removed and partly as a matter of tradition and of pride, and, by a natural association of ideas, it has even been extended to apply to living apartments over a private garage, so that it is practically impossible for the owner of a lot, which must be used for either stable or garage purposes on the ground floor, to figure upon obtaining the rents which the neighborhood should justify from any living apartments that he might arrange in other portions of the same building. And, were he to arrange apartments on a cheaper scale, then he would draw in an undesirable class of tenants to an otherwise desirable neighborhood, which is the very most effective method for lowering the tone and the values in that neighborhood in general.

Insurance Regulations and Popular Prejudice a Hindrance.

Insurance regulations, according to which any stable or garage property must not be occupied for residence, including cooking and housekeeping by more than one family, or at all, under penalty of prohibitive insurance rates, or unless fireproof construction is adopted, have also contributed to keeping such properties down to one, two, or at most three, stories, and those usually of ungenerous architecture and dimensions, the owner being actuated by the idea that the less valuable the improvements of the place, so long as it brings no direct revenue, or none commensurate with the value of the ground, the better is his chance for disposing of it at a profit as soon as a further rise in values shall make such a sale advisable.

Naturally, it has not escaped all observers that the good and sufficient reasons which in the first place created the objection against living over a stable are in reality wholly inapplicable to living over a private garage, unless the latter is conducted in an extremely slovenly manner or the living apartments are laid out

as if only persons of very humble demands upon the comforts and amenities of life could contemplate occupying them. Many understand perfectly well that a modern many-storied building with a private garage occupying the greater portion of the ground floor may be made intrinsically more desirable for residence purposes, either for a single family or as an apartment building, than if that same ground floor constituted an apartment or were rented for a physician's or a real estate man's office or for a store; and they realize—architects and owners among them—that some of the so-called "stable streets" might be transformed into rows of profitable residential buildings without surrendering any of the accommodations they now afford for housing the modern means of transportation—the automobiles—were it not solely that nobody dares to undertake this innovation in localities where rents should be high, for fear of running afoul of the still surviving popular prejudice, among those who are able to pay high rents, against "living over a garage."

It remains for the press to abate this prejudice as rapidly as possible and thereby to contribute not only to the readier and more convenient housing of automobiles, and incidentally to the more extensive sale of them, but also to the more systematic caretaking, cleanliness and precaution against fires which will be compulsory in such buildings as here contemplated, and to the erection of fine, monumental structures in localities which are now anything but attractive, though cheek by jowl with the most elegant residential quarters of the city.

The garage arrangements in the new Automobile Club of America on Fifty-fourth street and the vestibule in the Home Club on Forty-eighth street bear testimony to the perfect compatibility which exists between home surroundings—which do not differ greatly from club surroundings in character—and garage facilities, if the latter are properly understood as not including that machine shop equipment, with hammering and noise, which was considered necessary in the probation days of the automobile.

Architects Beginning to Appreciate the Situation.

Among the younger architects several realize that the automobile is destined to become one in that series of engineering developments—the elevator, structural iron and concrete construction, electrical progress, the telephone, the use of small engine power, etc.—by which their profession has been well-nigh revolutionized and by which new chances for earning distinction in that profession have been opened for those who prove capable of properly gauging the rights of the new against the rights of the old. They know that much which is old in the building world need not necessarily be profitable and well-considered, but also that anything new they may propose to an owner of real estate in the way of a building venture must offer almost positive guarantees of profits above the ordinary; and with this condition in view they consider it the part of wisdom to make haste slowly in planning the incorporation of the automobile garage in large structures intended to yield a profit as high-class residence property. They know the strength of the prejudice which is the main subject of this article, and they know how slowly it will die, though die it must.

On the other hand, some of them are aware that there is at present an active demand for what is known as studio-apartments, not only among artists but a demand extending to thousands who have no professional use for the very large room, or rooms, with high-light or skylight arrangements which constitute the distinguishing feature of this class of living rooms; and these architects seize shrewdly upon this fact as one which affords the desired opportunity for rebuilding the obnoxious stables or garages on a plan that should prove profitable to the owners and creditable to themselves, it being an admitted supposition that the particular class of people who desire studio-apartments are least influenced by social prejudices or traditions, while willing to pay a rent proportionate to the real qualities of the houseroom offered them.

This seems a pretty solution for the temporary deadlock between the old prejudice against stables, which has been so thoughtlessly paraphrased as to include private garages, and the natural desire for enlarging the good residence zone of the city while also catering to the ever-growing demand for garage facilities in the immediate vicinity of those who own the automobiles.

The architects of the future have in mind buildings of considerable size and many stories, such as have not yet been materialized in practice, but an example on a smaller scale of the combination of private garage and artists' studio may be seen at 109 East Sixty-third street, a garage belonging to Mr. Blair, a banker, and of which the top floor is occupied as a painter's studio, while the second floor, as usual, affords living-quarters for the chauffeur and his family.

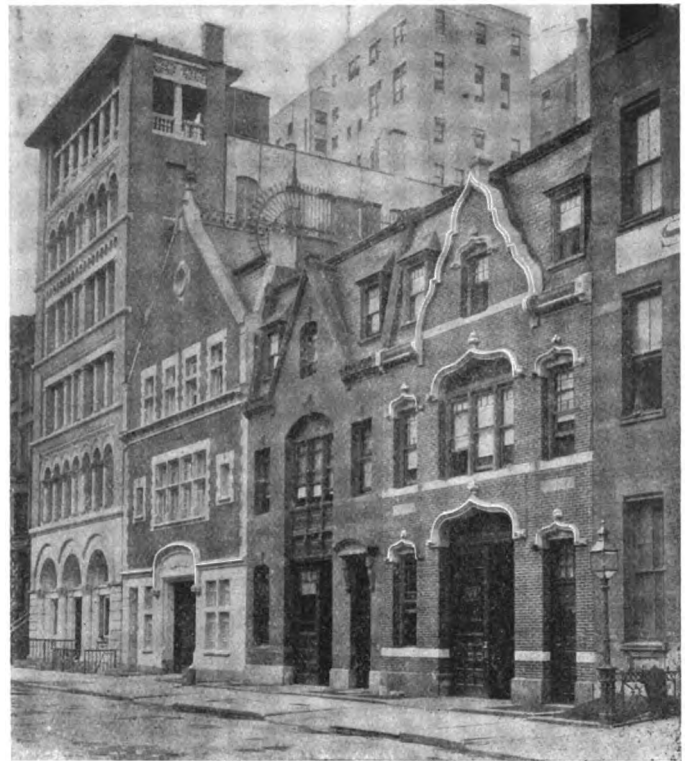
Where Some of the Modern Private Garages Are Located.

Among owners of automobiles and of horses there seems to have been a very general appreciation of the anomaly in occupying expensive lots with low, hideous and unprofitable stable or garage buildings, but in the face of the prejudice referred to they have accepted a compromise solution. They have sought localities where lots were less high priced, such as the vicinity of Lexington avenue, and where the influx of a less pretentious class of residents gave promise that nicely appointed rooms over a garage, or even over a neat-appearing and neatly-kept stable, would not be despised, and here they have erected structures of two, three or four stories, which, though probably not profitable, are at least a credit to the neighborhood in which they are placed. As a rule they are fireproofed, at least as this phrase goes, and often they are distinctly ornamental.

In this latter class the garage building on Sixty-sixth street, near Lexington avenue, of which one part belongs to Payne Whitney and the other to the Guggenheimer estate, is prominent, but apparently no idea of deriving any revenue from it has been entertained. Generally it is true that the costlier the building the less evidence does it present of any desire to rent any part of it out. Such buildings as the large garage on East Seventy-third street, between Lexington and Third avenues, belonging to ex-Mayor Grant and his friend, Mr. Brady, where some fifteen automobiles are housed, and Mr. Pulitzer's stable and garage on the same street, are interesting examples of automobile garage and stable architecture, but have little to do with the present subject. On other streets in the same vicinity, however, on East Seventy-sixth, Seventy-fifth, Seventy-fourth, Sixty-sixth, Sixty-third, between Lexington and Park avenues, and on East Sixty-second, between Park and Madison avenues, a number of garages are observed in which the upper stories are occupied by tenants other than the chauffeurs or caretakers.

Exterior Appearance a Necessary Adjunct to Success.

But, throughout, the step of bidding for tenants has been taken only falteringly, except in one instance which is illustrated in an accompanying photograph; and in this instance a failure has evidently been scored. The building is four stories high and contains four would-be garages, one of which is occupied by a blacksmith and another by a carpenter, and a large sign announces that the living-apartments above are for rent for business purposes. The history of the building has not been one of economic success, since it was erected some eight or nine years ago by one more foresighted than cautious; but there is evidence that the fault may lie largely in the architecture, and indeed it would have been remarkable if at that early day the true requirements for garages and for living-apartments above them could have been even approximately foreseen, considering that at this very day only the most progressive architects have begun to work out the various problems which these requirements involve, on the drawing board, and are just learning to understand what errors have been committed by the few who during the past years lightly undertook similar tasks.



GARAGES AND STABLES WITH LIVING QUARTERS ABOVE THEM.

These buildings are located on East Sixty-second street, between Park and Madison avenues. In the foreground is shown O. F. Thomas' private garage.

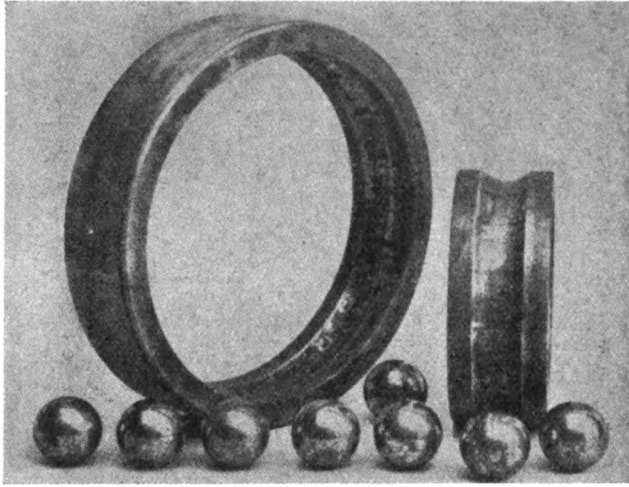
Two points relating to the exterior appearance of such buildings have been made clear. They must not conform with stable architecture; that is, the entrance to the living-apartments must not be slighted in comparison with the entrance to the garage, and the windows must not be low and humble; for a private house the entrances may be combined, as in the house erected by the architect of the Automobile Club for himself at 109 East Fortieth street; but, if apartments are to be rented, all assertion of prejudice must be forestalled by a liberal use of those architectural embellishments which proclaim the dignity of a house intended primarily for human habitation. Human pride rebels against any direct or implied subordination to either automobiles or horses, and can scarcely be blamed. The two entrances must be at least equal in artistic elaboration and in this respect it is fortunate that the automobile does not require as broad an entrance as carriages drawn by horses. A barely completed stable-garage on East Fifty-third street shows two coordinate entrances, designed on this plan; but richer suggestions are supplied in some of the old French houses from the middle ages, some of which those who have toured in the *chateau* region of France will have noticed.

The other point referred to relates to the equipment of the garage. It has become evident that the larger the investment which the building represents in which it is located, the more thoroughly it must be fireproofed and provided with all the scientific facilities for storing of fuel, cleaning of vehicles and floors, electric charging of batteries (or at least the wiring for it), so that it may under all circumstances represent a current rental value, even if the man who has it planned for his own use should decide to abandon it for any reason which may arise in the course of human events. New York affords more than one striking illustration of the errant perversity of fortune in failing to smile upon real estate improvements of a special character in connection with the automobile, even where the conditions involve no such phases as are presented by the problem of profitably combining garage and living accommodations which now confronts many a metropolitan architect.

INFLUENCE OF ACID AND RUST ON BALL BEARINGS*

By HENRY HESS.

MANY of the members of this society have a decided interest in the integrity of ball bearings, some because they ride in cars mounted on them and do not want to add to the revenues of the medical profession, because a bearing gives out—others because of this and also because their kindly souls are grieved when they hear of mishaps to the users of their cars, not to speak of the pain experienced from demands for replacement.



EFFECT OF ACID AND RUST ON BALLS AND RACES.

Now, I am in a position to know fairly well what troubles develop with ball bearings, since my company supplies them, and since every chap who has a grievance registers his kick with us. I find the chief causes of trouble to be dirt, rust and acid. Pretty nearly every one to whose attention grit and rust are drawn will recognize and acknowledge their presence and agree that it cannot be considered anything but harmful. But when acid damage is referred to, that is met with an incredulous stare if not a downright denial of its possibility, and a request to be told where acid could possibly come from.

To those familiar with lubricants the thing is not so mysterious. I remember very well an occurrence of years ago, when I was building machine tools, and was interested in ball bearings only because those in my bicycle either always wanted a new ball or taking up or something. It so happened that a

* Paper read before the Society of Automobile Engineers, Buffalo, July, 1907.

certain machine was set back for some more urgent job. On taking it up again the main spindle journal was found to be badly scarred with deep, irregular channels and pits. Wild theories of the existence of a new bug that thrived on steel were propounded, but the solution was much simpler. The bug was found to be a combination of waste, acid oil, and heat to make the acid action more energetic. The next lesson in lubrication I received when building some heavy motor-driven, high-speed lathes, having a steel-worm driving a bronze gear with the combination immersed in oil. Deposits of copper were found on the worm and other steel parts. The obscure occurrence was found to be due to acid in the oil bath and a slight current leakage combining to form an electroplating bath.

The two races and the series of balls that I have circulated were recently returned by one of our customers. They constitute a beautiful example of the action of an acid lubricant. The balls are irregularly etched on their surface. The races are similarly etched. There are also transverse discolored bands that are slightly etched in the ball tracks. These correspond to the positions of the separator end plates, and show that the machine stood for some time. It is a peculiarity that acid acts more energetically where the metal surfaces are in more intimate contact. This is probably because the small space acts by capillarity to set up a slight current to always draw from the adjacent masses a fresh supply of unspent acid lubricant. Now, it is a very fully demonstrated fact that the life of a ball bearing is proportional to the perfection of the surfaces of the balls and races. Poor finish means short life; acid pockmarks are not only symptoms of a serious ball-bearing disease, but in themselves cause its early demise. That acid lubricants do produce these symptoms is clear enough from the parts exhibited.

The remedy is the use of lubricant that is neutral and that will remain so. There are many such to be had, some at high, and some at reasonable prices. It does not follow that a costly lubricant is free of acid taint. In general the mineral oils are best. Animal or vegetable oils are to be avoided; though they may not contain free acid when bought, they are fairly certain to develop it under suitable conditions of exposure to heat, sunlight, etc. The best test that I know of is to take a piece of brightly-polished clean steel, wrap around this heavy threads from waste thoroughly soaked in the lubricant under test, and expose this to the sun's rays in some fairly warm place. Suitable oil or grease will show no etching, even after months of exposure. In bad cases the oil will stand convicted after a few hours or days, or at most a week or so.

AUTOMOBILING'S RAPID STRIDES IN CHINA

Referring to his previous report on the introduction of automobiles into the colony of Kiachow, China, Consul Wilbur T. Gracey, of Tsingtau, submits additional information. He says:

In continuation of my report published in Daily Consular and Trade Reports on May 2, 1907, it is interesting to note remarks in regard to automobiles in Shanghai, which appear in a recently published report by the Commissioner of Customs at that port:

There is also some idea of supplementing the tramway by lines of motor omnibuses. One of the alternative schemes to the tramway, and one which was strongly advocated, was to have no tramways at all, but lines of motor vehicles. This scheme was negatived, mainly, upon the hypothesis that the native could not be trusted to become a reliable chauffeur. Curiously enough, the reverse has proved to be the fact, and no modern invention has developed more rapidly in Shanghai, or contributed more to the expansion of the town, than the motor industry. Garages and

repair shops are springing up in all directions, and the large number of valuable motor cars and motor boats, all of which are most of the time solely in charge of the native chauffeur, would strike any newly arrived Occidental as exceptional anywhere. Many wealthy natives have acquired cars, which they drive themselves at times, while enormous motor vans, used by firms which have their godowns far removed from their office, the municipal council's new motor chemical fire engine, etc., all prove how welcome and serviceable the new industry is in this flat country. It is even suggested that a good road along the river bank to Woosung, which might be easily made owing to the existence of a dike which would only need widening from the river side, would do more to promote the expansion of Shanghai than the projected road to the hills. The latter proposal would be very expensive.

Shanghai is the only other port in China, besides Tsingtau, where automobiles can be used with any success. The roads are excellent macadam and run for twenty miles into the country.

LETTERS INTERESTING AND INSTRUCTIVE

WHY IS THE TWO-CYCLE NOT POPULAR?

Editor THE AUTOMOBILE:

[910.]—Will you kindly inform me through "The Automobile" what the general objection is to the two-cycle engine. I have read all kinds of criticisms—mostly against this type of engine—but I have yet to find a user of an Elmore car that is not an enthusiast. I have been operating all kinds of cars for the past six years and I now own a three-cylinder Elmore, which I have had for some time. I have been trying hard to find some objection to the engine in my car and the more I try to find some faults with it the more I am convinced that the four-cycle engine is not in it. It is the most perfect running piece of machinery I have ever seen.

Will you please inform me why this type of engine is not more in use? Is it on account of patents or on account of ignorance? It is certainly the most simple engine made and the power it develops is a revelation.

CHAS. J. CHABOT.

Dallas, Tex.

We are not aware that there is any *general* objection to the two-cycle motor in the sense that there is a popular prejudice against it, as such is not the fact. If other makers were to take up the construction of a car with a two-cycle motor and push it energetically there would be a far greater number of this class in use. As it is, the average manufacturer realizes that it is much easier to sell a four-cycle car than a two-cycle, simply because the public has not been educated to the latter. The man in the street most frequently buys a certain make of car because a friend of his has one or recommended it, and as two-cycle cars are greatly in the minority, they do not get these recommendations as often as they would were the case otherwise. Under existing circumstances it is necessary to make a convert to the two-cycle principle every time a car is sold, and while an intending purchaser may be convinced of the superiority of the two-cycle owing to its simplicity, he cannot reconcile this and the fact that there are so few in use, comparatively speaking. It is extremely difficult to overcome the inertia and conservatism of the buying public. Technically, the objection to the two-cycle engine is that it is not as efficient as the four-cycle, owing to the fact that the incoming charge is always more or less diluted with the burnt gases of the previous explosion, and a portion of the fresh charge also seems to escape through the exhaust before the closing of the latter port. These faults are such that they should have little or no weight with the average buyer, for so far as the everyday user is concerned, they are doubtless counterbalanced by the disadvantages of valves and their mechanism in the four-cycle engine. It is simply because the makers find it easier to sell four-cycle machines and prefer to work along the line of least resistance.

CHANGING THE CARBURETER ON A RUNABOUT.

Editor THE AUTOMOBILE:

[911.]—I am the owner of a 1906 runabout, and have been troubled considerably with my carbureter, which is of a very simple pattern, and made by the manufacturers, but while it was very good for a time, it has now become shaky in several parts, and doctoring does very little good. I propose substituting a Schebler, and, with this end in view, wrote Wheeler & Schebler, who recommended putting in a one-and-a-quarter-inch size, but a local mechanic tells me that this size is unnecessarily large, and that a one-inch would be the proper size. If you know anything about the matter, also the possibility of obtaining ready-made fittings for making the connections, wish you would write me, and oblige a subscriber.

C. F. H. v. BLUCHER.

Corpus Christi, Texas.

We believe that you would be well advised to adopt the one-and-a-quarter-inch size carbureter in preference to a smaller model. You should have no difficulty in fitting this carbureter in place of the one now employed; the present piping may be used again, and we believe that the necessary unions are supplied as a part of the carbureter. If not they can be obtained from the maker at a slight additional charge.

TO INCREASE THE POWER OF A 1905 CAR.

Editor THE AUTOMOBILE:

[912.]—Will you please let me know through the "Letters Interesting and Instructive" column of "The Automobile" if it is possible to increase the power of engines in a four-cylinder Ford touring car, 1905 model? I intend to enlarge the exhaust pipes and make larger openings into same. The exhaust pipes are very small. Would it be advisable in my case to increase the initial compression, and would you advise me to increase size of valves?

Erie, Pa.

W. C. S.

It would probably be possible for you to slightly increase the power of your engine by increasing the compression a little. We should not advise you, however, to touch the valves. Before making any changes it would be advisable to look to your piston rings and see that you have the maximum compression with motor in present condition. Unless the compression is exceptionally low it would be better to let well enough alone. Enlarging the exhaust openings would not be worth the trouble involved. If, as you say, the pipes are exceptionally small, you might get rid of the exhaust more quickly and thus cool the engine better by enlarging them, but we should not advise you to make any change in the present opening. You can experiment for yourself what the probable effect will be by noting carefully the performance of the car on some hill in its present condition, and running it over the same ground several times with exhaust pipes off.

ABOUT CELLULAR AND TUBULAR RADIATORS.

Editor THE AUTOMOBILE:

[913.]—I am an interested reader of "The Automobile," and solicit information. Will you kindly publish in your "Letters Interesting and Instructive" whether the cellular or tubular radiator cools more effectively, which is the heavier, which is the most preferred, and why?

Philadelphia, Pa.

P. M. F.

Generally the cellular or honeycomb radiator, by exposing a larger cooling surface to the air within given external dimensions, cools more effectively. So much depends on the material and workmanship that it is impossible to say emphatically which type is the heavier; probably if weights were obtained of half a dozen different makes of each type it would be found that the tubular radiator weighed a little less than the cellular type. As to which is most preferred is a matter of opinion. Although the cellular type gives the maximum of cooling area in the minimum of space, it has the disadvantage of being more delicate of construction. A good cellular radiator is all that could be desired, but a poorly constructed one is an eternal pest. The good points of the tubular radiator are its simplicity and ability to stand rough usage.

QUESTIONS CONCERNING A NORTHERN.

Editor THE AUTOMOBILE:

[914.]—I have a Northern two-cylinder touring car and would appreciate it if you could throw some light on the following:

1. When the throttle and spark are advanced beyond a certain point, the engine seems to choke and slow down. This happens when the levers are advanced beyond the three-quarter point; that is, three-quarters of the whole distance. Otherwise the car runs very well.

2. When I start the motor up after it has been standing for half an hour or so, it only fires on one cylinder for about twenty revolutions. Then they both begin working. Why is this?

3. If I ran a pipe from the carbureter air-intake to the outside of the exhaust pipe so that warm air could be taken into the carbureter, as shown in the drawing, would it make the motor run any smoother?

Chicago.

A READER.

1. This is probably due to failure of the auxiliary air inlet to work beyond the point you mention. Up to that point it increases the supply of air in accordance with the speed of the motor, thus keeping the mixture uniform, but when the three-quarter point is passed, the valve either cannot open any more, or its full opening is not correctly calculated to supply the proper quantity of air

for the maximum speed and power. Doubtless you will find the former to be the case, some obstruction preventing the full opening of the valve. A test of the nozzle adjustment to verify the latter and find out if the proper amount of gasoline is being fed might also be beneficial. As the engines and complete chassis are thoroughly tested out before being passed at the factory, the trouble is very much more apt to lie in a lack of adjustment.

2. It would seem as if but one cylinder received a supply of fuel until the motor was warmed up a bit. The foregoing reply will be found to apply to this. See if the carbureter is properly adjusted in every way and doubtless the trouble will disappear.

3. It will doubtless be found an advantage to fit a warm air pipe such as you mention. We should not recommend a piece of rubber hose for the purpose, however, but rather a metal tube which can be equipped with a cut-out as is done on many cars.

WHY THE SELDEN PATENT HAS NOT EXPIRED.

Editor THE AUTOMOBILE:

[915.]—Will you kindly explain through "Letters Interesting and Instructive" why the Selden patent has not expired, as I understand it was secured in 1877. F. W. O. & S. Nyack, N. Y.

The Selden patent, which bears the Patent Office No. 549,160, was not secured in 1877, as you presume by your letter; in fact, the application for the patent was not filed until 1879. Proceedings in the Patent Office delayed the issue of the patent until November 5, 1895. As patents are issued for seventeen years, it has still five years to run.

ONE MAN'S EXPERIENCE IN THE INDUSTRY.

Editor THE AUTOMOBILE:

[916.]—I would like to answer Letter No. 892, on page 359, issue of September 12, 1907, in which he asks advice about entering the auto business. My advice to him would be to stick where he is, to work faithfully and honestly for his employers, and he will be better off than if he undertook to learn the auto business, notwithstanding that same is still in its infancy.

My reason for making the above assertion is based on personal experience and observation, and can be substantiated upon investigation. Personal experience covers more than twelve years, engaged in various departments of the gas engine and automobile industry, with excellent references from such companies as I have been engaged by. I am and have been unable to obtain a position since the trustees of the company, of which the auto department was a part, decided to close same, owing to financial difficulties of the head of the concern.

I have written to more than a hundred companies in the industry; have less than fifty replies, in which they answer that they will file my application; the others did not even offer to do that much; I have answered one "ad" for a position as traveling salesman (same has appeared eight times in your magazine) five times, also others, and have never received one answer to any of them; my experience, technical knowledge, ability, etc., fully qualify me for such a position.

As excellent an authority as Mr. Reeves, the general manager of the A. M. C. M. A., has recognized my qualifications as above and has placed my name at or near the top of the list kept by the employment bureau of the association. Concerns having my name on file must have lost the file, as every once in a while I see in "News and Trade Miscellany" that so and so has gone with this or that concern.

In the New York "Herald," issue of Sunday, September 15, there were fifty-five "ads" of positions wanted by chauffeurs and repairmen, and two "ads" of help wanted in the last issue of your magazine. There were fifty-five men who advertised for positions, covering every department in the automobile industry, and thirty-four "ads" wanting help, of which fifteen were operators, or actually nineteen concerns needing help.

Graduates are being turned out by the dozens, diploma, license, and recommendation for \$25. They even offer positions, paying \$100 to \$150 per month for their graduates. I tested out last winter more than twenty men, who had made applications for positions as demonstrators and salesmen, and did not find one worth \$40 per month, let alone \$150. Nearly every one in the trade can give you many instances where cars have been ruined by ignorant chauffeurs and mechanics, and the upkeep of most cars is from 10 to 25 per cent. higher than it should be owing to grafting done by these same graduates.

Mr. Words, the industry has not as yet settled into its proper place, and, even if it had, it would take from three to five years to properly learn same, as it covers more than one department of mechanics. I have made it a close study for years in the various departments and am still a long way from knowing it all. Stick at what you are now doing, faithful and honest service will be appreciated by your employers and your compensation will probably be as great as it would be in the auto business.

New York City.

EXPERIENCED.

PAUL LACROIX DIDN'T DRIVE SELDEN '77 BUGGY.

Editor THE AUTOMOBILE:

[917.]—I have just seen in your issue of September 12, page 353, a photograph of myself and Mr. Lamberjack in a car designated: "The Original Selden Gas Buggy." The last paragraph of the article, which is entitled "Selden '77 Buggy Proves Its Practicability," reads as follows:

"There were many interested witnesses who were surprised at the showing made by the old buggy, not the least being Paul Lacroix and E. Lamberjack, of Paris, who saw the car in operation for the first time. They were also given an opportunity of testing the weight of the claims of its backers with regard to its running powers by getting in and running it themselves."

In view of the fact that I am engaged in the sale of cars manufactured by Renault Frères, your article places me in the position of a person who, while he repudiates the validity and the practicability of the Selden patent, is surprised at the good performance of a car claimed to have been built in conformity therewith.

It is true that on Friday, September 6, Mr. Lamberjack and myself saw the car known as the "Selden gas buggy" on Forty-ninth street; it is also true that we sat in such car so that the photograph might be taken. When we did so we had no idea that such photograph would be used for an article such as that in your paper; neither had we any idea that the photograph would be used for the purpose of making plausible a statement that we operated the car.

The statement that we operated the car is wholly without foundation. The statement that we were surprised at the performance of the car is, in a sense, true. Our surprise, however, was at the very bad performance of the car, and at the fact that much fuss has been made over so impracticable a device. What we saw was a car equipped with a modern system of electric ignition, though no such system is shown in the patent. Even with such ignition twelve attempts made during a period of two hours resulted in an aggregate operation of about 12 minutes, and over a distance of about 4,000 feet.

To some the performance may have proved practicability, but, in justice to me, kindly publish this letter, so that I may not be accused of being among such number. Between such a car and even a mule—give me the mule. A mule may be slow, and even balky; with him there would be some probability of one's reaching his destination; with a car such as I saw, there would be none.

New York City.

PAUL LACROIX.

TRADE WARNED OF A SLICK INDIVIDUAL.

Editor THE AUTOMOBILE:

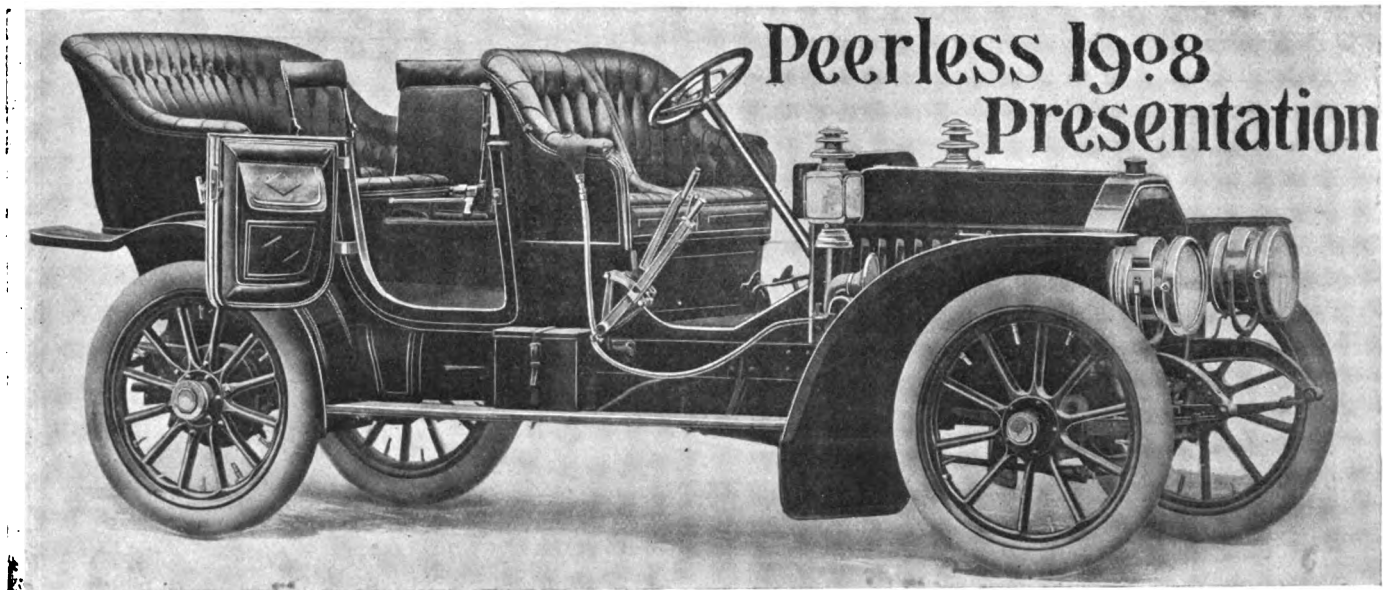
[918.]—We had a call the other day from a very slick individual with a strong English accent, who claimed to be H. G. Graham, son of the president of Argyll Motors, Ltd., Glasgow, Scotland. He claimed to have charge of the Argyll London branch, which is near our London office, seemed to be intimately acquainted with our London representatives, knew to a dollar the amount of goods we had sold in London this year, and knew that we had just received an order for a number of lights for the king's new car, and possessed a lot of other information which would make it seem certain that he was what he represented himself to be.

He stated that he had secured the contract for several thousand lights for the 1908 Argyll cars, and after showing to his own satisfaction that our success abroad was largely due to his unrewarded efforts, remembered that he was short of funds, and tried to secure a loan. Having become suspicious, we turned him over to the police, and found that he had nearly \$1,000 in his pockets. As he had secured nothing from us, we let him go, but now regret this, as he appears to be a professional swindler, and he is such a slick article that we think the trade should be warned.

He speaks very rapidly with a strong English accent, with a great deal of unnecessary profanity; is about 5 feet 5 inches, weighs about 150 pounds, has a smooth face with rather florid complexion, wears glasses, and has very poor teeth, many of them missing, as a result, he explains, of an accident when he was driving the Argyll car in the Isle of Man races last year. When he called on us he wore a blue sack suit and cheap plaid cap from Detroit. He showed a railway ticket on which he had just come from Pittsburg, and claimed to have just placed a \$50,000 contract with the American Vanadium Company, who have just advised us that they never heard of the man.

Plainfield, N. J.

S. W. RUSHMORE.



MODEL 18, 30-HORSEPOWER TOURING CAR, THE LEADER OF THE 1908 PEERLESS LINE.

IT is significant of the more settled conditions of automobile design that structural changes in succeeding models from the leading factories are becoming fewer and fewer. Alterations there always will be as added experience reveals defects and researches make possible further improvements, but radical departures from the models of the preceding year are now a thing of the past. It is a state of affairs which cannot but be eminently satisfactory to every user of an automobile, for it is an assurance that depreciation, once the bugbear of the user, has been reduced to its minimum.

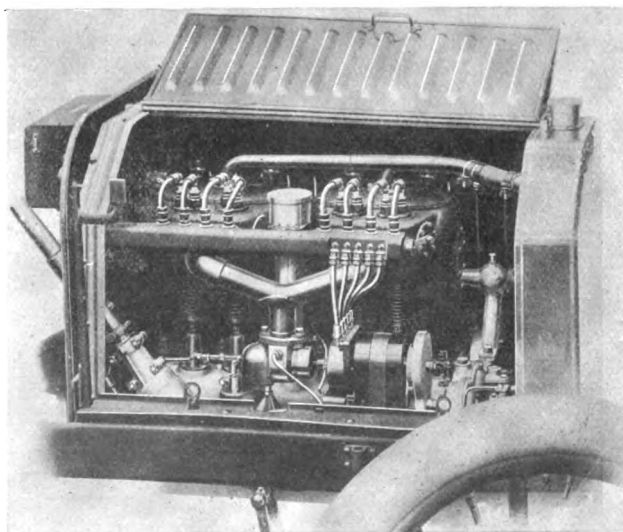
An illustration of this settling tendency is found by a comparison of the Peerless Motor Car Company's models for 1908, details of which have just been made known, and the cars turned out by the Cleveland firm during the current year. To the 30- and 45-horsepower models of last season has been added a six-cylinder car, developing 57-horsepower, according to A. L. A. M. rating. Its cylinder dimensions are 4 7-8 by 5 1-2 inches, the same general motor construction being used here as on the other models. Wheelbase is 133 inches, and a seven-passenger touring body will be fitted. This model, the first of which has been undergoing road tests the greater part of the summer, will be manufactured after January 1. The "fours" for 1908 have already begun to issue from the factory.

The principal changes of next year's models over those of this season are a larger wheelbase, seven-passenger body, radiator directly over front axle, 36-inch wheels, flat springs, and a double ignition system, with magneto as a part of the regular equipment. A review of the features of Model 18, rated as 30-horsepower, will cover all essentials of the two types.

Motor.—In general features the construction of the motor is the same as Model 16, of last year. Cylinder bore has been increased to 4 7-8 inches, stroke remaining 5 1-2 inches, as before. The cylinders are cast in pairs, with offset intake and mechanically operated valves on opposite sides. Instead of aluminum, the water-jacket plates are all made in copper. Construction has been slightly

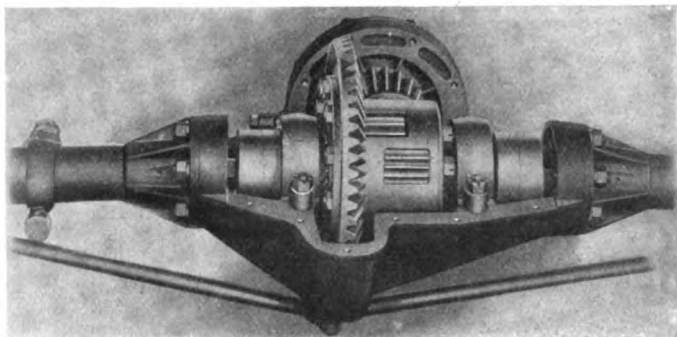
changed in order to insure a more certain removal of core sand. The crankcase is a single aluminum casting, designed for strength and non-leakage of oil, with large hand-hole plates, by means of which easy access can be had to connecting rods and bearings. The crankshaft is a solid drop forging, specially treated, hardened and ground accurately to size. All gears, including half-time, pump and magneto gears, are encased in the forward end of the motor and run in oil, thus minimizing wear and preventing noise. The front bearing is fitted with a stuffing box to prevent leakage of oil. Both intake and exhaust valves, which are mechanically operated, are flat-seated and are made of a special alloy imported valve steel, as used during the past two years. They are adjustable to take up all wear, and to insure silent running after long use.

Ignition and Carbureter.—Instead of a magneto being furnished as an extra, it now forms a part of the regular equipment of all Peerless cars. The Eiseman high-tension type is used, and is mounted on a platform on intake side of the motor. In addition, the same coil, commutator and single battery as used in 1907 is again employed, thus giving two independent ignition systems, each with its own set of plugs. The advantage of this double system is that either can be used independently of the other; thus, the commutator, spark coil and battery may be entirely removed from the car, and



PEERLESS MOTOR, SHOWING METHOD OF WIRING.

there still remains a perfect magneto system; or, on the other hand, the magneto may be taken off, and there is the same well-known battery system employed for several years. All wires are connected with their terminals by a spring attachment, there being no thumb-nuts to release. The magneto can be entirely removed without difficulty in less than five minutes. The commutator is located on the right-hand side of the motor, between the two cylinders, and is brought up level with the top of the cylinders. The carbureter is automatic in its action, providing suitable mixtures for varying motor speeds. The throttle is controlled by



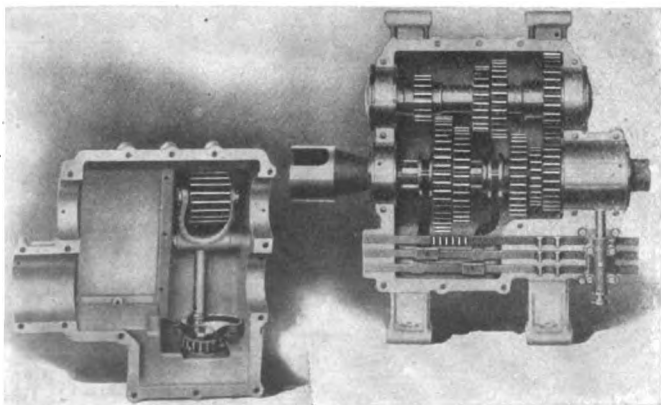
PEERLESS DIFFERENTIAL SHOWING WORKING PARTS.

hand lever on steering wheel, by accelerator pedal and by a governor.

Lubrication.—Improvements have been made in the oiler so as to cut down the number of oil pipes and connections, and it is now connected with the front and rear compartments of the crankcase, so that by means of a two-way cock the different compartments may be filled direct from the oil tank. Lubrication of the pistons is provided by oil leads from the lubricator to the cylinders, the flow being regulated by means of sight-feeds on the dash. Crankshaft, wristpins, bearings, camshafts, cams and all gears are oiled by splash from the crankcase, which oil is replenished by tubes from the lubricator and regulated by sight feeds on the dash.

Water Circulation.—An increase has been made in the size of the radiator over that of last year. By placing it directly over the front axle, instead of slightly forward, the lines of the car have been rendered more graceful. Water circulation is assured by a gear pump. The fan has been materially improved—it is now a single-piece aluminum, and is driven by bevel gears instead of by belt. The construction is particularly robust, extra strength being given to the bracket by bolting it to the forward cylinder.

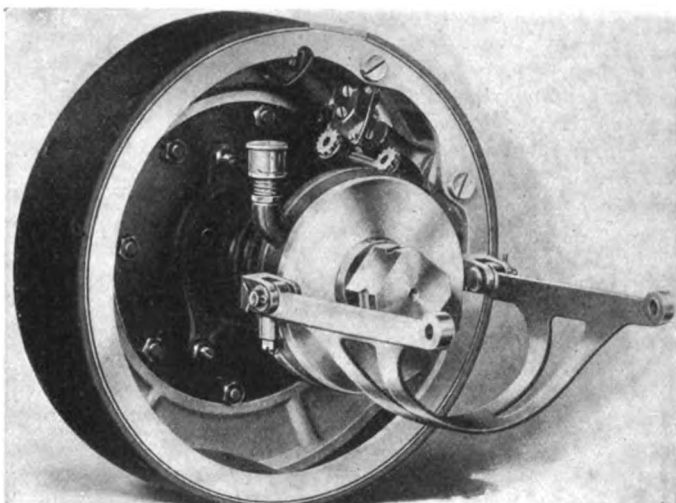
Transmission and Drive.—Connecting the internal expanding clutch with the transmission is a shaft with universal joints at both ends, allowing for easy removal of the clutch without disturbing any other part of the mechanism. Four forward speeds and reverse are provided through sliding gear of the selective type, all controlled by a single lever. Imported ball-bearings of large diameter are used in the gearcase, their lubrication being provided for from outside. The aluminum case has a large-size hand hole on top for inspection of gears. The only change in the propeller-shaft and rear live axle is that all driving parts have been increased in dimensions and are now made from imported silico-manganese steel stock, which experience has shown to be more uniform in quality and much stronger than the alloy steels used on 1907 models. Universal joints on each side



TRANSMISSION, SHOWING THE REVERSE MECHANISM.

of the driving gears and connected with the live-axle take up all strain on the axle and prevent any binding of the gears. These universal joints make possible an arch construction, and also permit dishing the rear wheels two degrees, the same as the front wheels. Imported ball-bearings of extra-large size are used for the road wheels. The axle tubes are of heavy gauge and brazed into the cast-steel differential case, and further strengthened by a webbed collar brazed to the tube and bolted to end of differential casing. The spring saddles are brazed to the axle tube. Distance roads from the frame to rear axle on either side are adjustable by means of a turn-buckle, and a torque rod is used from the differential casing to a spring bracket attached to a cross member of the frame.

Front Axle and Steering Mechanism.—The front axle is a solid one-piece drop forging, I-beam design, with spring saddles integral, the center of the axle being the lowest part of the car. Steering knuckles in the axle yokes are fitted with special imported ball-bearings of large size, and with an improved oiling arrangement. The steering gear is of the worm and sector type, the sector and shaft being a one-piece solid drop forging. Instead of being placed before the front axle, the connecting rod between steering knuckles is behind the front axle on the 1908 models.



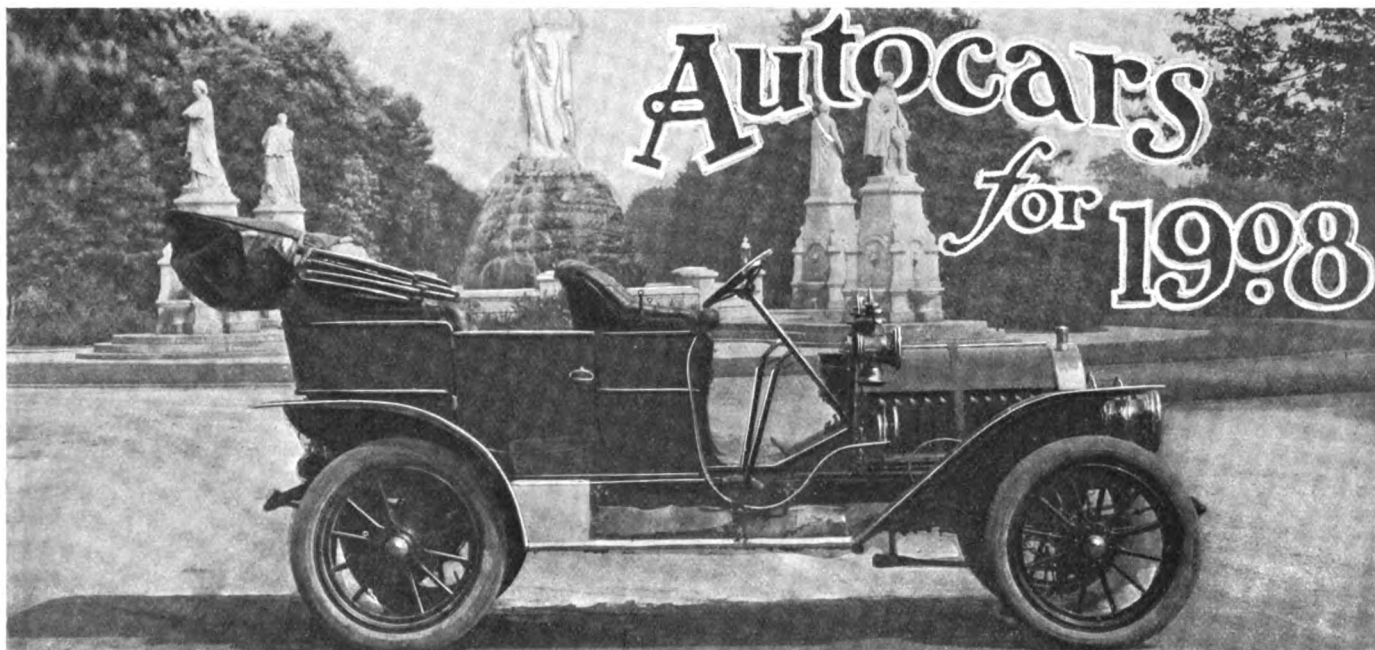
INTERNAL EXPANDING CLUTCH OF THE 1908 PEERLESS.

Frame and Springs.—The cold-rolled steel drop frame, first used on the Peerless Model 15, of 1906, will be continued on all models. The dropping amounts to 2 1-2 inches just in front of the rear axle, and carries the center of gravity of the car nearer the ground without interfering with the road clearance. French Lemoine springs of special silico-manganese steel are used for the semi-elliptics in front and the platform suspension in the rear, and are longer and flatter than those of 1907.

Wheels.—Thirty-six-inch artillery wheels, with dished spokes, are used both front and rear. Four-inch clincher tires are mounted on the front wheels, and 4 1-2-inch on rear.

Model 15.—The 45-horsepower car is similar to the one described, with the exception of cylinder dimensions, being 5 1-4 by 5 3-4 inches and wheelbase 119 inches. It is furnished with limousine body, interchangeable with the standard touring body, or with roadster body, which is not interchangeable.

Body and Color.—The body is of Peerless type, king of Belgium lines, the rear seat being wider and the tonneau longer and more spacious, and built to carry seven people comfortably. Small seats of folding type are used, which are practical and comfortable, and which may be folded against the side when not required for use. They are also removable. The standard color will be maroon with coach painter's light red running gear. Other color combinations will be furnished only when ordered special.

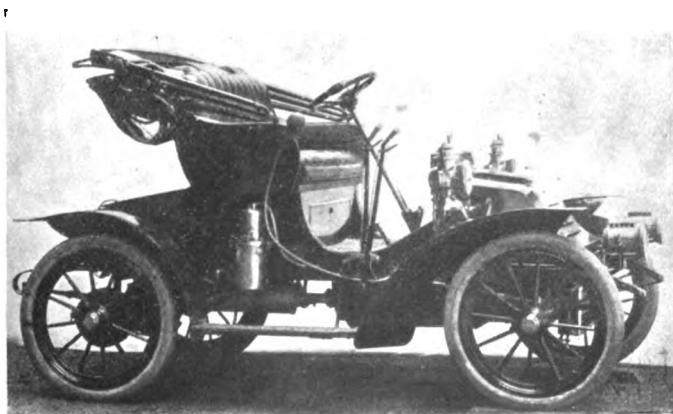


TYPE XIV AUTOCAR TOURING CAR FOR 1908, WHICH HEADS THE AUTOCAR LINE FOR THE COMING SEASON.

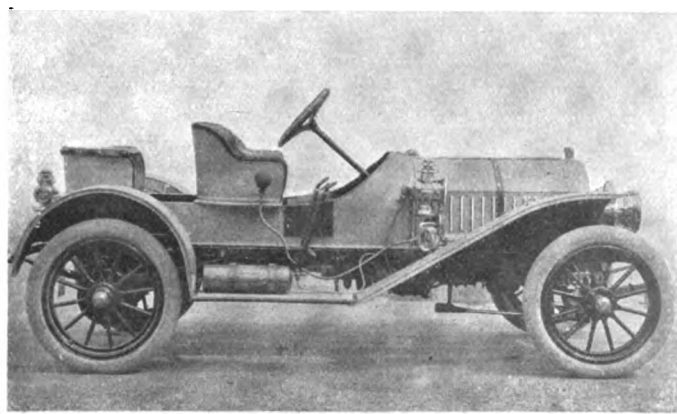
TO meet the demand for a high-powered runabout that has become so prevalent, the Autocar Company, Ardmore, Pa., builders of the cars of the same name, have developed a special type which has been given the title of the Autocar "mile-a-minute" roadster, the attractive appearance of which is apparent from the illustration. The standard Type XIV Autocar chassis forms the foundation of the car, but numerous modifications have been made to make the complete car conform more closely to the special use to which it is to be put. The drive is geared higher than on the touring car for obvious reasons, while the control levers have been shortened and moved back, an 18-inch steering wheel being fitted. The bonnet is 4 inches longer, and the mechanical oiler has been placed forward of the dash under the hood instead of being mounted on the former. In other respects the standard features of construction long identified with Autocar practice have been retained. The most prominent of these are the independently cast cylinders, and the three-point suspension of the unit power plant, the motor, change-speed gear and clutch all being contained in a special sectional case of material of high tensile strength, the different parts of which are firmly bolted together and the whole supported as a unit at three points. Two of these are bolted directly to the frame forward, making a rigid joint, while the third, situated under the center of the gearcase, is seated on a stiff spring attached to a cross member of the frame. This arrangement eliminates the usual subframe con-

struction and also insures constant alignment of the essentials of the power plant and drive. Both the motor and the transmission are protected from below by means of a metal shield. The regulation equipment has also been extended to include a gas-tank, speedometer and tire holders.

The other members of the Autocar family for 1908 consist of the standard touring car and the two-cylinder runabout, known respectively during the past year as Types XIV and XV. Long experience in the building of these cars has demonstrated the value of the features of construction which they embody, so that there will be practically no radical change in their design for the coming season. Their builders are one of the oldest manufacturers of automobiles in this country, and, moreover, a firm that has consistently adhered to the distinctive design that it has evolved in the course of a number of years of building cars. Minor improvements and detailed additions here and there will be made—in fact, are always being planned in the draughting rooms of every up-to-date automobile plant—and the Autocar will be no exception in this respect, but designs have approached to a standard so closely within the past few years that familiarity with what has preceded is essential to distinguish the changes in new models. The line will also naturally include standard types of covered cars such as a limousine, mounted on the standard Autocar chassis, of which the makers are planning to turn out a larger number than ever during the season of 1908.



THE POPULAR TWO-CYLINDER AUTOCAR TYPE XV.



AUTOCAR "MILE-A-MINUTE ROADSTER"—THE NEWCOMER.

MILAN'S AUTO FIRE ENGINE TESTS.

Vice-Consul Ernest Santi, of Milan, reports as follows on the mechanical progress of that Italian city in fighting fires:

The first automobile fire engine tried in Milan in the year 1901 was a benzine car, 10 horsepower, and was fitted with first-aid material and with places for four firemen. The second trial was made with an American car (the Oldsmobile) of 7 horsepower, for the use of the chief officers, and with a Panhard car for four firemen, which was at first used as a first-aid car, but was then rebuilt into an engine by using the motor of the car when not running for pumping purposes.

In 1905 the fire brigade bought an Orion car of Italian make and fitted it with a piston pump with a delivery of 790 quarts of water, and driven by the motor of the car when not running. These first trials were satisfactory, but their continuance showed that some most important changes would have to be made so as to get a perfect working of the engine.

In 1906 the Milan department bought two large automobiles, Bianchi cars, made in Milan. These two 18 and 24 horsepower cars were intended for carrying the men to fires, but the system was of little value, as the crews arrived so far ahead of the horse engines that they had to remain idle for some time until the slower apparatus arrived. For this reason on one of the cars a small pump was fixed, worked by the motor when the car was not running. An Italian-made pump was built especially for this service so as to fill the smallest possible space, while, being a piston pump, it delivered the water as high as an ordinary fire engine. The pump is 2 feet long, 1 1-5 feet wide, and 1 3-10 feet high, everything included. It has two cylinders coupled together with two connected pistons. The pump weighs 275 1-2 pounds. Starting is effected by the same lever by which the motor is worked. The interlocking mechanism of the wheels during the working of the pump is closed in an aluminum box, with an oil bath, and supported by spherical bearings. The disposition of the pump is such that the car itself did not have to be modified in any way. The handle for the aspirator is on the posterior side, next to the benzine tank, and the handle for the pressure tube is under the right forward seat. The air tube for the pressure mechanism is fixed to a corner of the car.

The maximum velocity of this car on a plain is 44 miles per hour, although as a rule it runs generally at 37 miles, with a cargo of four men, one officer and chauffeur, together with hose and first-aid material. Experiments have shown that the maximum delivery of the pump is about 500 quarts per minute, and the mean delivery 450 quarts.

The Milan fire brigade has also experimented recently with a steam automobile pumping engine bought recently from a firm in Saxony. The chassis, a U-shaped frame, resting on springs attached to the axles, carries the boiler, the motor, and the mechanisms for the propulsion of the car, and for the pump. The rear wheels have a diameter of 3 feet. The front wheels have solid india-rubber tires, while the large wheels have double solid tires. A special friction differential apparatus allows one wheel to go forward and the other to work backwards, to be guided in places where the streets have sharp curves. The motor propulsion of both the pump and the car has two cylinders, with the so-called Stephenson disposition. The pump is a two-cylinder machine. The fuel can be either coal or petroleum, but petroleum is found much more convenient, as the stoker only turns the tap on and the flame is immediately working. The feeding of the boiler can be effected in three ways—by the injector, by a hand pump, and by a special steam pump. There are two water tanks, a small one on the rear of the engine next to the boiler and a larger one under the seat of the chauffeur.

Five firemen and a stoker can be accommodated on the car, which, so laden, can run at a mean speed of 15 1-2 miles per hour, although on a smooth road and with no obstacles in the way of other traffic it has run easily at the rate of 22 miles. Experiments have shown that the car can deliver 950 quarts of water

per minute at a sufficient height. The machine when running requires 30 horsepower and the pump 25 horsepower.

The remarkably small brigade, as well as the low fire loss, in Milan, the population of which is nearly 600,000, is explained wholly by the strict inspection laws and by the stone and cement construction required by the laws.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
- Oct. 26.....—New Haven, Conn., Second Regiment Armory, Third Annual Automobile Show, New Haven Business Men's Association.
- Nov. 2-9.....—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
- Nov. 29-Dec. 6.—Chicago, Casino Garden, Second Annual Auto Parts Show. A. M. Andrews, secretary, 184 La Salle street.
- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 14-21.....—St. Louis, Mo., New Coliseum, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
- Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.
- Feb. 3-8.....—Buffalo, Convention Hall, First Annual Power Boat and Sportsmen's Show, auspices of Buffalo Launch Club. Dal H. Lewis, manager, 760 Main street, Buffalo, N. Y.
- Feb. 20-Mar. 7.—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsmen's Show.
- Mar. 9-14.....—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dal H. Lewis, manager.

Races, Hill-Climbs, Etc.

- Sept. 28.....—Chicago, Harlem Track, Race Meet, Chicago Automobile Club.
- Sept. 27-28.....—New York City, Morris Park Motordrome, 24-hour Race, Morris Park Motordrome Club.
- Oct. 4-5.....—Trenton, N. J., Inter-State Fair Automobile Races, Includes 24-hour Event.
- Oct. 19.....—Kansas City, Mo., Kansas City Jockey Club Track, Race Meet, Automobile Club of Kansas City.
- Oct. 21.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

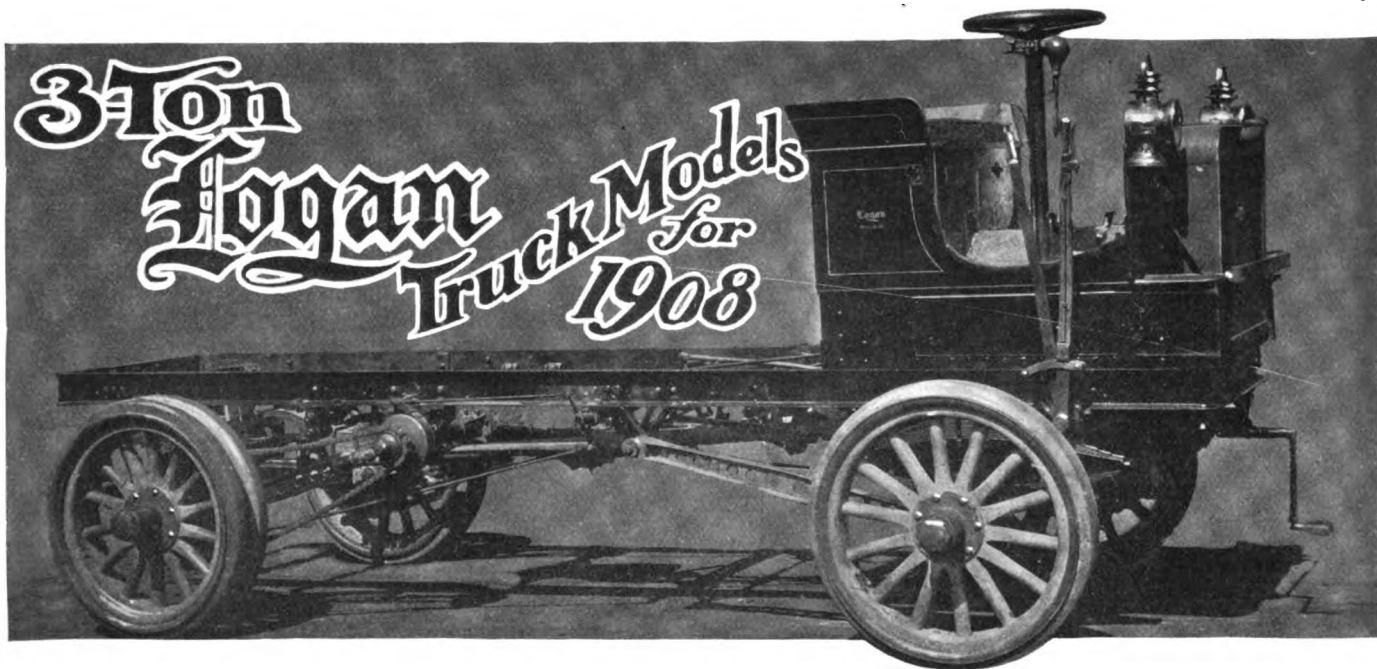
FOREIGN.

Shows.

- Aug. 1-Sept. 30.—Holland, Amsterdam, International Exhibition of Motors and Machines, Palace of Industry.
- Sept. 28-Oct. 7.—Denmark, Copenhagen International Auto Show.
- Nov. 11-23.....—London, Olympia Motor Show.
- Nov. 12-Dec. 1.—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
- Dec. 5-22.....—Berlin, Germany, Automobile Show.
- Jan. 18-Feb. 2.—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.

Races, Hill-Climbs, Etc.

- Oct. 1-15.....—Paris, Electric Vehicle Competition, Automobile Club of France.
- Oct. 20.....—France, Gallon Hill Climb.
- Nov. 1-15.....—France, Volturette Contest near Paris.
- May 16, 1908.....—Sicily, Targa Florio, Automobile Club of Italy.
- June 20-July 5, 1908.—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
- July 14, 1908...—Paris to London, Aerial Race.
- August, 1908...—France, Coupe de la Presse, Automobile Club of France. (Exact date to be announced.)



AFTER a long period of testing under severe conditions, the Logan Construction Company, of Chillicothe, O., completed, about two months ago, a new three-ton truck officially known as Model S. Results were so satisfactory under the trying-out process that the company decided to build another and smaller model, with a load capacity of one ton, to be known as Model T. The two 1908 commercial vehicles being built on similar lines, the smaller truck an exact duplicate in miniature of the larger model, a description of Model S will suffice for both.

Mounted forward on a subframe attached to the 5-inch channel-section pressed steel frame is a 40-horsepower water-cooled vertical four-cylinder motor, with its 4 3-4 by 5-inch cylinders cast in pairs. Valves are all mechanically operated, ignition is by jump spark, and the carbureter is of the float feed type. Seeking to combine extreme simplicity with efficiency, close attention has been paid to cooling and lubrication. The former is provided for by a large size radiator, gear driven pump and fan. The oiler has been cast with the engine crankcase, circulation being assured by a gear pump. Tests have shown a high efficiency combined with great economy in the matter of lubrication of these trucks.

Transmission, an important factor in any mechanically operated vehicle, is of vital importance in the life of a heavy load carrying truck and has rightly been given the attention it needs by the Logan Construction Company. First in the line is a multiple disc clutch, the casing of which is cast integral with the flywheel, and is absolutely oil-tight. A propeller shaft with two universal joints transmits the power to the gear set by which three forward speeds and reverse are obtained on the selective principle. From the countershaft to the rear wheels the drive is taken by side chains of 1 1-2-inch pitch and 3-4-inch width. Krupp chrome nickel steel is employed throughout for the gears, which are of 6-inch pitch and 1 1-4-inch face. Timken and Hess-Bright bearings with ample adjustments on each part play an important part in the efficiency of the transmission. The heavy side chains are guaranteed to stand a strain of 60,000 pounds each, and the makers claim that one set will give good service for at least two years.

Engine control is by spark and throttle levers mounted on the steering column. All gear

changes are obtained by a single lever at the right of driver's seat, the emergency brake lever is equally accessible, and clutch and running brakes are operated by foot pedals. To simplify gear changes the clutch and propeller shaft are automatically braked on the operation of the foot clutch or the emergency lever. The capacity of the gasoline tank is fifteen gallons. Security is assured by five brakes, one set on the rear hubs, one set on the jack shaft and one brake on the clutch. Steering is of the worm and nut type.

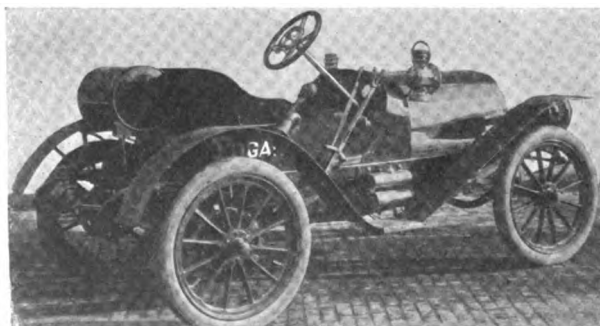
Front and rear axles have been designed with an ample margin of strength above the heaviest load capacity of the vehicle. The rear axle is of solid steel, 2 1-2 inches square, with integral spring seats. Large Timken roller bearings are used for the road wheels and for the steering knuckles. The long I-section radius or reach roads, plainly shown in illustration, are a feature which will be appreciated.

Suspension is such a vital factor in the life of both machinery and tires that no conscientious builder can afford to neglect it. The Logan Construction Company has adopted full elliptic springs forward and platform type of suspension in the rear. With eleven leaves 5-16 inches by 2 1-2 and 38 inches long for the front set and twelve leaves 5-16 inches by 3 inches in the rear, the life of tires and engine should be prolonged to the maximum.

Tire dimensions are 36 inches by 5 inches in front and 3 1-2-inch twins in the rear. Wheelbase is 108 and tread 60 inches.

An Addition to Logan Runabout Family.

In the touring car branch of their business the Logan Construction Company has made an interesting addition in the shape of a special semi-racer runabout. This vehicle, which will supplement the regular runabout designed for the use of professional men, physicians, etc., is equipped with a 20-24-horsepower air-cooled motor. It is constructed along the same lines as the regular Blue Streak runabout which has made such a good record for itself, and, as will be seen from illustration, is of a pleasing, racy appearance. Features of the regular Blue Streak, which will be continued, are four-cylinder, air-cooled motor, sliding gear transmission, shaft drive, and jump spark by storage battery. Total weight is 1,587 pounds.



THE NEW LOGAN AIR-COOLED SEMI-RACER ROADSTER.

A CRITICISM OF STEERING GEARS IN GENERAL USE*

BY LOUIS T. WEISS, CHAIRMAN TECHNICAL COMMITTEE L. I. AUTOMOBILE CLUB.

AN unusual number of automobile accidents have occurred recently, and in most cases we read that the steering gear broke, or that the car, when going at high speed, became unmanageable, or the driver lost all control of his car, or the car first headed for one side of the road and then for the other, finally landing upside down in a ditch, or succeeded in smashing itself to pieces on a stone wall, tree, telegraph or other pole. In most of these cases one or more lives were lost. There can exist but little doubt that the statement, "that the car became unmanageable," is correct in many of the sad occurrences.

Your committee has had no opportunity to examine any cars after accidents had taken place, and if such opportunity had presented itself, we would have proved of little value since the cars are mostly a general wreck. The survivors, if any, will surely not care to rehearse all the details if they knew them, of such a calamity where perhaps their dearest ones were crushed to pulp, or torn to pieces.

We have examined and considered the steering gear now in general use, and believe that it is certainly deplorably faulty. It is surprising that the manufacturers furnish such a mechanism

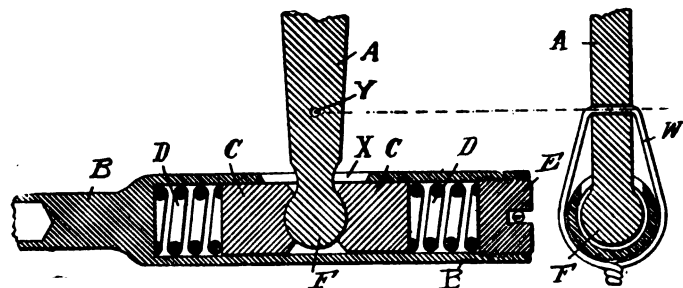
The mechanism proper, such as the worm and gear, or the nut and thread, as well as the steering knuckles, are generally very well proportioned and well made. With the reach rod, which is just as important as the rest, it is different. When assembling, the ball F is entered through opening X, and surely can come out the same way if the sockets CC open. Then the rod B will fall to the ground, and all connections between the hand wheel and the front wheels of the car are broken. You are absolutely at the mercy of fate. Your car runs wild. The sockets CC will open when either of the springs break, and break they will, as the writer has personally removed one spring in three parts.

It is true that some makers of cars make the opening buttonhole shape, and others slit it all the way out to the end, so that the ball can only be entered from the end, or through the large part of the buttonhole opening, and, when in place, these are covered or closed by a nut or cap, which at the same time answers the purpose of compressing the springs, as does E in the sketch. We have then an opening through which the ball cannot pass and the rod cannot drop off. We have examined such connections and found some where the thin wall of the tubing had been worn so large that the ball passed through easily. Others were so that the blow of a fist forced the rod off.

In the sketch we show a primitive, but quite an effective way to prevent the dropping of the rod if the springs should break so that your car will not run wild. The writer has taken such precaution ever since he has run cars, and has, as before stated, removed one spring in three pieces. After the break the wheels wobbled quite some, but the car could still be steered.

We do not recommend this particular method of drilling a hole and drawing a wire through it and around the tube B in all cases, since some steering cranks and knuckles would be weakened too much by the hole. But we do believe it to be a very wise precaution to fasten the parts either by wire or other means, so as to prevent the reach rod from falling, jumping or being jerked out of connection if the sockets CC should separate.

Some, and perhaps many, will say, "I have driven my car for two or three seasons, at high speeds, too, and I have never had any such trouble," but we should remember that one experience will be just once too often, and it is likely that we will not live to tell the tale.



DETAILS OF COMMONLY USED TYPE OF CONNECTION.

when they well know what must result on its breaking down while in use. The kind of steering gear which we speak of consists of the hand wheel, worm gear or nut movements, which causes the steering crank to swing in a vertical plane. This crank is connected to the steering knuckle by means of a reach or connecting rod swinging in a horizontal plane. To this rod, of which we show the principle by sketch herewith (sketch shows one connection only, the other is similar) we wish to draw your serious attention.

Since the steering crank A moves in an arc of a vertical plane, and the steering knuckle (not shown) in an arc of a horizontal plane, it is necessary that the connecting rod B be so made as to allow for up and down, and at the same time sidewise or lateral, motions at each end. A convenient and nice way to accomplish this is to have the ends of both cranks ballshape, shown at FF in sketch. The sockets CC partly encircle the ball end F of crank A. The springs DD exert a pressure tending at all times to keep the sockets CC in close contact with ball F. The nut E in some cases enters the tube B as shown, and in others, screws around the outside of that tube. In nearly all cases the tube is of about one-third the thickness shown on the sketch.

This tube generally has an oblong hole cut into its side large enough to allow the ball end, together with the two sockets, to move freely and longitudinally in the tube B, thus forming a yielding and playless connection between the crank A and the steering knuckle. A yielding connection is very desirable, since it prevents snapping off of the steering knuckle, as well as lengthens the life of the irreversible steering mechanism proper.

Now let us see where we can justly criticize it.

THOUSANDS OF AMERICAN AUTO PARTIES ABROAD

Consul R. E. Mansfield, writing from Lucerne, Switzerland, says that it is estimated that there are now in Europe 8,000 American touring parties in automobiles. He adds:

Each car carries on an average five persons, making a total of 40,000 Americans autoing on the Continent. The expense will average \$10 per day for each person, making a daily expenditure by this class of American travelers in Europe of \$400,000. The American motorist usually spends two months on the Continent, which brings the aggregate expenditure up to \$24,000,000 for the season. So great is the number of American automobiles on the Continent that the transport of motors across the Atlantic has become a regular and specialized business. A properly equipped touring car is a private train and yacht combined. The traveler can go north, south, east, or west, when he wishes, stop as many days as he wishes at one point, and has no need to worry about tickets or luggage. Motor tourists on the Continent are brought much more into touch with national life than the railway traveler, who, passing through Europe on a train de luxe, from one hotel de luxe to another, finds all Europe alike, sees nothing of national costume or habit, and hears little except his own language.

The great interest in motoring in all parts of the world, and especially in using automobiles as a means of travel as well as pleasure by Americans in Europe, will furnish additional stimulus to the trade and an incentive to American manufacturers to meet the demand for and compete with the continental manufacturers in the world's markets for high-grade touring cars.

*Paper read before the Long Island Automobile Club.

WHAT THE AUTO CLUBS ARE DOING JUST NOW

THE NEWS FROM WORCESTER, MASS.

WORCESTER, MASS., Sept. 23.—September 25 is old home day at Bellingham, Mass. This is a little town on one of the routes between Providence and Worcester, and its officials have succeeded in getting a State highway right through it. There is now but one section of this route where there is no State highway. That is between Worcester and Grafton, and members of Worcester club and others in Milford, Hopedale, and the vicinity towns, headed by William H. Baker, of Milford, want a gathering of motorists at Bellingham to show the appreciation of the good roads there and to stir up a sentiment for the completion of the route with the State highway.

September 27 the contests and tours committee of the club has called an informal run to Barre. It is the last day of the annual fair of the Worcester County West Agricultural Society, and a good show and a good time are promised by the management of the fair for the members of the club. A delegation of Worcester motorists will attend the Valley fair, at Brattleboro, Vt., September 25. There will be Worcester competitors in the automobile parade there.

Plans are being talked up between the Worcester Automobile Club and Rhode Island Automobile Club, of Providence, for a joint gymkhana. At present the prospects are good for a gymkhana and other stunts at Providence this fall with teams from both clubs participating, and a return event under similar conditions at Worcester next season. President John P. Coughlin, of the Worcester Automobile Club, is taking a two weeks' vacation in Nova Scotia and New Brunswick.

L. E. MYERS NOW PRESIDENT ILLINOIS STATE A. A.

CHICAGO, Sept. 23.—L. E. Myers, delegate from the Chicago Automobile Club to the annual meeting of the Illinois State Automobile Association, has been elected president of that body, succeeding Sidney S. Gorham, the retiring chief executive, Samuel P. Irwin, of Bloomington, George W. Ehrhart, of Decatur, and R. M. Baker, of Springfield, were elected, as vice-presidents. John Farson, treasurer, and W. H. B. Weston, secretary.

The new directorate consists of Ira M. Cobe, John Farson, L. E. Myers and Sidney S. Gorham, Chicago Automobile Club; R. M. Baker, Springfield; G. W. Ehrhart, Decatur; S. P. Irwin, Bloomington; H. A. Olson, Woodstock; J. H. Francis, Austin; R. A. Whitney and B. C. Hamilton, Chicago Motor Club.

PORTLAND TO BAR YOUTHFUL DRIVERS.

PORTLAND, ORE., Sept. 19.—That no person under the age of eighteen years shall be permitted to drive an automobile on the streets of Portland is one of the provisions of a new ordinance adopted by the special committee of the Common Council for favorable report to that body, after consultation with representatives of the Portland Automobile Club, which is a unit in endorsing the new regulation. Boys and girls driving machines have been a common sight here, but after the ordinance is passed they will have to be accompanied by their elders. Another regulation adopted with a view of minimizing chances of accident is that automobiles must not pass between the curb and a street car that has stopped to take on or discharge passengers.

GENEVANS TO INCREASE ROAD-SIGN FUND.

GENEVA, N. Y., Sept. 23.—At the last meeting of the Geneva Automobile Club it was voted to increase membership dues to \$4 per year, with the view of increasing the funds for placing additional road signs in the vicinity. A danger sign has been placed at Bean's hill, which is a bad spot for automobilists unacquainted with the territory.

A. C. A. INSIGNIA FOR MEMBERS' CARS.

NEW YORK, Sept. 24.—A committee of the Automobile Club of America, consisting of Melville D. Chapman and Dr. Schuyler Skaats Wheeler, has brought out a club plate that can be attached either to the dash or radiator of members' cars. These plates, which are about three inches square, are made of brass, with the words "The Automobile Club of America" at the top of the plate. In the center is the club flag enamelled in colors on a black background, while at the bottom is a serial number. In a circular letter to members the committee, in advocating the use of the new device, says:

The plates will be useful in several ways. They serve as a means of identification and as proof of membership in the club. They may be useful in dealing with supply houses on the road, and also possibly as a means of identification in case of trouble. It is, therefore, obviously necessary that members should agree to be responsible for the custody of the plates, and to remove them from their cars if they allow the cars to leave their possession and ownership, and return them to the club in case they cease to be members of the club, or upon demand, and in accepting the plates members will do so subject to the right of the club to retake its property wherever found, in the event that it is not returned as agreed.

SANTA BARBARANS TOIL TO IMPROVE THE ROADS.

SANTA BARBARA, CAL., Sept. 18.—Impatient at the tardiness of the County Supervisors in making passable the roads leading out of the city, a dozen members of the Santa Barbara Automobile Club, armed with picks and shovels, and conveyed in three autos, sallied forth last week and did yeoman service in improving the Gaviota road. Some weeks ago volunteers from the club did the trick for the El Capitan road, going over twenty-five miles of rock and chuck holes and making a fairly decent road-bed. Despite the hot sun the learned professions vied with each other in the application of muscle, led by Clio Lloyd, candidate for Mayor of Santa Barbara, who swung his pick with great dexterity and effect. After the road had been voted to be in excellent repair, the "laborers," with their wives and friends, enjoyed a picnic beneath the spreading oaks in the Rincon Canyon.

FIRST RACE MEET IN THE OHIO VALLEY.

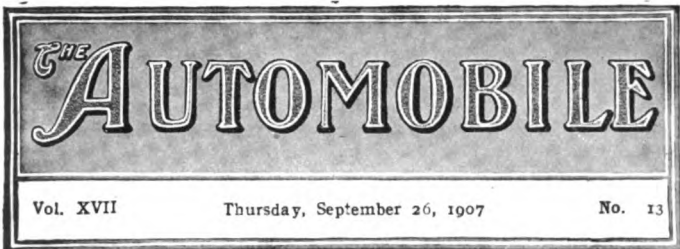
WHEELING, W. VA., Sept. 23.—Plans are maturing for a mammoth race meet to be given on the State Fair Grounds, near Wheeling, by the Ohio Valley Automobile Club. Arrangements are being perfected under the direction of Secretary T. A. Westmyer, although auto owners all along the Ohio Valley are becoming interested.

Auto owners from down the Ohio river as far as Marietta and Parkersburg, W. Va., will take part in this event. This will be the first event of the kind to be held in the Ohio Valley, and because of this great interest is being shown. Committees will be selected within a fortnight, after which dates for the race meeting will be decided upon.

RECENT AUTO CLUB ELECTIONS.

SAN ANTONIO, TEX.—H. E. Ogg has been elected president of the San Antonio Automobile Club to succeed Henry Crawford, who recently died. The club is making active preparations for a number of long runs throughout the State during the winter, which is the finest season of the year for autoing here.

LINCOLN, ILL.—At the annual meeting of the Lincoln Automobile Association held last week the board of directors was enlarged from three to six members. The membership of the board for the ensuing year is L. W. Walker, E. L. Edwards, C. L. Hyde, B. F. Coffman, K. L. Hyde and G. F. Phillippe.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor

R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT

A. B. SWETLAND, Business Manager

LOUIS R. SMITH FRANK B. BARNETT

W. I. RALPH, 1035 Old South Building, Boston, Mass.

C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00
To subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Iliffe & Sons, Limited, 20 Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.
The Automobile is a consolidation of The Automobile (monthly) and the Motor
Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903,
and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905, - - - - -	730,000
“ “ in 1906, - - - - -	791,000
“ “ This Issue - - - - -	17,000
“ “ Since January 1, - - - - -	638,650

Whence the Lack of Interest in Commercial Vehicles? From an economic point of view there is nothing about the automobile industry in this country as a whole that strikes the observer so forcibly as the almost total lack of general interest in the gasoline-driven commercial vehicle. Comment on the subject is opportune at a time when extensive and widely advertised competitions are being held in both England and France. There has been an event of this nature held here, which need not be characterized, and another abortive attempt to second it which came to worse than nothing, as it placed the commercial vehicle further behind, at least where New York City is concerned, than if the matter had been allowed to sleep in peace, as it has done since. That there is a vast field for the commercial vehicle goes without saying, but even granting its great superiority over present methods, the fact must be recognized that the prospective users of such vehicles are in the same position as the steam railroads where electric traction is concerned. They have on hand many thousand dollars' worth of costly equipment which cannot be scrapped simply because there is something better. The value of the horses and wagons operated by express companies, for instance, would reach a tremendous figure and the same thing is true of other large users.

Progress must necessarily be slow, but something could certainly be done to hasten the advent of the commercial vehicle, at

least at a slightly faster rate than has characterized its advance up to the present. There are a great many vehicles in daily use and a great many more being built, but the trouble is so little is heard of them and they are so few compared to the vast bulk of other traffic that very little is seen of them. Publicity is what the commercial vehicle needs more than anything else, but unfortunately it is overlooked and little or nothing heard of it in the din and clamor with which the pleasure vehicle is constantly surrounded. The market for the two is not as widely separated as might appear at first sight, for it is frequently the business man's experience with his car that leads him to investigate the possibilities of automobile delivery and heavy haulage. It would do a great deal of good, not alone to a special class of makers, but to the industry as a whole, to give the commercial vehicle side a little more attention.



A Weak Point in Most of the Repair Shops.

Why, when a repair man takes an automobile for a complete overhauling, does he so frequently neglect to tune it up to its highest degree of efficiency? The question has been forced upon us by a number of cases in which a car, after coming out of the hands of the repairer, was in an apparently worse condition than when it entered his establishment. We are not here referring to the automobile butcher, whose attentions cannot be otherwise than injurious to any piece of mechanism, but to first-class firms with experience, an efficient staff, and such modern machinery as to inspire confidence. At the commencement of the touring season the owner ships his car to such an establishment, giving instructions for a complete overhaul of engine and transmission. Too frequently he is disappointed and disgusted on the first run to find the engine pulling badly, not because of any material defects, but owing to lack of attention to such minor matters as ignition and carburetion. The trouble lies in the fact that the work has been done by a shop mechanic with little experience on the road. Running an engine light in the repair shop is not sufficient to guarantee it being in condition to operate satisfactorily on the highway. Fear of accidents and the lack of suitable roads in the neighborhood may be primarily responsible for the substitution of a shop tuning up for a thorough road test. In any case it is dissatisfying to the owner and injurious to the reputation of the repair man that a machine fresh from an overhauling should need to have the carbureter cleaned out, throttle adjusted, commutator attended to and sundry bolts screwed up. Twenty miles on the road, with a skilled tester at the wheel, would have caused all such defects to be brought to light and remedied.



New York: The World's New Center of Automobiling.

Wandering around upper Broadway, Fifth avenue, and other portions of New York where automobiles most congregate, the man who has the time for such diletantism cannot but be struck by the fact that the metropolis of the United States is becoming more and more the rendezvous of all types and nationalities of horseless vehicles. Registration tags at the rear of the ubiquitous machines tell an interesting story to those who care to read them. During the past few weeks might have been noticed, in addition to the familiar official registration numbers of New York and New Jersey, tags from every State in the Union which has thought fit to busy itself with registration. Foreigners, too, had their peep in with cars carrying the E, G, and I, of Paris, and the LC, of London. The British Automobile Association's road badge occupied the position on one visitor's car which some Broadway habitués prefer to give to a more homely mascot. The thought suggests itself: Will the tag habit, from which the handbag traveler has always suffered, make itself felt among automobiles and worry the bicycle policeman as the railroad porter is now worried? A chair in the Champs-Elysees, Paris, used to be declared to be the best spot in the world to witness a meeting of automobiles from all parts of the globe. The vantage point seems to be moving a few thousand miles westward.

FIRST GOOD ROADS AND GOOD LAWS CONVENTION

SPRINGFIELD, MASS., Sept. 24.—A pronounced success and the forerunner of others that will follow and assume even greater national proportions was the good roads and legislative convention of the Automobile Club of Springfield, held all day in Cooley's Hotel, and concluding in the evening with an enthusiastic banquet. So well did the brilliant idea find accord that the A. A. A. national officers present conferred with the local officials and these resolutions resulted from the morning session, which was devoted to good roads:

Resolved, that the subject of the best material for surfacing roads be referred to the Good Roads Board of the American Automobile Association, with the request to investigate and report at the next convention.

Resolved, further, that the American Automobile Association be requested, either as an association or through one of its clubs, to call a convention on Good Roads and Legislation in the summer or fall of 1908.

Stanford L. Haynes.

William H. Hotchkiss.

Lewis R. Speare.

Robert P. Hooper.

Dr. A. S. Cushman.

The actual results of the convention as a whole, so far as any definite action was concerned, found nearly complete expression in the foregoing set of resolutions, and those discussed later in the day, but not reproduced here for lack of space; both were adopted by the convention unanimously. The first were approved following the discussion of the morning, which was restricted to the subject of "Good Roads," and the second set after the afternoon session, when the question of "Automobile Legislation" was the theme. Following the spirit of the first resolutions, which provided for a similar convention next year, it was practically agreed that the next convention, which will be called in the fall of 1908, will be held in Buffalo.

Results of the Morning Session.

The morning session was opened by Mayor William E. Sanderson, of Springfield, and the delegates were further welcomed by H. H. Bowman, president of the Board of Trade. W. L. Dickinson, vice-president of the New York and Chicago State Roads Association, was the first speaker, and he discussed the value of trunk systems of roads between States and their value to the consumer and the farmer.

William E. McClintock, of Massachusetts, asserted positively that the automobiles have been and are working damage on the State highways incommensurate with their number, as compared with other sorts of vehicles, and defended the method adopted this year by the Massachusetts Legislature at the recommendation of the State Highway Commission, of a re-registration of the automobiles and the application of the proceeds from the fees to improvements in the State's highways.

Dr. Cushman made his main plea for good roads on the ground that they bring about an esthetic development in the people who use them. He explained the value of the department which he represented to farmers with limited means who want to know how to make their money count for the most, and to whom the bureau is able to give just the information desired.

Commissioner Edwards, of Rhode Island, suggested a treatment for the roads which he declared possessed everything desired for the new road, but which apparently was too costly for the average State. The treatment consisted of a new surface of several inches depth of stone and tar, with an exterior coating of tar and then the surface layer, also permeated with the tar.

Mr. Hooper, as a member of the national association, took exception to the statements of the Highway Commissioners and declared that it was yet to be proven to his satisfaction that the automobile injured the roads more than the ordinary vehicle. He believed the solution to the problem lay, however, in a co-operation on the part of the autoist and the roadmaker.

Judge W. H. Hotchkiss, president of the American Automobile Association, delivered an address that was concise and convincing, making an evident impression on his hearers. After discussing the manner in which the rights of the autoist under the State law may be affected by the police power in the placing of fair restrictions on automobilists, he continued in part:

"It is an old saying that the legislator has his ear close to the ground, and at present there is not the slightest doubt that our legislators are inclined to be responsive to waves of prejudice. This condition is a menace to the rights of the automobilist as a citizen. We are going to stop the tax on automobile traffic as it is enforced in certain localities, and we are going to do it by Federal legislation. There are prejudices prevailing against the automobilist, and they are due somewhat to the envy of those who haven't, for those who have. At any rate, the sane use of the roads by the automobilist is the only way to conquer those prejudices. Racing on circular tracks, the dangers attendant thereon and the sensational reports that the resulting accidents give rise to in the newspapers, serve to stimulate prejudice. During my administration as head of the American Automobile Association, I intend to do away with racing on the highway without the taking of proper precautions. Not 2 per cent. of the owners of automobiles drive other than sanely, but when it comes to the foreign chauffeurs which you have in New York City, I don't believe that there is 2 per cent. of that class that do drive sanely. There is at present a chaos of motor laws in the several States, and we need Federal law to make legislation uniform. Automobile travel from one State to another is commerce, and as such should have Federal supervision. The national association has prepared a bill providing for national registration, which it will push before the next session of Congress, and another calling for uniform speed laws and penalties."

Done at the Afternoon Session.

James H. McDonald, of Connecticut, declared himself in favor of the registration system of raising money for State roads and declared that the matter had been put up to the Connecticut autoists and that they had fully agreed with the Highway Commission that it was just and efficient.

William P. Hayes gave an exhaustive account of the Massachusetts automobile legislation, and Congressman Gillet, in a discussion of national legislation, asserted that in his belief Federal laws governing automobiles were not likely to prosper when pushed by automobile clubs owing to prevailing prejudices.

Following the afternoon session, at the suggestion of W. Clive Crosby, delegate from the New Jersey Automobile and Motor Club, a second committee was appointed to endorse the views of the convention as expressed in the discussion of the afternoon, which were confined more to the legal aspects of the automobile problem. The committee consisted of Judge Hotchkiss, Dr. Cushman, Robt. P. Hooper, William E. McClintock, chairman of the Massachusetts Highway Commission, and Arthur E. Corbin of the local club, and the set of resolutions were submitted to the committee and endorsed by a standing vote of the convention at the banquet last night.

Over Two Hundred Present at Banquet.

More than 200 covers were laid at the banquet held in the evening at Cooley's Hotel, and the function proved as notable as the business session of the day. Colonel C. L. Young, chairman of the banquet committee, facetiously introduced the Hon. Charles W. Bosworth as toastmaster of the occasion. The speakers included Dr. V. J. Irwin, president of the Automobile Club of Springfield; Congressman F. H. Gillett, of Springfield; Colonel A. P. Langtry, editor of the *Springfield Union*; Dr. Harvey Martin; L. R. Speare, first vice-president of the A. A. A.; Judge W. S. Kellogg, of Westfield; A. G. Batchelder, editor of *THE AUTOMOBILE*; Frank B. Hall, Worcester Automobile Club; E. H. Lathrop, of Springfield, and Robert P. Hooper, chairman of the A. A. A. Good Roads Board, who introduced a resolution of thanks on behalf of the visitors for the numerous courtesies extended during the entire course of the convention.

SIX-CYLINDERS AT THE GARDEN SHOW.

Predictions of the coming of the six-cylinder in 1908 will begin to materialize in tangible form at the coming Garden show of the Association of Licensed Automobile Manufacturers, to be held from November 2 to 9, as it is now known that no less than eleven cars of this type will be staged. They will range in horsepower from 42 to 70, and as they will all be rated under the new A. L. A. M. formula there will be some odd figures, such as 48, 46.6, 43, 45, 51 and the like, the cylinder bores ranging from 4 1-8 to 5 inches. The minimum price is \$3,500 and the maximum \$6,500, the former being represented by the familiar Stevens-Duryea "Little Six" of 35 horsepower, officially known as Model U, and the latter by the 60-horsepower Pierce-Arrow. Between these two extremes there is the Franklin 42-horsepower, air-cooled, six-cylinder car, the only one of its type in the show, listing at \$4,000; the 48-horsepower, six-cylinder Oldsmobile, listing at \$4,200; the Winton "Six-Teen-Six," recently described in *THE AUTOMOBILE*, and listing at \$4,500, and the two Pierce-Arrow "sixes" of 43 and 60 horsepower, respectively, and listing at \$5,500 and \$6,500. No less than six of this new multi-cylindered type are listed at \$6,000. These are the 45-horsepower Apperson, the 70-horsepower Stearns, the 51-horsepower Lozier, the 60-horsepower Thomas, the 50-horsepower Stevens-Duryea, and the Peerless. All of them will be made in both runabout and touring car types and there will be a sprinkling of both at the show, so that the six-cylinder will doubtless come into its own with a great flourish.

QUAKER CITY ANNOUNCES ITS SHOW DATES.

PHILADELPHIA, Sept. 23.—The local Automobile Trade Association got busy last week and took the first step toward holding the annual show by selecting a date. After much discussion it was decided to open the show on Saturday, November 9, and continue it till the following Saturday. Following immediately upon the New York shows, and previous to that at Chicago, the association managers believe that they will secure a large number of exhibits from the Gotham exhibition. No decision was made as to where the show is to be held, the dearth of big buildings in the heart of the city, as usual, necessitating the crowding of the show into some one of the utterly inadequate armories.

President W. F. Smith on Saturday announced the following show committee: George H. Smith, manager of the local White Company branch; Edward Leeds, of Titman, Leeds & Co., Studebaker and Matheson agents; E. H. Fitch, of the Diamond Rubber Company's local branch, and Fred Vanderhoef, manager of the Ford branch. J. H. Beck, whose work as secretary last year was so favorably commented upon, again consented to act in that capacity, so that the success of the show may be considered as assured in advance. Every effort will be brought to bear to make it the biggest thing of its kind the Quaker City has ever seen, despite the great lack of suitable accommodations.

DATES FIXED FOR CANADIAN SHOWS.

MONTREAL, Sept. 21.—Manager R. M. Jaffray announces March 21 to 28 as the date of the Toronto automobile show, to be held in the St. Lawrence Rink, and April 5 to 12 for Montreal's exhibition in the Arena. To date, the number of applications for space for the Montreal show far exceeds those of last year, and everything points to a bumper show.

APPLICATION BLANKS OUT FOR BUFFALO SHOW.

BUFFALO, N. Y., Sept. 23.—The sixth annual automobile show under the auspices of the Automobile Club of Buffalo will take place in Convention Hall during the week of March 9 to 14, 1908. The plan of floor and application blanks will be ready in a few days. Dai H. Lewis, secretary of the club, will have charge of the show, as usual.

BEARINGS DISCUSSED BY A. L. A. M. ENGINEERS.

Ball bearings for use in motors constituted the subject taken up by the Mechanical Branch of the Association of Licensed Automobile Engineers at its meeting in New York City on Monday last. The use of anti-friction bearings has become almost universal in other parts of the car, such as in the gear-set and the wheels, but ball-bearing motors have been turned out by comparatively few makers up to the present. Papers on the subject were read by Frank Stearns of the F. B. Stearns Company, E. T. Bird-sall of the Selden Motor Vehicle Company, and E. R. Hewitt of the Hewitt Motor Company. This subject occupied the entire morning session and it was the consensus of opinion that in view of the great advantages of the ball-bearing over plain types it must sooner or later become standard for all high-grade construction. The elimination of the plain bearing marks a tremendous step forward in motor design, owing to the fact that it permits of the building of shorter motors, eliminates journal friction, reduces the complication of lubrication systems considerably and assures the highest efficiency by its absolute simplicity and absence of wear. The last-named is far from being the least of its advantages, as it does away with the greatest bugbear of the automobile user—loose bearings—and the consequent pounding and loss of efficiency that they entail. It is almost impossible to improperly assemble a ball bearing, and, once in place, there is no tedious process of fitting and adjusting necessary, as is the case with the plain bearing.

At the afternoon session, the report of the Tire Committee was taken up, the particular subject being a two-part detachable rim. Following this, the report of the Test Committee on engine tests was read and proved of great interest. These tests were made on a Thomas Detroit motor at the Hartford laboratory of the association, and it was clearly shown that considerable of the depreciation in power of a motor was due to the friction of the piston rings. Suggestions were made looking toward the elimination of this objection and a discussion of general interest resulted.

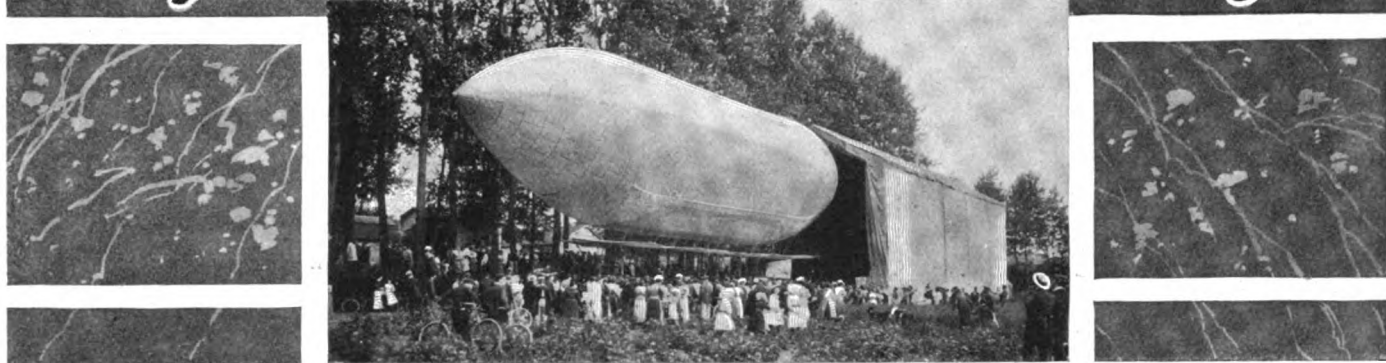
AUTUMN EFFECTS TO DECORATE PALACE SHOW.

In looking about for a motif for the decorations of the combined show of the Automobile Club of America and the American Motor Car Manufacturers' Association and Motor and Accessory Manufacturers, Inc., to be held in the Grand Central Palace in New York, October 24 to 31, the decorators have looked to nature for a setting and will endeavor to create an out-of-doors effect in keeping with the usual environment of the automobile by the liberal use of autumn-colored boughs and leaves banked up against the columns, panels and balconies to form a background for the cars. The number of the latter exhibited will form a startling revelation of the wonderful progress of the American industry, as out of a total of 246 exhibitors no less than 70 will show complete cars.

MOTOR LEAGUE ACTIVE IN NEW JERSEY.

A State board of officers of the American Motor League is being formed in New Jersey preparatory to the organization of a State division of the league there. Up to the present, 61 members have already been appointed as representatives and other appointments to complete the board will be announced shortly; a chief consul, vice-consul and secretary-treasurer will be named and the complete board convened to complete the work of organization. In organizing the New Jersey State division, the twenty-one counties have been divided into seven districts, each of which will be entitled to a number of representatives proportionate to the membership roll of the league in that district. The work of the new division will be most strongly directed toward securing better legislation, and the number of autoists in New Jersey makes them so important a factor politically that President Potter is confident they can make their influence felt.

Sky Pilots are Busy These Days



WAITING EXPECTANTLY FOR THE FIRST FLIGHT OF MALECOT'S AIRSHIP.

PARIS, Sept. 16.—Malecot's combination balloon and aeroplane, slightly heavier than the air, is at present the feature of interest in the French aeronautical world. An accidental fouling of the propeller during the preliminary trials near Meaux has postponed the public tests indefinitely. The main gas vessel, 108 feet in length, has pointed ends and a maximum diameter of 23 feet. Within it is a small auxiliary ballonnet, which is filled with air by means of a fan, thus compensating for any loss which may take place from the gas. Below the main gas vessel is a longitudinal openwork girder carrying transverse spars supporting the fabric of the aeroplane, 65 feet in length, and having an area of nearly two hundred square feet. Below this is a cage carrying the Buchet engine driving a single propeller, and beneath this again a basket for the passengers.

Santos-Dumont has decided to fit a three-bladed propeller in place of the two-bladed one formerly used on his aeroplane.

Balloon evolutions above Paris are becoming of such common occurrence as hardly to call for comment. As soon as the army steerable was called in, M. Henri Deutsch de la Meurthe's *Ville de Paris* began evolutions. One of the most successful trips was made this week. Coming out of its shed at about 9 A.M., the balloon evolved above the plain of Sartrouville, descended, changed some of its passengers and steered for the capital. After passing over Chatou, Suresnes and Rueil, a stop of a few minutes was made above the old military fort at Mont Valerien, Paris was entered by the Bois de Boulogne and the Muette, then a huge circle described over the city. The entire trip lasted exactly four hours. Four hundred pounds of ballast remained on reaching home.

LONDON, Sept. 16.—Britain's first military airship, the *Nulli Secundus*, made but a poor impression on its initial appearance in public at Farnborough, and although the weather was favorable did not accomplish its trials without a couple of minor accidents. Its ungainly sausage shape contrasts unfavorably with the graceful lines of the *Patrie*, the *Ville de Paris* or even the older *Le Jaune* of French construction. Structural details are rigorously guarded by the army authorities, but it was naturally impossible to hide its main features from the thousands who gathered on the common to watch its evolutions.

The spherical gas-bag of 60,000 cubic feet capacity is surrounded by a netting and four broad silk bands by means of which three distinct horizontal frameworks are suspended. Power is obtained from an eight-cylinder 50-horsepower motor driving a couple of propellers through long belting running over wire-spoked pulley wheels.

PREPARING FOR AMERICA'S BALLOON RACE.

Arrangements have been made for a large number of the members of the Aero Club of America to leave New York on the Pennsylvania Railroad on October 17 to witness the race for the Gordon Bennett Aeronautical Cup at St. Louis, on October 21. The club headquarters at St. Louis will be the Jefferson Hotel. Special arrangements have been made by the city of St. Louis, the Business Men's League and the Aero Club of St. Louis to contribute to the success of the visit. The Aero Club of America has appointed a reception committee under the chairmanship of Cortlandt Field Bishop.

ONE RECORD LOWERED IN FRENCH STRAIGHTAWAY

PARIS, Sept. 16.—On the white band of perfect highway bordered by olive trees, between Salon and Arles, Bablot has succeeded in lowering a world's record with the Brasier racer which he drove in the Grand Prix. His time for five kilometers, flying start, was 1:56 4-5, beating the Mors record by :31-5. The Brasier made the fastest time over the kilometer in :23 4-5, but failed to lower the world's record for this distance. It should be remembered, however, that Hemery, who placed the kilometer on the Salon road at :20 1-5, had the eight-cylinder Darracq which, later, on Florida Beach, attained a prolonged speed which no other vehicle has equaled. Bablot's Brasier was the machine which turned turtle in the Grand Prix when trying to avoid one of the Renault racers on a difficult turn.

Rougier, on the Dietrich which he handled in the Grand Prix and later on the Brescia circuit, in Italy, came second, nearly three minutes behind the Brasier. For this magnificent piece of road-

way, probably the fastest in the world, his machine was not geared sufficiently high. Duray, though expected, failed to make an appearance. A Tourand car had trouble at the starting line which prevented it competing. Rochet-Schneider took third place in both the kilometer and five-kilometer races. Summary of times for the big racers is:

	One Kilometer.	Five Kilometers.
Brasier (Bablot).....	23 4-5	1:56 4-5
Dietrich (Rougier).....	28 1-5	2:04 2-5
Rochet-Schneider (Haeusslin).....	32 1-5	2:38 2-5
Average for kilometer, 93.9 miles an hour; for five kilometers, 95.7 miles an hour.		

Previous years' touring car races have been run on a selling price basis; this year classification was by cylinder area, thus making difficult any comparison between the present and previous speeds. The fastest time made by any tourist was an average of 69.4 by a Radia on the kilometer and 71.7 miles an hour by a La Buire on the five-kilometer stretch.

ADVERSE DECISION IN TIRE PATENTS CASE

BY his decision, handed down on September 9, Judge Buffington, sitting in the United States Circuit Court for the Western District of Pennsylvania, has brought to a close the first chapter in the long-drawn-out litigation over what are familiarly termed the "clincher tire patents." There are four of these patents, the first of which was granted to Thomas B. Jeffery on July 16, 1891, then of the old firm of Gormully & Jeffery; the second patent was issued on April 28, 1896; the third on January 5, 1892, and the fourth on July 17, 1894, all of them covering means of attaching the shoe or outer cover of a pneumatic tire to a rim without cementing, which was the only method known at the time, this being employed on the so-called Dunlop "rag" tire. In brief, the principal one of these patents, which is the first, covers the familiar "bead" or retaining edge of a clincher shoe and is considered as basic by its owners, while the others cover modifications of the same idea, with the exception of the fourth, relating to the tube. The official title of the action is the G & J Tire Company, Indianapolis, Ind., vs. the Pennsylvania Rubber Company, Jeannette, Pa., and there is a similar action pending against the Michelin Tire Company, in the Southern District of New York, in which no decision has yet been rendered.

By his recently delivered decision in the first-named action, Judge Buffington has left the complainants not a leg to stand on, as he holds in the plainest terms that none of the patents has been infringed. While the G & J Tire Company has been somewhat taken aback at this, it has announced its intention of appealing, and has issued a statement to the effect that, holding that there has been no infringement is equivalent to stating that neither the G & J Tire Company nor any of its licensees have ever manufactured the construction called for by the patents, as the clincher tire manufactured by the defendant is precisely the same as that continuously made by the G & J Company.

The substance of Judge Buffington's decision, which, if sustained, will be far-reaching in its effect, is as follows:

"The rim (A) is provided with hook edges all al, and the figure referred to shows hooks on the rim.—For these provision is made: 'The tire-sheath (C) is provided with correspondingly hooked edges XI Cll. In the specifications alone the words hook or hooked are found some seventeen times and other than double hooked connection no other method is stated or suggested. If the patentee or his device contemplated the use of any other means or form of engagement he did not disclose it to the public.

"This combination of sheath and tire in the various modifications of this double hook engagement constitutes the claims in question, and the hooks (beads) on both, in some form, are elements of every claim, of which the first, for brevity's sake, will serve to illustrate, viz.: 'In combination with the rim having recesses open toward the axis of the wheel, the tire sheath having its edges reversed and engaged in such recesses, and the elastic expandible core (tube) between the rim and the sheath, substantially as set forth.' Now in the light of this specification we are clear the respondent's tire does not infringe. The respondent uses other means to hold its tire in place, and its method is not disclosed or suggested in the patent in suit. If the disclosure of that patent comprised all the instructions the tire maker of to-day possessed, it is evident the art would not teach the method followed by both

respondent and complainant in the manufacture of a modern automobile tire. The patentee showed a hook pure and simple. His hook was such that the hooked edges of the rim 'may be turned inward or outward.' His are genuine hooks, so shaped that by virtue of the form and uses of their recesses, increase of disruptive force, whether the hook or rim is bent outward or inward, lessens the possibility of detachment of the interlocked edges. On the other hand, if the edge of respondent's rim is turned outward no pneumatic connection can be made with a sheath, showing that the connections used in the two methods are essentially different. Respondent's device has no hook open toward the axis, nor one in the direction of a tangent to the inflatable core, while air pressure increases the adhesion of its engaging surfaces, yet its method of doing it is not the process of increasing engagement by the catch ends of the patentee's hooks mutually interlocked in holding recesses. In our judgment it would be a miscarriage of the patent system to so construe this Jeffery patent with its specific form of hook connection as to make it cover respondent's device, which is so different from the hook of the patent that even the complainant who owns that patent uses the same method and not the hooked engagement of the patent.

"The second patent is No. 558,956, issued April 28th, 1896, for a wheel tire, claims 5 and 10 of which are alleged to be infringed. Respondent defends on the ground of non-infringement. We are of the opinion the defense is sustained. The subject matter of this patent, its late date in the art and the close differentiations required to obtain the narrowly limited claims in question indicate the patent was restricted to a comparatively narrow field of improvement."

The claims of this patent provide for "tires having inflatable cores; and it consists in the character and construction of the inclosing sheath and the mode of securing the same to the rim." The sides "of the sheath were made of folded canvas or other web, joined at the folded edges to a tread of rubber of sufficient thickness to stand wear and sufficient elastic flexibility to adapt it to yield with the core, and having also tensile elasticity, so that the sheath which comprises it at the middle section is transversely extensible to a slight degree."

Claims 5 and 10 of this patent both provide for beads extending inwardly so as to be held between the core (tube) and the rim.

"In the respondent's device, however, the sheath ends with its two peripheral side connections with the rim," reads the decision. "No theory or ingenious connection can change that fact, and fact, not theory, is the test of infringement. Accordingly we hold respondent does not infringe.

"The third patent is No. 466,565, issued January 5, 1892, for a wheel tire, claim 7 of which is alleged to be infringed. The defense is non-infringement. It is a device for fastening a tire sheath to a rim by means of hooks, five different modifications of which are shown in the drawings. The respondent, using no hooks to make its connection, does not infringe.

"The fourth patent is No. 523,314, issued July 17th, 1894, for a wheel tire, of which Claims 1, 2 and 3 are alleged to be infringed. The defense is non-infringement. As pertinent to the present case the patent was for a tire provided with an auxiliary wedging device. This consists of a circular ribbed ring, preferably of soft rubber, cemented to the inner periphery of the tube. Now the respondent has neither ring nor rib on its core, but it is alleged to infringe by the use of small butterfly bolts placed at four quadrant points and clamped to the rim by a rigidly fixed bolt and nut with a set-screw and serving to keep the sheath in place on the rim should the core become deflated. The bolt is not affected by either tire inflation or deflation. It is thus clear that its functions and structure are wholly diverse from the ringed rib of complainant's patent, and performs a wholly different function."

RECORD FIGURES IN 24-HOUR RELAY RACE.

MILWAUKEE, Wis., Sept. 21.—New figures were put up in 24-hour relay races by the performance of the Locomobile team of four-cylinder, 40-horsepower cars driven by Drach and Leiser. In two rounds of the clock 1,146 miles were covered, breaking the relay record of 1,135 miles, made by the Ford team at Detroit last June. The Locomobile also made the fastest time for 100 miles, covering that distance in 2:01:09. A Mitchell, driven by Friend and Brown, was second with 914 miles to its credit; a two-cylinder Buick was third with 884 miles. Alto-

gether there were seven starters: Locomobile, Jackson, Buick, Mason, Cadillac, and Wayne. The Loco was first at the end of the initial round and had no difficulty in maintaining its lead. The Jackson had carbureter troubles at an early hour, and, there being no relief car present, had to abandon the contest. The Wayne was in a similar difficulty when engine trouble came its way. During the tenth hour the Mason car went through the fence, its driver, George Dusenberg, suffering a broken collar bone. The Cadillac was withdrawn during the fifteenth hour.

THE NEW IMPERIAL TO BE AT THE PALACE.

One of the new cars to be uncovered at the coming Grand Central Palace show in October will be the Imperial, made by the Imperial Motor Car Company, Williamsport, Pa. Though it began operations a year ago, the company has made haste slowly and this is but its second model, which is designed on larger and more powerful lines than the first. The motor is of the company's own design and is conservatively rated at 35 horsepower. It is fitted with an Eisemann high-tension magneto and double ignition system. The clutch is a metal-to-metal floating ring, with cork inserts, while one of the features of the car on which its designers have lavished a great deal of attention is the double drop frame, giving a "straight line drive," bringing the crankshaft of the motor and the rear axle on practically the same plane when the car is carrying its normal load, thus avoiding a great deal of friction and consequent rapid wear at the universals. A four-speed and reverse gear-set with selective type of operation is fitted, drive being by propeller shaft. An I-beam front axle is employed and a floating rear, the running gear having 36-inch wheels. The lines of the car are pleasing, as will be evident from the photograph illustrating the Imperial roadster, in which Fred P. Brand, vice-president and general manager of the company, is at the wheel, and Superintendent William I. Glasby



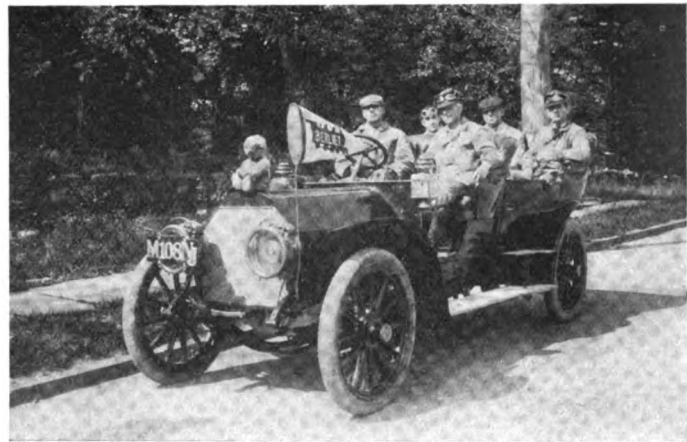
MANAGER FRED BRAND AT THE WHEEL OF THE IMPERIAL.

is seated beside him. The first model has been used continuously for the past year as a demonstrating car over the Pennsylvania mountain roads and their "thank-you-marms" and has not been in the shop a day.

TRANSCONTINENTAL DRAGON IN HARD LUCK.

One misfortune after another has so served to delay the Dragon car in which Charles A. D'Arcy left San Francisco on September 4, in the attempt to make a new transcontinental record, that the prospects of lowering the latter have practically vanished, despite which Mr. D'Arcy and his crew will bring the car through to New York. On Sunday last, September 22, the car passed through North Platte, Neb., which means that by far the worst part of the trip has been left behind. Some of the troubles encountered included getting stuck in a quicksand, being stalled on the desert and suffering the loss of two of the drivers, not to mention wrecking the differential, which, however, was replaced by a spare one carried on the car. The car is being driven by D'Arcy and Theodore Hartenstein and they were accompanied at the start by Benjamin W. Turner and Frank Sexton. The route followed paralleled the tracks of the Central Pacific, Union Pacific and Chicago & Northwestern roads as closely as possible, and this will land the party in Chicago, from where the northern route through Indiana, Ohio and New York State will be followed to New York City.

Six-cylinder automobiles will be made by the Newcastle (Pa.) Automobile Company, a new concern headed by Daniel Morgan, of Pittsburgh. A factory will be erected.



THE BERLIET "SIX" PARTY LEAVING GOTHAM FOR CHICAGO.

A BERLIET "SIX" OFF ON A TOUR.

Although it was Friday the thirteenth—a combination generally held to be particularly ominous for the undertaking of an enterprise—that fact did not deter a party that left New York for Chicago on that day in a new Berliet six-cylinder car, bound for Chicago. H. C. Townsend at the wheel, F. M. Hoblitt and Arthur N. Jervis of the American Locomotive Company, accompanied by Enoch Rector and B. C. Buxton, secretary and treasurer, respectively, of the W. W. Shaw Company, Chicago agents for the Berliet cars, comprised the contingent which thus set superstition at defiance. After a short stay in Chicago, St. Louis, Indianapolis, Cleveland, Buffalo, Pittsburgh, Philadelphia and a few other cities will be visited on the return trip, arriving back in New York about the middle of October.

A RECORD-BREAKING LOAD FOR CLIMBING.

It is one thing to take a car up a mountain on the high gear, but quite another to pile in it and on it all the load that it can possibly be made to carry and then accomplish the same feat, so that the makers of the Pennsylvania are justly proud of the performance of one of their cars in climbing Never-Sink mountain, near Reading, Pa., "loaded to the gunnels," so to speak, as shown by the accompanying photograph. There are many stretches that are extremely stiff, aggravated by sharp turns, and at the time the car was sent up the surface was badly cut up by washouts, which had been refilled with loose, soft earth. The entire distance was covered without the necessity of changing gear. The human load consisted of Philadelphia newspaper men who were there to see and observe as well as to be carried.



LOAD OF SCRIBES THAT THE PENNSYLVANIA CARRIED.



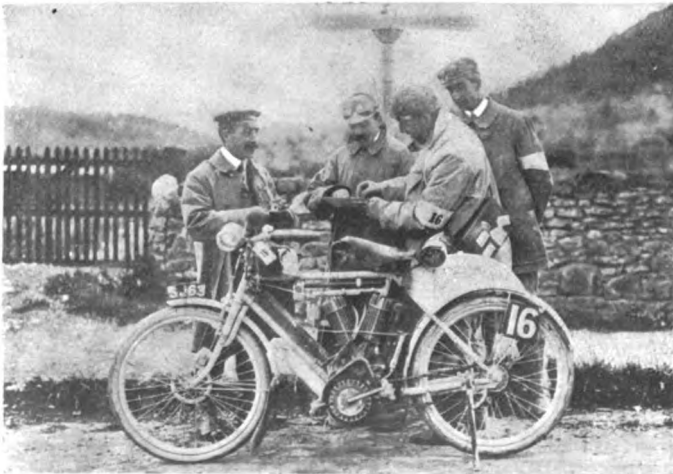
WHAT THE LOZIER CAR ENCOUNTERED IN NEVADA.

IN THE WILDS OF THE GOLD-MINING COUNTRY.

Nothing has proved such a boon to the prospector as the automobile, and, high as the price of gasoline on the Western deserts and in the mountains, miles away from the nearest railroad, it is cheap compared with the expense of muleback travel. C. W. Feigenspan, of Goldfield, Nev., is a prospector who finds his Lozier car particularly valuable in this class of work, to which he has been devoting it steadily in California and Nevada for the past three months. The illustration is from a photograph taken in the Nevada wilds. Mr. Feigenspan shortly expects to drive the car overland to New York, but that will not make one automobile the less in Goldfield, for as a result of his success L. W. Stevenson, president of the Southern Pacific Railroad, recently invested in a 40-horsepower Lozier and will drive it out there.

HASTINGS RETURNS FROM ENGLAND VICTORIOUS.

Theodore K. Hastings, who went abroad early last summer to compete in the 1,000-mile endurance contest held under the auspices of the Autocycle Club of Great Britain, returned last Thursday on the *Oceanic*. The tour was held from August 19 to 24, start and finish being near London, while the route lay for a large part through Wales and its picturesque hills. Hastings was among the first five to finish and received two gold medals, one for his performance in the contest and the other for the neat appearance of the two-cylinder Indian motorcycle which he rode, a prize having been offered for the best appearing and best kept machine. He had a perfect score in the contest, his mileage being 1,002. Of the 39 starters, but 15 finished, and Mr. Hastings expressed himself as so well pleased with his trip that he will repeat it next year.



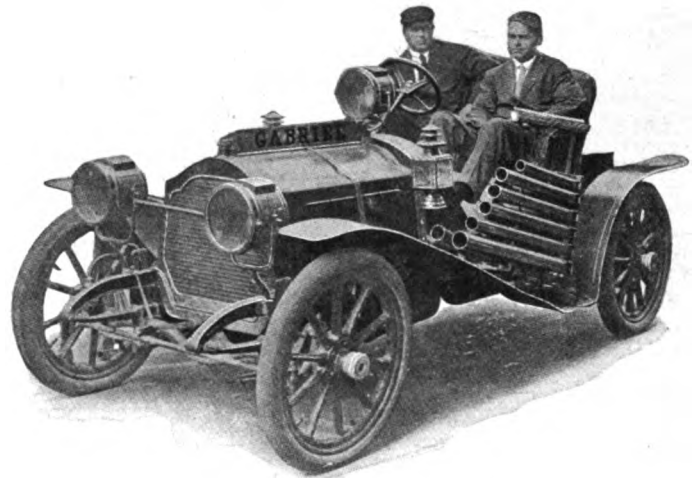
HASTINGS CHECKING AT ONE OF THE CONTROLS.

KNOX NAME BELONGS TO OLDER CONCERN.

SPRINGFIELD, MASS., Sept. 23.—By an injunction issued in the Superior Court in the case of the Knox Automobile Company vs. the Knox Motor Truck Company, the latter concern is ordered to cease doing business under its present name or any name of which the word "Knox" is a part. The decree was issued in response to a bill of equity filed about two years ago in which it was alleged by the Knox Automobile Company that the Motor Truck Company in using the word "Knox" was leading to a confusion on the part of the public between the two cars and an injury to the plaintiff's business.

In the memorandum accompanying the decree Chief Justice Aiken finds in support of the contention of the plaintiff that confusion between the cars of the two companies must necessarily arise, and also that whatever reputation in the automobile business is attached to the name "Knox" is due largely to the Knox Automobile Company.

The court reviewed the facts brought out in the hearing relative to the association of Harry A. Knox with E. H. Cutler and others in the Knox Automobile Company, incorporated in 1900. In 1901 Mr. Knox conveyed by a bill of sale to his copartners his entire share of the business, giving them full title by a bill of sale to all the company's assets, and in 1904 disposed of all his stock in the company. Immediately afterward the rival concern was started, the defendants in the present case.



C. H. FOSTER AND HIS GABRIEL HORN CHIMES.

MAKING MUSIC FROM THE EXHAUST.

That the automobile, as representative of the most up-to-date method of transportation, has also been responsible for similarly progressive ideas in advertising was never better illustrated than by the recent 6,000-mile trip made by C. H. Foster, of Cleveland, O., to introduce the new 28-chime Gabriel horn, as well as to demonstrate the qualities of the Foster shock absorber. The horn is really a pipe organ on a small scale and, despite the restricted space limitations offered by an automobile, Mr. Foster has devised a regulation keyboard on which almost any composition can be rendered with its full chords, though there are but few more keys than three octaves. The principal cities in Michigan, Wisconsin, Illinois, Indiana, Ohio, Massachusetts, Connecticut and Rhode Island were visited as well as New York City, where performances while en route through Central Park, and on Coney Island's bowery, caused no end of astonishment. Old timers thought the steam calliope had been revived in a far more refined shape and run by gasoline, though it is considerable of a mystery to the average observer as to just what does form the operative power of the compact and inconspicuous instrument. Its appearance on the car is shown by the accompanying illustration, though neither this nor an actual view of the car itself gives an inkling of just how the player performs except upon a view from the left hand side.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

Design patent has just been allowed Gray & Davis, Amesbury, Mass., on their new 1908 searchlight. Its design and character was so distinctive that patent was allowed without question.

The Toledo plant of the Pope Motor Car Company has been ordered closed for the purpose of making an inventory. It is expected that about two weeks will suffice to do this and that the plant will resume operations at the end of that time.

The Seitz Manufacturing Company has been voted \$10,000 by the city council of Monroe, Mich., and will erect a factory there. The company will make a new commercial vehicle, a special feature of which will be the transmission equipment, the inventor of which is the president of the company.

In the automobile parade in Buffalo during Old Home Week, much attention was attracted by the first carriage built by the Babcock Electric Carriage Company, of that city. The vehicle is still in daily use, and is stated to have traveled more than 70,000 miles. It is used by some of the factory officials, and was driven in the parade by A. H. Kime.

The Glide Club, recently organized at Peoria, Ill., held its initial club run last Sunday. The rendezvous was Lake Senachwine, fifty-two miles from Peoria, where the party was entertained at the Undercliff Hotel. Ten Glide four- and six-cylinder cars are reported to have made the round trip without adjustments of any kind, and all returned on schedule time with perfect scores.

An interesting business trip of about 6,000 miles has just been completed by W. B. Fewell, western representative of the Locomobile Company of America, in the 1908 40-horsepower car. The start was made from Bridgeport, Conn., and the route covered was from New York to Albany, through the State to Buffalo, then to Cleveland, Columbus, Cincinnati, Wheeling, Pittsburg, Bedford Springs, Gettysburg, Harrisburg and Philadelphia. The principal reason for the trip was to show the 1908 product to the agents.

For the purpose of enlightening the purchasing public on the mechanical construction of 1908 models, and the principal changes from 1907 to 1908 cars, the American Motor Car Manufacturers' Association has engaged the services of Charles E. Duryea, who is recognized as one of America's leading mechanical experts, to write comprehensive mechanical data for the Association's members. As Mr. Duryea is one of the pioneer auto builders of the country, and an authority on gas engines, his articles will attract widespread attention.

John Wilkinson, chief mechanical engineer of the H. H. Franklin Mfg. Co., Syracuse, N. Y., and designer of Franklin automobiles, will probably never overcome his tendency to make peculiar and special experiments. A few days ago he tried out a 1908 Franklin by taking off the air fan, placing a blanket over the hood, loading the car with 700 pounds of lead, and making a run of thirty miles to his country residence, just to see if he could overheat the air-cooled car. Although successful in many of his ex-

periments he is reported to have failed in this particular instance.

The new home of the Matheson car, a concrete and steel building of imposing proportions, five stories and basement, located on Broadway, between Forty-ninth and Fiftieth streets, and running from Broadway through to Seventh avenue, will soon be ready for occupancy. It is opposite the present quarters of the Palmer & Singer Mfg. Co., the distributors of the Matheson car. The building is so constructed that three stories additional may be built on whenever necessary. The decorating and finish, both within and without the building, are highly artistic. The upper floor has been arranged as a repair and stock room; three intermediate floors will be used for the garage, and are capable of accommodating 150 cars; a magnificent salesroom, 36x40 feet, with a mezzanine balcony and offices, will be located on the main floor. The building is provided with two large elevators, each having a lifting capacity of 12,000 pounds.

RECENT BUSINESS CHANGES.

The Brooklyn Motor Car Company, 1384-1386 Bedford avenue, Brooklyn, N. Y., has incorporated, and will hereafter be known as the R. E. P. Sporting Goods Company. The company's line will not only be comprised of auto supplies, but will include everything pertaining to the outfitting of a sportsman.

The Walter Automobile Company has placed E. S. Lea in charge of its agency in Philadelphia. Mr. Lea was formerly connected with the company's factory at Trenton in a prominent capacity. In addition to handling the Walter and Darracq cars, the Philadelphia house will also carry a line of Belgian motorcycles.

A number of changes in the location of auto dealers in Worcester, Mass., are being made. The Robinson garage on Church place, on the west side, is to be taken and managed by the Worcester Motor Car Company, a new entrant in the field. George H. Phelps, agent for the Corbin car, is to have a garage at Newton square. The Pond Auto Station, which has an uptown office at 186 Main street, and its garage on Assonet street, will have a new garage on Allen court, just off Main street, at Franklin square.

NEW AGENCIES ESTABLISHED.

The New York agency for Continental motors, manufactured by the Continental Motor Company, Muskegon, Mich., has been placed with Thomas J. Wetzel, 29 West Forty-second street.

Sheldon W. Case, agent for Holsman automobiles in Newark, N. J., and vicinity, has opened a show room at 292 Halsey street, that city. Last year Mr. Case conducted the Holsman sales from his Montclair office, which will be retained, making two salesrooms for the car in the territory.

The New York agency for the Atlas two-cylinder runabout, made by the Knox Motor Truck Company, Springfield, Mass., has been placed with C. H. Martin, formerly of Martin & Company,

consulting engineers on commercial vehicles, who has opened headquarters at 31 West Forty-second street.

The Lozier Motor Company makes the following announcement of new agencies placed for 1908: For Jersey City, with George Blakesley, president of the Crescent Automobile Company, who is one of the pioneer dealers of Hudson County, N. J.; for Cincinnati, the Sid Black Automobile Company, who last year handled the Lozier and Franklin and other lines, and will this year confine its attention to the Lozier and Franklin exclusively; for Columbus, O., and vicinity, the Orlando-Kessler Company.

President Horace DeLisser, of the Ajax-Grieb Rubber Company, who is now making an extensive tour of the country, has opened the following Ajax tire branch houses: In Chicago, at 1418 Michigan avenue, in charge of G. J. Durwell, formerly branch manager for the International Tire Company; in Detroit, in charge of Charles Hatch, formerly branch manager in that city for the Hartford Rubber Works, and prior to that time with the Diamond Chain Company. Mr. DeLisser is now en route to California, where he will establish other branches.

PERSONAL TRADE MENTION.

F. C. Chandler, manager of the foreign department and the western agencies of the Lozier Motor Company, is making a tour of the western cities. W. S. M. Mead is visiting the eastern Lozier agencies.

Leo Melanowski, formerly identified with the Dragon car, and, until recently, chief engineer of the Aerocar Company, Detroit, Mich., leaves to-day on *La Lorraine*, accompanied by his wife, for a four months' visit to the automobile factories of France, England, Germany and Italy.

ERNEST KELLY'S DEATH.

By the unfortunate death of Ernest Kelly recently at Sacramento, Cal., the Dragon Automobile Company has lost a valuable helper, and a large circle of friends mourn a genial spirit. Ernest Kelly, who was one of the traveling sales managers of the Dragon concern, had gone westward to straighten out some business for his company. During his stay in Sacramento he undertook to drive Percy Walker's Thomas Flyer in a match with Fernando Nelson's car of the same make, handled by Bert Dingley. Owing, it is thought, to the dusty nature of the track, Kelly drove into the fence when traveling almost sixty miles an hour. The machine broke through the barricades, struck a ditch, then threw the driver some fifty feet. Although seriously injured, Kelly regained consciousness at the hospital sufficiently to talk cheerfully to the doctors, but later lapsed into unconsciousness and passed away.

Last winter Ernest Kelly gained prominence by piloting a Thomas car in one of the longest non-stop runs held in this country. One of his last tasks with the Dragon people was the starting of the transcontinental Dragon which is now crossing the continent.

INFORMATION FOR AUTO USERS.

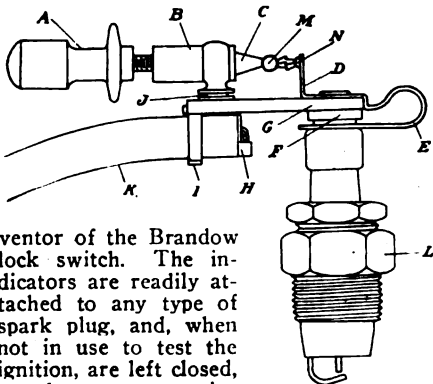
Town and Country Driving Boots.—Handling the wheel of a car in winter weather, or sitting in the tonneau, is pretty cold work, particularly for tender extremities, and to avert this unpleasantness Guiterman Brothers, Saint Paul,



GUITERMAN'S DRIVING BOOTS.

Minn., are marketing a special type of fur-lined boots for both men and women. They are designed to pass over the ordinary shoe readily and extend considerably above its top, thus affording thorough protection to both the ankles as well as the feet. The type illustrated is 17 inches high and is known as the Czar boot; it is made of black leather, as shown in the illustration, with a heavy oak sole and heel. Other types, such as the "Romeo" and "Dixie" are made 9 inches high, the first named in tan with light, flexible sole, and the second, in two types of black with flexible or stiff, heavy oak sole and heel. For women, the "Juliet" style comes in two heights, 11 and 14 inches, in tan or black leather, both having light, flexible soles. They are ordered by giving the regular shoe sizes of the intending wearer.

Brandow Spark Indicator.—This is a device designed to aid in the location or discovery of ignition faults, and is the invention of Dr. Frank W. Brandow, of Pittsfield, Mass., formerly president of the Berkshire Automobile Club, and in-

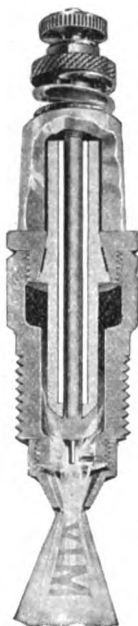


BRANDOW INDICATOR APPLIED.

ventor of the Brandow lock switch. The indicators are readily attached to any type of spark plug, and, when not in use to test the ignition, are left closed, as they are not intended to form spark gaps. They are permanently attached to the engine, one at each plug, and are accordingly always ready for use. To adjust vibrators, or test a unit of the coil, the indicators are opened about 1-4

inch, while, to time the engine, they are opened but 1-8 inch. Weak batteries are shown by the indicators by an occasional miss, while faulty carbureter adjustment is revealed by irregular firing in spite of the spark passing constantly, the indicators being open about 1-8 inch; for magneto testing they are opened 1-4 inch. The device is being manufactured and marketed by the Brandow Combination Lock Switch Company, 86 North street, Pittsfield, Mass.

Vim Spark Plug.—This plug, which is just being put on the market by the K-W Ignition Company, Cleveland, O., embodies many radically different ideas in plug construction. The chief of these is the elimination of all packing and the substitution of ground taper joints



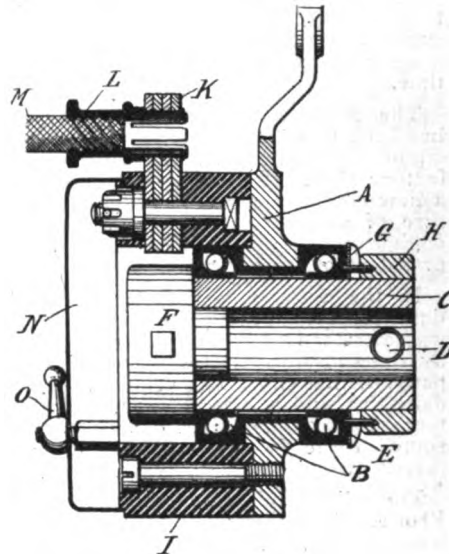
NEW VIM PLUG.

which are absolutely gas tight and are maintained so in spite of the expansion and contraction of the different parts by being subjected to the tension of a helical steel spring. To insulate it, the central stem of the plug is surrounded by a heavy wrapped mica tube, which fits into the center of an unglazed porcelain tube, thus making it a combination mica and porcelain plug, having all the advantages of the high insulating properties of both these materials without their drawbacks. Surrounding the large taper joint, near the hexagon nut, is an annular pocket extending for a considerable distance along the porcelain core. The old or burnt mixture is compressed back into this space, allowing an ample volume of new mixture to surround the spark gap part of the plug at the base of the brass nozzle. The latter confines the mixture within the plug, so that when the spark occurs at the gap, it explodes the new mixture confined in the plug and shoots a blast of flame out through the nozzle into the cylinder. The Vim plug is claimed by its makers to be absolutely soot-proof as the result of this construction.

Mexican Graphite Auto Lubricant.—This lubricant is intended for general automobile use, and is said to be absolutely uniform, gritless, dripless and free from precipitation, and it can be employed wherever oil is used, such as in the gear or differential case, wheel hubs and similar situations, with great economy, owing to the absence of dripping. This gritless graphite powder is manufactured by the United States Graphite Company, Saginaw, Mich., from graphite of their own mines in Mexico, and its specific advantages lie in the fact that it is reduced to an impalpable powder by an elaborate system, and is then combined with the proper lubricating oils and solidified to the right consistency for automobile use. In this state it has a great affinity for oil, and in consequence possesses great power of adhering to bearing surfaces, which makes it very valuable as a lubricant. The compound is about the consistency of

non-fluid oil and carries exactly the proper proportion of the powdered graphite, a result that, the makers state, is difficult, if not impossible, to obtain by hand mixing.

Herz Ball-Bearing Timer.—For 1908, Herz & Company, 203-205 Lafayette street, New York, are bringing out a timer to be known as the 1908 Excellent Standard. This is an improved design, mounted on ball-bearings throughout, and is self-adjusting. All parts are in-



SECTION VIEW HERZ TIMER.

terchangeable, of the best materials and the most accurate workmanship. In the illustration, A is the steel base and advance lever with hardened cups for the ball bearings B, while C shows the rotating center sleeve with the contact plunger F, this sleeve being fastened to the camshaft or timer shaft by the set screw D. H is a collar fastened on the sleeve by means of two set screws, holding a specially designed screw G, which presses against the lower cone E, thus making the device self-adjusting, by taking up both lateral and endwise movement. The cone flanges are fitted close to the bearings to make them dustproof. I is the hard rubber insulation containing the contact K of laminated tool steel plates with a brass sleeve, into which the terminal L is pressed. The latter is reversible and can be attached either from the top or bottom. The wire M is attached to the terminal L by laying it over the outside and screwing in through the threaded hole.

An Improved Carriage Lock.—A security locking handle which should be well received by all automobilists interested in the minor perfections and luxuries of their cars has just been put on the market and is handled in New York City by the Auto Supply Company, 1733 to 1737 Broadway, New York City. The lock is combined with the handle, obviating the necessity of a separate lock with keyhole on the door frame and cut away on the pillar. Each pair of handles includes two keys, which fit either handle. The locking device in each pair differs so that none of the keys will fit any but the handles for which they are made. This safety locking handle can be used with any ordinary lever lock and, being interchangeable, an ordinary handle may be replaced by it in a few moments.

THE AUTOMOBILE



MANAGER FOSDICK PLEASSED



HARRY CEDRINO AND PARKER



TANGERMAN JR. QUIETLY ELATED

Morris Park's Concluding 24

Marred by Fatality and Accident. Winner: Fiat of Italy.

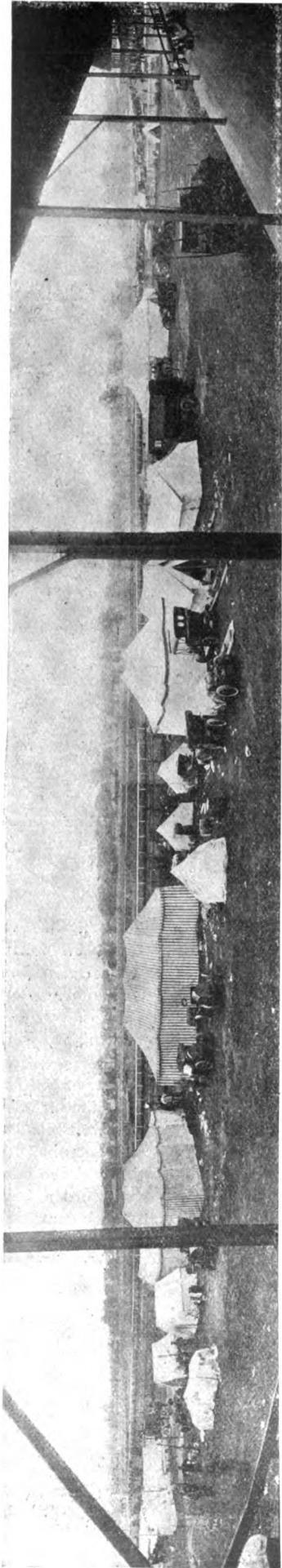
FIAT, driven alternately by Cedrino and Parker, ran up the highest score in the second twenty-four hour race, held September 27-28, at the Morris Park track. The 984 miles to the credit of the Italian machine when Official Wagner fired the pistol shots which announced the termination of the long struggle made victory an easy one, for Studebaker was far behind, with 878 miles, and the Itala had 873. The Renault record of 1,079 miles remains unbroken, but it should be mentioned to the credit of the contestants in the last event that for six hours they had to struggle in a drenching downpour of rain, which rapidly transformed the dirt track into a quagmire. Goggles could not be worn when ploughing through the sea of mud and water, with the result that every driver on the track suffered intensely from the effects of the dirty mess thrown into his face at every turn of the wheels.

With one fatal accident to record, that of L. W. Smelser, the pilot of No. 3 Lozier, and several very narrow escapes on the

part of drivers and spectators, the question involuntarily arises: "Is the game worth while?" The man who lays down his dollar for thrills probably has no reason to grumble at his bargain, but every person with an interest in the welfare of the industry, or any knowledge of racing in its most wholesome forms, will declare unhesitatingly that, as at present conducted on improvised horse tracks, this form of contest is harmful.

There was but one absentee at the starting line when the competitors were lined up in four rows opposite the grandstands and sent away by Wagner at intervals of five seconds. The missing one was the Renault with which Paul Lacroix and Meurice Bernin established the record of 1,079 miles at the last meeting. While attempting a Chicago-New York record a few days ago, Bernin was struck by a non-skid band, which came off the tire when traveling at a rapid rate. The injury, though not of a serious nature, was exceedingly painful, causing the driver to abandon his cross-country run and withdraw his engagement





VIEW OF MORRIS PARK, TAKEN SATURDAY MORNING WHILE THE RACE WAS IN PROGRESS AND BEFORE THE ACCIDENT HAPPENED WHICH CAST A GLOOM OVER THE WHOLE AFFAIR.

in the Morris Park race. Lacroix took consolation in a challenge to the winner of the race and also to the Thomas victor of the Brighton Beach "24."

At the outset a very rapid pace was set, the Dietrich running off 52 miles; the Simplex and Lozier No. 3, 50 each, and a number having well over 40 miles to their credit at the end of the first hour. It was obvious that such a rapid rate of travel could not be maintained on the track, for although lighting was better than ever before, some oiling had been done, and a little attempt made at banking, the turns were still in bad condition. Few of the drivers appeared to have a just appreciation of the speed which they could reasonably hope to maintain during two rounds of the clock, danger-courting driving and playing to the gallery being more common than sane handling of the machines on a makeshift track. Gas lamps were used almost exclusively for both head and rear lights, consequently there were few stoppages to light up during the night. Whenever a stop was made it was always because of broken piping or rubber tubing having slipped off the metal ends. No. 6 Matheson was the first to abandon the contest, after two hours' running. The penalty for excessive speeding on turns had soon to be paid in the shape of time lost for changing tires, and business began early at the big camp installed below the stands.

One of the features of the organization of the race was the attention which had been given by nearly every entrant to the fitting up of the repair tents and providing accommodation for the helpers. The Diamond Tire Company, which supplied all the contestants but three with tires,

had a well-organized establishment in charge of G. A. Davidson. A solid wood platform gave a secure standing ground on which to work on the cars, one large tent held a quantity of tires, and smaller ones were used for lodging the workmen. Lighting, too, was satisfactory. Instead of a single tent in which men slept, ate, worked and fell over one another in busy moments, there were a number of large, well-lighted tents, with tools laid out on tables, spare parts aligned carefully, and gasoline and water cans filled and painted in such a way as to avoid confusion in the exciting moments when a car ran in for repairs. In front of the improvised workshop, too, stout floor boards had been laid down and guarded off by ropes. Smaller tents close by provided sleeping accommodation for the staff of mechanics.

The Lozier people had even gone one better with a private checking station opposite the camp, where the passage of each of the firm's cars was recorded mechanically, and where the cream-clad drivers were given their position round by round by the aid of luminous signs. At the opposite end of the line Matheson had a private signaling system to their drivers.

Vigorous efforts were made by officials, police and a squad of Pinkerton men to keep the paddock clear of idlers. With large gaps through which healthy inquisitive youths could crawl with little difficulty, the task was not always an easy one, but the routing out was zealously performed by the big stick brigade.

At the end of the third hour the two Loziers had got a good lead with 143 and 146 miles respectively, followed by Vaughan on the Stearns, with Fiat, Allen-Kingston, Darracq and Motobloc closely bunched. Smelser continued to maintain a high rate of speed, covering 44, 46, 47 and 49 miles in the hour, until the seventh, when he lost time, and Cedrino on his Fiat drew level. At the end of the ninth hour the Italian had a lead of eight miles and from this point onward continued to draw away from the crowd until the end. At the end of the sixteenth hour the Fiat had got ten miles ahead of the Renault record for that time.

How the Improvised Track Claimed Its Victim.

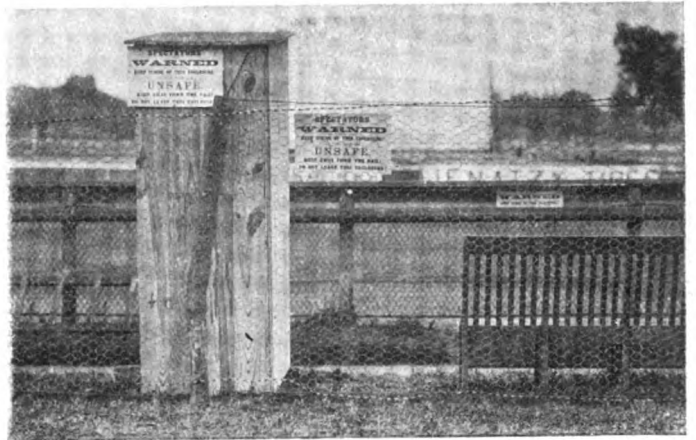
Near the end of the thirteenth hour L. W. Smelser, who had driven the Lozier No. 3 continuously from the start, and was then in eighth position, crashed through the barrier at the upper turn and received such injuries that he died an hour later at the Fordham Hospital. According to the Lozier people, the right front tire blew off the rim through taking the turn from the back stretch at too high a speed. It was impossible to swing the machine round with the deflated tire hanging to the wheel, and it rushed straight ahead into the barrier marking the limits of the track. The top bar of the hedge consists of a stout metal pipe used for carrying water when the course was the scene of horse racing. The car passed under this, the top of the radiator being damaged in the passage. Fred Hall, Smelser's mechanic, being rather lower than the driver, passed under this pipe and escaped injuries. Smelser either dodged too late, or was too tall to escape the pipe, for he struck it with his head and fell from the machine unconscious. Doctors on the field gave the necessary attention immediately and the unfortunate man was hurried to the hospital, where he died an hour later.

A couple of spectators, who had no business near the inner rail, were struck by the machine, and sustained injuries which fortunately were not of a very serious nature. By breaking through the barrier and running across the grass land before it pulled up, the front of the machine was considerably wrecked, but after examination of the parts the Lozier experts are emphatic in declaring that no part of the steering gear broke and that the accident can alone be attributed to the tire pulling off the rim through taking the slightly banked turn on loose earth at too high a speed.

As soon as news came that Smelser was dead, Mr. Lozier ordered the companion machine, driven by Michener, to withdraw from the contest; it was then in fifth position. L. W. Smelser was junior member in the firm of the Linkroum-Smelser Automobile Company, of Newark, N. J.



STUDEBAKER CONTESTANT WHICH FIGURED AS SECOND SURVIVOR.



PRECAUTIONS TO KEEP ONLOOKERS OUT OF DANGER ZONE.

Both Mathesons had gone out during the night, Nuneman's Darracq was in the paddock with a couple of cylinders taken down, the driver declaring that the clumsy mechanic had pumped air instead of oil into the engine; Mack's Dietrich, after the fastest initial round of the meet, had to be doctored at frequent

a remarkably lucky manner. At the time of the spill four other cars were following the Packard on the turn and for a moment there were prospects of a serious mix-up. Fortunately, however, all steered clear. Compared with the last race held on the Morris Park track, this turn appeared to be particularly bad.

MILEAGE HOUR BY HOUR IN THE SECOND MORRIS PARK 24-HOUR RACE, SEPTEMBER 27-28.

CAR	H.P.	DRIVERS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
1) Fiat.....	35	Cedriano-Parker.....	43	90	134	180	227	271	316	362	408	457	504	553	600	650	699	746	781	830	855	884	910	934	959	984	984
2) Studebaker..	35	Holm-Ditmar.....	43	90	133	173	214	254	284	329	369	412	458	494	537	582	623	667	710	752	772	793	819	839	861	878	878
3) Itala.....	40	Zumbach-Carriere.....	43	80	118	154	198	243	279	319	355	396	432	471	508	549	586	631	672	720	739	768	796	817	845	873	873
4) Fray'r-Mill'r	50	Knepper-Webster.....	44	82	126	169	207	250	293	321	368	396	421	467	501	530	574	610	649	674	678	694	712	712	736	756	756
5) Al'n-K'gst'n	30-35	Campbell.....	43	90	136	171	204	250	291	337	378	414	462	505	544	590	618	618	618	618	636	667	692	714	729	745	745
6) Stearns.....	30	Vaughan-Warren.....	41	91	143	180	216	257	296	343	390	432	443	461	482	505	556	596	632	674	691	706	706	706	710	729	729
7) Simplex.....	50	Poole-Robertson.....	50	101	122	137	175	216	252	291	315	368	391	428	469	469	469	480	542	585	611	628	643	661	674	696	696
8) Stearns.....	30	Schlupp-Heims.....	44	82	83	122	148	194	222	259	305	347	401	423	423	426	478	511	527	527	537	537	553	568	576	594	594
9) Darracq.....	40	McCulla-Griffith.....	11	43	76	112	147	165	197	211	211	229	265	298	319	374	391	401	447	450	500	528	532	532	532	534	534
10) Motobloc....	30-35	Guillard-Bloch.....	43	83	129	169	176	204	243	244	250	289	289	341	357	357	375	398	439	465	468	482	482	482	482	485	485
11) Packard.....	30	Owen-Embleton.....	45	95	129	147	176	221	261	308	355	393	414	455	503	542	577	624	674	677	.....	.....	.....	.....	.....	.....	677
12) Lozier.....	60	Michener-Hutchinson.	47	97	143	171	194	243	294	332	365	405	451	492	531	560	574	.....	.....	.....	.....	.....	.....	.....	.....	.....	574
13) Lozier.....	40	Smelser-Linkroum.....	50	100	146	193	237	286	316	354	394	397	428	443	486	521	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	521
14) Rolls-Royce.	20	Burne-Fuller.....	44	79	113	137	183	211	252	296	315	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346
15) Dietrich.....	60	Mack-Rippengill.....	52	93	122	154	204	244	287	343	393	393	393	393	393	393	393	393	393	393	393	393	393	393	393	393	393
16) Welch.....	50	Truwin-Greenwood.....	39	63	90	137	175	180	200	232	239	240	240	251	251	266	266	294	294	311	325	.....	.....	.....	.....	.....	325
17) Darracq.....	40	Wallace-Nuneman.....	44	91	130	168	186	221	266	303	318	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	318
18) Mathenson..	60	Lescault-Buck.....	43	79	119	150	183	211	214	216	254	267	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	257
19) Matheson...	50	Ryall-Adams.....	37	72	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	72
Renault Record	.....	.....	45	92	138	179	226	271	314	360	406	453	503	552	597	646	695	736	787	826	871	909	951	995	1,032	1,079	

intervals by a team of French mechanics; the Welch had furnished little since it cast a shoe and went into the inside fence. With this reduction, added to the departure of the two Loziers, the track at times had a deserted appearance during the forenoon.

Excitement was provided about 1:30 when, on rounding the turn past the grandstand, Stuart Elliott's Packard rushed into the inner fence, rolled over on its left side and threw Embleton and his mechanic on the grass. Embleton was severely bruised and cut, but, considering the nature of the accident, escaped in

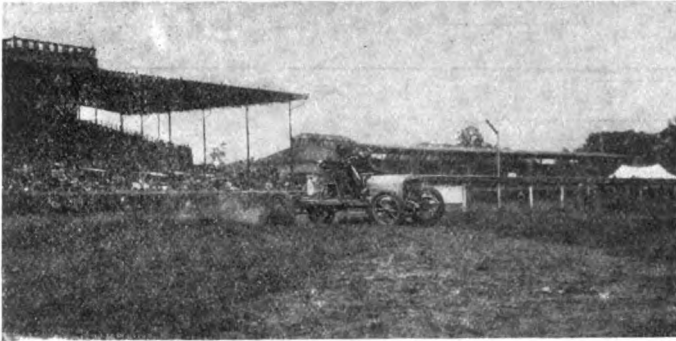
At the end of the eighteenth hour the race was called off for repairs to the track, short distance events being held in the interval. They were of little interest, however. Rain had fallen during the interval, and soon after the re-start continued to descend in such force that an effective stop was put to fast driving. The rules of the race demanded that those machines continuing in the contest should draw up opposite the grandstand and that no work should be done on them during the interval, an official being told off to enforce the regulation. Yet at the same time



REPAIRING THE MUCH CUT-UP TRACK DURING INTERMISSION.



LIGHTING OF THE TRACK WAS EXCEPTIONALLY WELL DONE.



"WALLY" OWEN AND AMERICAN MORS CROSS-COUNTRY WINNER.



DARRACQ CONTESTANTS IN THE TAXIMETER CAB EVENT.



DIAMOND TIRE CAMP WAS A BUSY PLACE MUCH OF THE TIME.

six cars were in the paddock undergoing extensive repairs and were allowed to come to the track after the re-starting of the contest and continue with the others. Even with these two hours'

gratuitous repairs the favored ones were never in danger of capturing first place, but they certainly got a position on the finishing list they would not have had under a just enforcement of the rules.

This one-sided justice practically allowed any machine which needed to renew its parts to run into the paddock a few minutes before calling an interval, receive every attention while there, and come out to compete with others forbidden to make repairs except during running time. Mack's Dietrich, whose mileage had stood at 393 from the ninth to the eighteenth hour, came out after the interval and carried off a special prize of \$20 for the highest mileage in the nineteenth hour. After this spurt it added one more mile to its score and retired permanently.

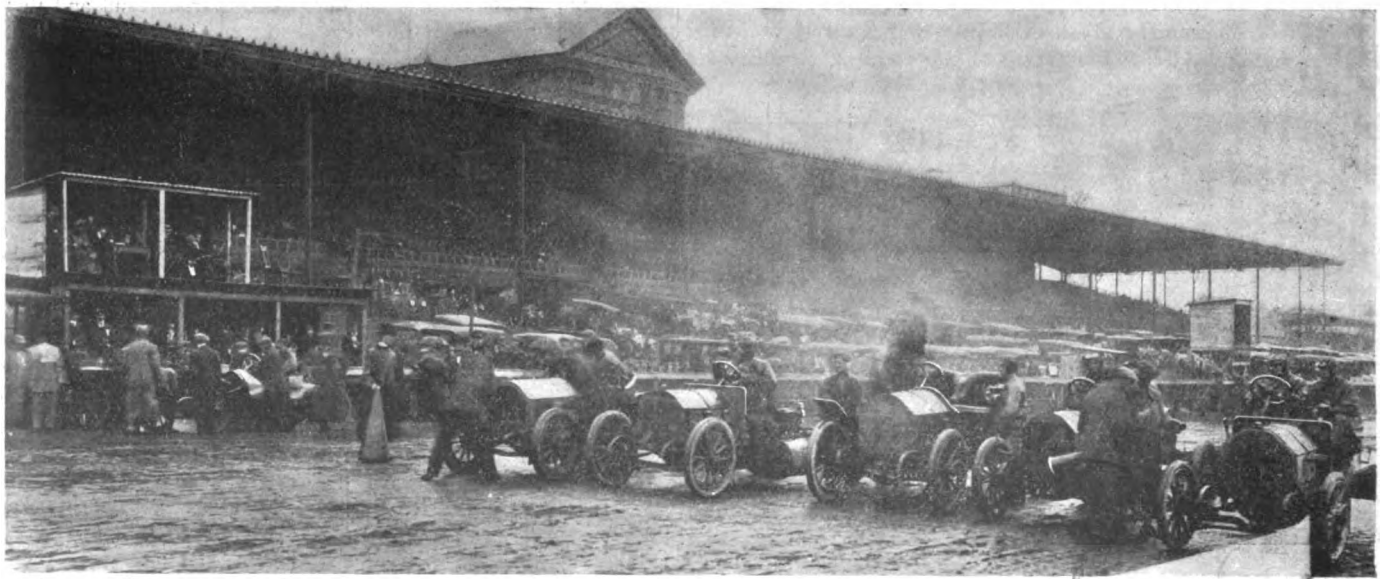
Continuous Rain Drove Spectators Home.

It was a persistent downpour which accompanied the re-starting of the struggle; a drenching rain which drove all but the most enthusiastic spectators homewards and made drivers and helpers hurry into rubber clothing, hunt round for chains, and cut down their speed by nearly one-half. There was no further doubt as to the result of the race. Fiat had a lead of 78 miles, was running with the regularity of clockwork, and had absolutely nothing to fear from any of her rivals. Cedrino, who was relieved occasionally by Parker remained the larger part of the time at the wheel, had handled the car in a masterly manner, maintaining an average of about forty-six miles an hour—which is probably all that can be got out of any car with the track in its then condition. The record of the Renault, which, like the Fiat, was kept within its limits, tends to confirm this. Instead of placing the gasoline tank at the rear, the Fiat people had hung it on the outside of the left frame, where it served to preserve the balance of the car on the bends. The Fiat was equipped with Michelin tires which gave no trouble whatever.

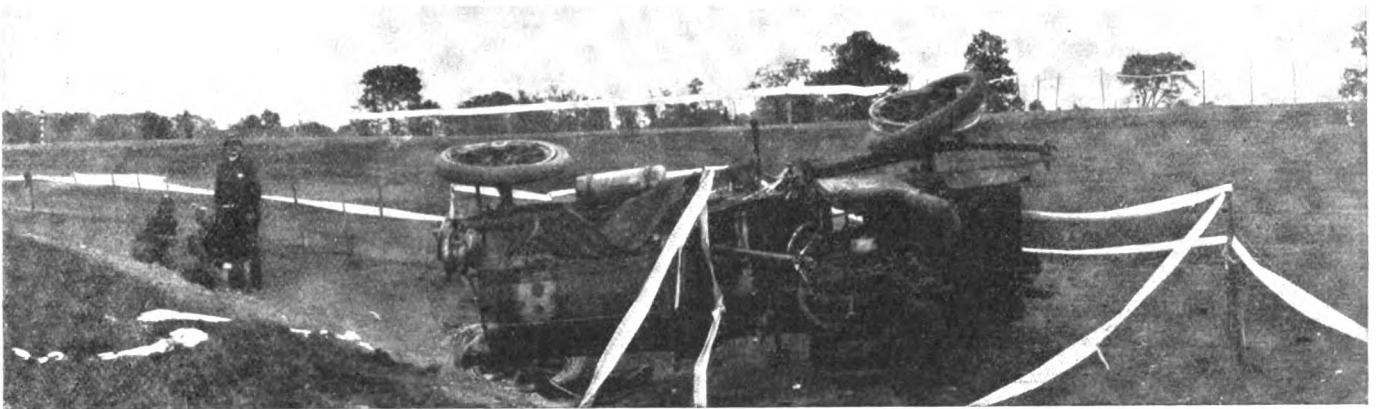
Most Drivers Were Cautious in the Rain.

With the rain Cedrino wisely cut his speed down to 29 miles for the first hour, then lowered it to 26 and again to 24, increasing it to 25 during the last hour. It was probably due as much to add to his own comfort as to a desire to save the machine, for a few miles an hour more on the flooded track must have added considerably to the discomfort of the drivers.

Zumbach and Carriere, who alternated at the wheel of the Itala, made prodigious efforts to get ahead of the Studebaker during the last six hours. Thirty-two miles behind on the recommencement of the race, the distance between the Italian car and the Studebaker was gradually diminished until at the end of the race there were only five miles between the two. The



LINE UP FOR THE RE-START SATURDAY AFTERNOON; DARRACQ, FIAT, SIMPLEX, STUDEBAKER, AND ITALA.



PHOTOGRAPH TAKEN IMMEDIATELY AFTER THE PACKARD ACCIDENT, THE DRIVER OF WHICH IS BEING ATTENDED BY POLICE OFFICERS.

foreign drivers sacrificed themselves and took every chance with the machine, rounding the curves in a manner which sent a thrill through the few spectators peering at them through the blinding rain. Zumbach suffered so much from the driving mud that he had to leave the car during the last hour and call a doctor to attend to his eyes.

As soon as the competitors were stopped and drawn up at the judges' stand Cedrino made a request for his prize money, explaining that he had heard that at these events the drivers were not always paid. He was given satisfaction on the spot. The Studebaker, 106 miles behind the Fiat, secured second position, solely through regularity of running. It was not the fastest of the cars on the track, but gradually worked up from a low position to the highest but one, owing to consistent work. Frayer-Miller was declared to be suffering from carbureter troubles; certainly she never showed the speed expected of her, and during the last few hours was frequently away for long periods. Allen-Kingston had a stationary mileage for four hours, but did not take the unfair advantage of remaining in the paddock during closed time. There were three hours during which Vaughan's Stearns remained stationary, while Schlipp's Stearns had no better record. Poole and Robertson on the Simplex were kept down considerably by tire trouble. The Darracq driven by McCulla practically retired at the twentieth hour, then added one mile to its score during the last few minutes of the race. Motobloc suffered from radiator troubles, had no staff to attend to the car when it put into port, and finally wasted a lot of time fitting mud guards.

Record Trials and Various Short Races.

During the afternoon interval an uninteresting race was held over twenty laps of the cross-country course inside the track, the competitors being Wallace Owen in an American Mors, Ned Crane in an English Daimler, and Arthur Rowley in a Dietrich. The Mors won. Robertson drove the big Vanderbilt cup Hotchkiss racer round the course a couple of times, then decided that it would be folly to attempt records with the track in its condition. Nuneman, on the Darracq with which Hémery won the Vanderbilt Cup, had no such scruples, and after a few practice spins made a trial against time, result being 0:58 for the mile.

Robertson made an attempt to lower the mile record on the Friday afternoon preceding the big race. He drove the Hotchkiss Vanderbilt Cup racer, and was clocked in 52 seconds, lowering the gasoline mark for Morris Park. A three laps race, about 4.17 miles, for four-cylinder Ford runabouts, was won by Frank Dunnell, Walter Livingston second, and E. Rogers Stearns third.

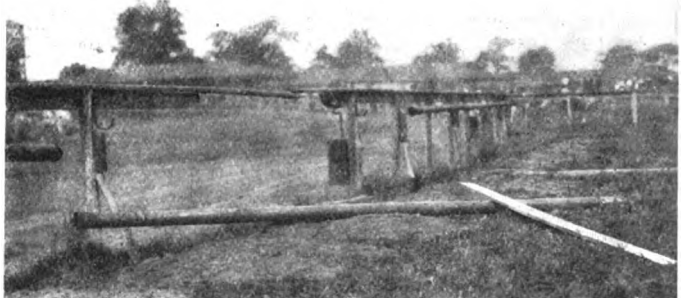
Wallace Owen won the 10-mile road race over the cross-country course with an American Mors; Ned Crane was second in the English Daimler, and Charles Trewin third on a Welch.

Seven of the new Darracq taximeter cabs lined up in a race which was won by Stephen Brown. No time was taken.

The twenty-five mile race open to stock cars of 60-horsepower or less was won by Guy Vaughan driving a Stearns, time 27:54 1-5; George Fentie on a Packard was second in 28:39.



SMELSER, THE UNFORTUNATE, AND HIS LOZIER CRAFT



WHERE THE POWERFUL CAR SMASHED THROUGH THE FENCE.



CAR STOPPED IN THE FIELD, STRANGELY REMAINING UPRIGHT.

BROOKLANDS TRACK HAS ITS FIRST FATALITY

LONDON, Sept. 23.—Brooklands track, the only one of its kind in the world, and specially built for safe racing at speeds up to 150 miles an hour, has proved that it has elements of grave danger. At the fourth meeting Mr. Herman, a member of a London firm of automobile dealers, met his death while driving the Minerva car with which Moore-Brabazon was victorious in the recent Ardennes circuit race under German Emperor rules. The sixth race had come to an end with the Minerva machine in about sixth position on the straightaway finish. It is not always possible to pull up on the straight, and Herman ran onto the banked portion, as is very frequently done. Probably owing to inexperience, for it was his first race on the track, he ran too far up the bank. It would have been possible to gradually drop down to the inside of the track, but the sight of the steep slope probably unnerved the driver and he gave a wrong turn of the steering wheel. Both rear wheels collapsed

seventeen competitors into line on the track at their proper distances and instruct them on the method of starting, a delay which did not please the public. As a signal to start the engines a rocket was fired, and three minutes later another rocket shot into the air to indicate the start of the race. In another handicap race three Mercedes machines were placed nearly a quarter of a mile away from the Napier on the scratch and the starter waved his flag in such a half-hearted manner that, although one of the cars shot away quickly, the scratch man had to be signaled by the starter to come along. As a first attempt, however, the handicapping arrangements were satisfactory.

All races were for distances not exceeding five miles, experience having shown that above this distance public interest wanes owing to the cars becoming widely spaced.

In a 2 1-2 mile race for cars of 26 horsepower, 2,000 pounds weight, H. E. Hall's Germain won by 100 yards over an Arrol



MOORE BRABAZON'S MINERVA AFTER IT HAD ROLLED FROM THE TOP OF HIGH BANKING TO INSIDE OF TRACK.

and the car began to roll down the steep bank. The mechanic was thrown free of the car, but the driver, unable to extricate himself, was rolled over and over with the machine until it came to a stop at the bottom of the bank on the inside of the track, with its wheels in the air. On one previous occasion a car went over the edge of the high banking, fortunately without any ill effects. The driver on that occasion steered it right off the cement to the outside earth banking, and allowed it to slide down until the outside railings brought it to a stop.

Novel Features in Handicaps in Numbering.

Attendance was still rather meager, notwithstanding a reduction in price of admission and further improvements in holding the races and arranging for the comfort of spectators. Sport was excellent, the meeting from the automobilist's point of view being the best yet held on the track. Instead of racing colors, as used at previous meets, each car was equipped with one of the new number plates, consisting of a flat metal disc carried in brackets behind the driver. By this means it was possible to distinguish the cars at any part of the track, and there is absolutely no increased wind resistance by the use of the plate.

For the first time, too, handicapping was employed by spacing the cars at the start. Throughout the season data had been collected on the performance of the different cars, and this, together with the known horsepower, allowed a very fair handicap to be arranged. It required about half an hour to get the

Johnston, at an average of 53.5 miles an hour. There were nine starters, among them being a Cadillac and two Berliets.

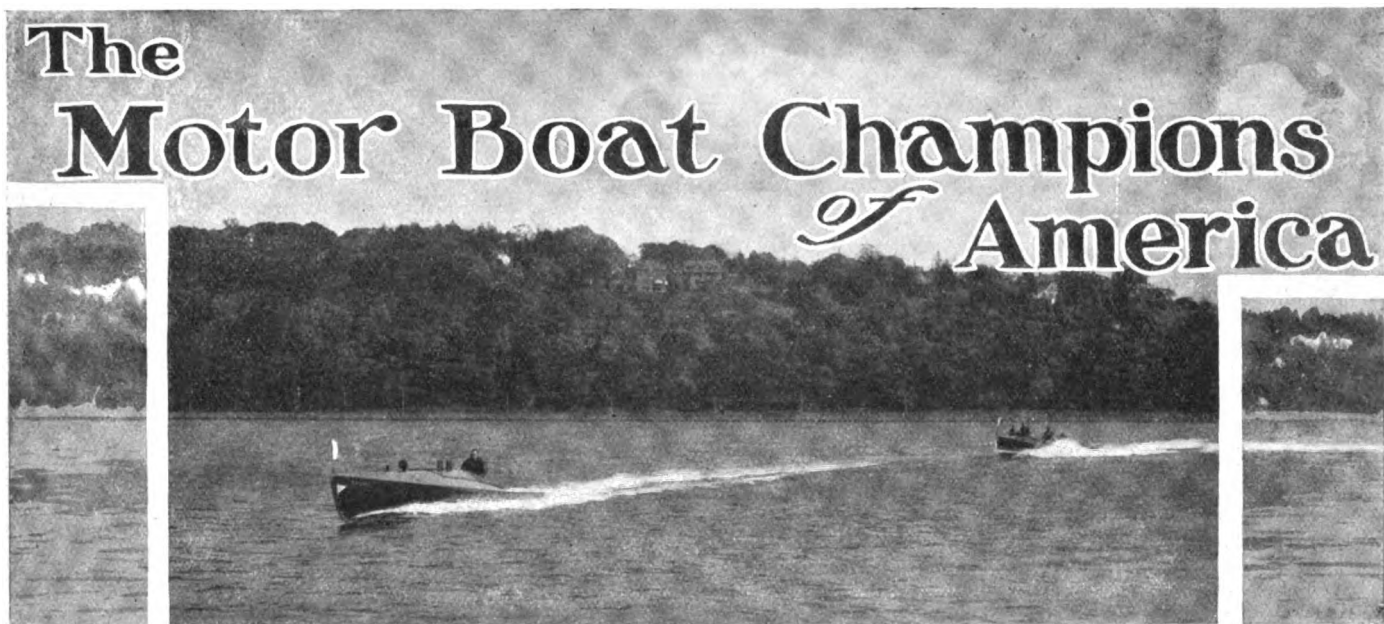
The 2 1-8 mile race for 40-horsepower cars, weighing 2,500 pounds, resulted in a victory for H. C. Tryon on a Napier at an average of 68.25 miles an hour. Clifford-Earp on an Iris was second and Huntley Walker on Darracq third.

A splendid race was witnessed in the five-mile contest for 90-horsepower cars weighing 3,000 pounds, which united one 1907 and two 1906 Grand Prix Mercedes and one Darracq. The 1907 Mercedes was similar to those of the previous year, with the exception that it ran at 1,500 revolutions to 1,200 revolutions of the earlier models. Drabble's Mercedes was first, at a speed of 92.5 miles an hour; Hutton's Mercedes second, and Resta on the same make of machine, third. Warwick Wright, last on the Darracq, ran at more than 90 miles an hour. Hutton's Mercedes was hardly recognizable as a German machine by reason of an extemporized cone shaped water tank in front, which gave the vehicle the appearance of a projectile.

Newton, driving S. F. Edge's Napier, won the five-mile handicap sweepstakes at a speed of 63.25 miles an hour in a field of seventeen starters. Napier came second and Darracq third.

Napier won first and second in the 60-horsepower 3 1-4 mile race for machines weighing 2,700 pounds. It was in this event that Moore-Brabazon's Minerva was wrecked.

Mercedes got first and second position in the 3 1-4 miles handicap for high-powered cars weighing 2,700 pounds.



"XPDNC," LEADING "SKEDADDLE" IN THE THIRTY-MILE NATIONAL CUP EVENT IN THE THIRD DAY'S RACING.

STORM and fog enshrouded the Hudson when the start was given on September 23 for the first race in connection with the annual race week carnival of the Motor Boat Club of America. The opening day's reliability trial united eight of the sixteen crafts originally entered, all of which, with one exception, succeeded in making the eight circuits of the course. Charles J. Swain's *Sparrow*, after making the fastest round, was forced to retire with its gasoline exhausted. *Speedway*, which covered nine rounds, was second fastest, and *Durno* third in point of speed. Position, however, was determined on a point system considering regularity of running, fuel and oil consumption, and similar attributes of an effective motor boat.

A stiff southeast wind was blowing up the river when *Skedaddle*, *Irene*, *Den* and *Dixie* united at the boathouse at the foot of 108th street on the second day for the 30-nautical-mile trials for the American championship. It was an unsatisfactory contest, for on the first round E. J. Schroeder's *Dixie*, victorious quite recently in the Harmsworth Cup Contest in England, was obliged to retire owing to engine trouble; *Den* went out on the second round and *Irene* on the third. H. H. Baruch's *Skedaddle*, much buffeted by the heavy seas and at one time in danger of being destroyed by fire, continued to the end, its time for the 30 nautical miles being 1:52:46. Fastest time was 24:40 miles an hour.

Joseph H. Hoadley's *Den* made the fastest time on the third day, when, in the first of the series of three races for the International Cup, she covered 30 nautical miles in 1:15:52. *Dixie*, the only other contestant in this event, disappointed her admirers by a retirement with carbureter troubles.

H. N. Baruch's *Skedaddle*, Jacob Siegel's *XPDNC*, and C. L. Seabury's *Speedway* started in the 30-nautical-mile race for the National Cup, held by *Skedaddle*. *XPDNC*, starting scratch, finished in 1:20:01, corrected time, *Skedaddle* being second, and *Speedway* third.

The Inter-State Cup, with its eleven starters, was the biggest event of the day.

C. J. Swain's *Sparrow* made the best time—1:40:53; *Meteor* was second; *Durno II*, third; *Speedway, Jr.*, fourth; *Artful* did not finish; *White Fox II* and *Flip* were disabled.

Wanderlust won the Motor Yacht Championship of twenty miles, with *Mao II* second, and *Marie* not finishing. *Ailsa Craig* secured an early victory over her only rival, *Iris*, in the Cabin Launch championship.

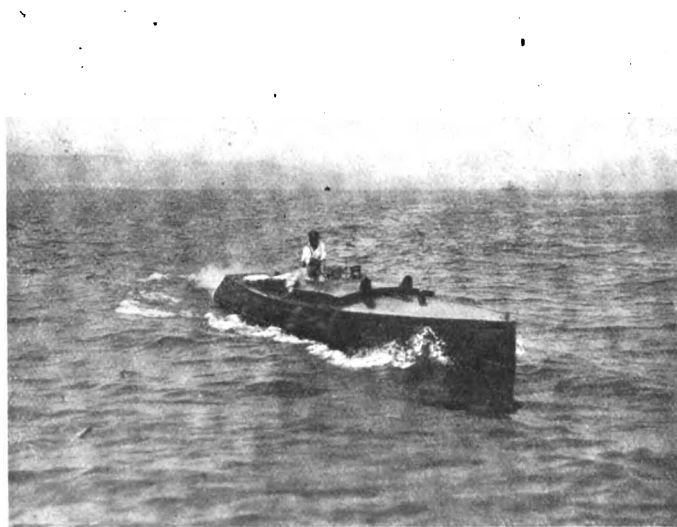
On the fourth day *Dixie* entirely disappeared from the motor boat carnival with a cracked cylinder, leaving *Irene* to run off the second match for the International Cup, her time for which was 1:15:07. *Skedaddle* got first place in the National Cup race, with *XPDNC* second and *Speedway* unable to finish. In the Inter-State Cup contest honor fell to *Sparrow*, with 1:32:53 for the 30 nautical miles.

Dixie being out of commission, *Irene* had no difficulty in capturing the International Cup Championship. Her time in the third match, run on the fifth day, was 1:15:56, against 1:19:47 for *Den*. The latter boat took the honors, however, in the mile championship flying start. *Den* and *Skedaddle* were the only contestants, the former averaging 25.622 knots an hour, equal to 29.504, and *Skedaddle* making 23.334 knots, or 26.1 miles. Six trials were run, three being with and three against the tide.

For the National Championship of 30 nautical miles, H. N. Baruch's *Skedaddle* and C. J. Siegel's *XPDNC* competed, the

former finishing in 1:13:22 and the latter in 1:19:57. *Skedaddle* thus winning two out of three matches, secured possession of the trophy. *Sparrow* was fastest in the Inter-State championship, defeating *Artful* and *Oriole*.

Den and *Skedaddle* finished an excellent race on the sixth day in the 116.3-nautical-mile contest from 108th street to Poughkeepsie and back. *Den* covered the distance at an average of 22.77 knots an hour, *Skedaddle* coming home just 59 seconds behind her. When time allowance has been made for the difference in rating between the two crafts, the probabilities are that *Skedaddle*



"IRENE," WHICH WON THE INTERNATIONAL CUP CHAMPIONSHIP.



"SKEDADDLE," WHICH WON TWO OF THE THREE THIRTY-MILE HEATS FOR THE NATIONAL CUP AND THE RACE.

will take first place. Though four other boats were in the contest, they never at any time troubled the leaders. *Speedway* broke down going up stream, while *Durno II*, *Sparrow* and *Fairbanks II* remained a considerable distance in the rear.

Cruisers had their long race to Peekskill and back, a distance of 75 miles. The fourteen starters made a pretty spectacle as they started out from the clubhouse at 8:45 A.M. on a more promising morning than any of the previous ones. At Tarrytown *Marie* dropped out of the race with overheated bearings; *Beldame* gave up about the same point, and *Pirate* seems to have sneaked from the scene. When *Grayling*, the largest boat, reached Peekskill the club officials had not arrived to set the stake boat. After cruising round the spot where that craft should have been the *Grayling* headed for home, her elapsed time being 4:22:0. On corrected times the positions were: *Idler*, 3:36:50; *Prodigy*, 4:37:28; *Osprey II*, 4:11:34; *Speedway, Jr.*, 4:46:00.

During the running of the long race *Irene* made attempts on the measured mile and succeeded in breaking the American record for that distance. Three runs were made with and three

against the tide, the best runs being at the rate of 25.904 knots, equal to 29.828 miles an hour. The *Standard's* best performance last year was at the rate of 29.172 miles an hour, and the *Den's* best time on Friday, 29.504 miles an hour.

ANOTHER PROPOSED LONG ISLAND COURSE.

According to daily newspaper reports, a syndicate of New York, Philadelphia and Boston capitalists have secured 100 acres of land at Westbury, Long Island, and propose to construct an automobile race course thereon, solely for the purpose of racing and demonstrating cars. The tract is known as the Homestead farm and is said to be admirably adapted to the purpose.

NEW YORK REGISTRATIONS INCREASE.

Up to the evening of September 29, the registrations of automobiles at Albany had reached a total of 907 for that month, so that with the one day missing it is safe to say the increase will be more than 200 cars over September, 1906.



THE "DEN," WHICH WON THE MILE CHAMPIONSHIP FLYING START, AND LED IN THE RACE TO POUGHKEEPSIE AND BACK.

THE CARBURETER AND ITS FUNCTIONS*

By CHARLES E. DURYEA.

THE carbureter is the lungs of the engine, and large power, long service and efficient action depend upon this device. Many varieties have been offered, and the road to the patent office is busier to-day than ever with people who think they have carbureters superior to former designs. With a fixed gas no carbureter is necessary, but air and gas adjustably proportioned are permitted to mix on their way to the cylinder with good results. The earlier inventors generally attempted to provide the gas by drawing air in some manner through a tank containing gasoline, which permitted the air to absorb gasoline vapor and issue from the tank practically saturated with vapor. This over rich mixture was then diluted by the admission of air to form the proper mixture. In one form wicks of cotton, or even excelsior, served to distribute the vapor through the air. In another form the air was drawn down into the liquid and, bubbling up through it, became saturated. Other inventors seeking simplicity admitted the gasoline directly into the air passage, trusting that it would be sprayed or vaporized and mixed with the air before the end of the compression stroke. Still others provided a spray nozzle, past which the air is drawn with sufficient velocity to break the liquid into a spray. This form is now in almost general use to the exclusion of other forms. Each is usually called a carbureter, but properly the gas tanks only are entitled to this name, and the present form is more appropriately an atomizer, or, since its essential service is to mix liquid fuel and air to form what is universally called a "mixture," I prefer the short, simple, expressive word, *mixer*.

Some Facts That Should Be Borne in Mind.

A number of facts concerning gasoline engines must be kept in mind when considering the mixing device if the engine is to give superior results:

First, the mixer must perform its function to the fullest possible extent and intimately mix the air and liquid. It is not enough that it should provide a proper mixture at high speed only, for, although this will cause the engine to show a high power, it will not give smooth running or great power at slow speeds. If the mixture is not intimately mixed, some parts are too poor to burn, others burn slowly because lean, while other parts are too fat to burn, or burn very slowly because overfat. The result is little power, a hot engine, much deposit of soot and an ill-smelling exhaust that is distinguishable at a distance.

Second, in order to have full power and give the best results the liquid fuel must be properly proportioned to the air. Too much or too little liquid produces slow-burning mixtures and undesirable results. Further, although during each cycle the engine may receive the proper amount of air and liquid for the perfect mixture, if the early portion is air and the latter portion largely liquid, it is quite evident that a homogenous mixture will not be produced and that proper ignition with perfect engine behavior cannot follow. It is therefore necessary that the air and liquid be proportioned constantly in a proper manner, and this may be rightly termed the second great requirement.

Third, it is also evident that different sized engines will have different requirements, and that a mixing device suited to one may not be suitable when fitted to another. The same is true in connection with speed. A proper mixture at one speed may be completely thrown out of proportion, or may be improperly mixed at another speed. Engines nowadays run at rotative speeds from 200 to 2,000, and the perfect mixer must meet these requirements. Since at high speeds full charges are usually used, while at the low speeds the throttle reduces the charge admitted, it is quite evident that the service required of a mixing device is

not adequately represented by the proportion 10 to 1, but that it is probably more nearly 20 to 1, and possibly may vary as much as 50 to 1. Such wide variation increases the difficulty of maintaining proper proportions and making a perfect mixture, and renders it necessary that the mixer should automatically adjust itself to the varying requirements.

Where Past Carbureter Construction Was Faulty.

These three features are the basic ones which must be kept in mind while considering the minor but important points of the perfect mixer. Most mixing devices heretofore constructed have aimed to provide for these three points, but more often than not each provision has been an imperfect one and the results not of superior quality. The typical mixer of to-day takes air from the atmosphere at practically constant pressure, and liquid from a float chamber presumably having a constant level. Since, however, the quantity of air required is about fifteen hundred times greater in volume than of the liquid, and since the speed under a given suction is much greater than the speed of the liquid, it will be seen that wide opportunity for improper proportion exists. Add to this the facts that at very slow speeds the liquid may not be sprayed, but may be simply drawn from its nozzle in large drops, or even in a stream running down the outer walls of the nozzle, while at very high speeds the air inlet may be too small to admit a sufficient quantity of air, and the difficulty of maintaining a proper proportion under such wide variation will become apparent. To meet this difficulty the perfect mixer must automatically enlarge the supply of air and vary the liquid to maintain it proportionate to the air as the needs of the engine grow greater. To do this with certainty it should have a diaphragm acted upon by the suction of the engine, which diaphragm should be large enough to respond to slight variations, and thus prevent high vacuums, with consequent reduced power at high speeds. This method of providing for wide range is the only correct method. The mere opening of the usual auxiliary air port cannot perform this service, for the suction must increase considerably before the air port will open, and there is seldom or never provision made for securing either intimate mixture or proper admission of proportionate amounts of air and liquid with this auxiliary device.

This necessary automatic adjustment should not only be operated by the suction, but it should be sensitive enough to prevent much variation in vacuum between high and low speeds, and the mixer at high speeds should have openings large enough to admit the fullest possible charges, while at low speeds the opening should be so small as to secure sufficient air velocity to make a perfect mixture, that is, a fine spray of the liquid properly proportioned and intimately mixed, even when turning the engine over by hand. This can only be attained by permitting a large diaphragm to vary the size of the passage or passages under increased suction, and consequently proportionate to the speed.

Perfect Balance of the Float Is Necessary.

The float chamber should be concentric with the liquid inlet, so that inclination in any direction will not cause more or less liquid to be admitted. The float should be surrounded by a substantially concentric volume of liquid that will support and balance the float, with the result that sudden vertical movements, such as jolts, are without effect. This arrangement is superior to floats balanced by weights, in addition to the column of liquid, for, owing to their different densities, the liquid and the weight may interfere in their duties and destroy the perfect balance sought for. The float should be a single piece preferably without working joints, and particularly without frictional contacts with levers, which may sooner or later wear through its thin metal

*Paper read before the Society of Automobile Engineers, Buffalo, N. Y., July, 1907.

and cause it to leak. The float should be constant in weight and buoyancy, and is therefore preferably of metal, since few cork floats can be depended upon to remain impervious to gasoline and retain their buoyancy. The float point should be adjustable, so that the level of the liquid may be maintained at the most advantageous point to suit the vacuum necessary to make the proper spray, and also to overcome the effect of different heads of gasoline which may be used. It should be quite evident that the mixer, giving excellent satisfaction when attached to the bottom of a tank three or four inches deep, may fail when piped to a tank several feet deep in the bow of the boat, which in rough weather may rise several feet above the level of the mixer. The float point may be of such taper and size as to in some degree vary the gasoline level in action, giving a higher level and better mixture at slow speeds.

The float point should be easily ground so that it may be kept tight and in perfect working order. Further, the motion of the vehicle should tend to move the float point to some degree, even though slight, which movement serves to force away any particles of dirt that may lodge on the point during the passage of liquid. On this account it is best if the float and point are fixed one to the other so that the point partakes of the motion of the float and liquid in the chamber. The gasoline should enter the float chamber from a single direction, either up or down, so that no pockets exist in which water or dirt may gather. It is best to feed the chamber by gravity from a tank above the float chamber and with downwardly extending pipe, without pockets, leading into the chamber near the top, with float point upward, such point being attached directly to the float without levers, weights or other unnecessary parts. The float chamber should open at the bottom for automobile use. This facilitates removal of any water, ice or dirt, and removal of float itself, without opening the top and permitting dirt to fall in from above. The float and removable bottom can be replaced with a stream of gasoline flowing upon them, which will wash away particles of dirt, if any accidentally get on the parts while being replaced. With top opening, ice in the bottom of the chamber may not only support the float and prevent its falling to admit gasoline, but may also bind the float so firmly that it cannot be removed to permit removal of ice, which may prove an unpleasant predicament if away from means of warming the mixer. The float chamber should have an air vent to permit proper action, and this vent should preferably terminate above the gasoline tank, so that if for any reason the float fails in its duty the gasoline rising in the vent tube will not rise higher than the tank level, and so cannot escape. Where convenient, the tickler, or device for depressing the float and flooding the mixer, should pass down this vent tube. This arrangement, in connection with a needle that closes the nozzle when the motor is stopped, prevents danger from leaking gasoline and possibly fire. It is more reliable than a stopcock, for the operator will grow careless about the stopcock, but will, if needed, adjust the nozzle daily to secure best results under prevailing weather conditions for that day.

Equalization of Fuel Flow into the Mixer.

All gasoline entering the mixer should be strained through ample gauze, so that particles likely to clog the nozzle may be kept from entering. Such gauzes are usually provided at the opening of the tank or in the funnel; but this is not sufficiently certain for the best results and the perfect mixer should be self-protected from this certain cause of trouble.

The outlet from the float chamber, usually termed the nozzle, should be nearly concentric with the chamber. If centrally located, variations in angle do not affect the level at this point; but it is some advantage to have this point slightly behind the center, so that going up hill or accelerating the action of the vehicle automatically raises the level of the liquid and thus slightly increases the flow, making the mixture slightly more fat and powerful. This arrangement permits the normal mixture to be lean, insures perfect combustion, great economy, and no odor, yet

automatically brings the mixture to maximum fatness and power when power is needed.

Since liquid has considerable weight, and consequent inertia, the passage to the nozzle should be both short and large, for large passages do not clog easily and, if short, the liquid can flow quickly and will likewise cause flowing without delay when the suction ceases. If large, the friction is less and no particle of liquid need acquire high momentum. If, on the other hand, this passage is long, the liquid does not get started until a large volume of air has passed the nozzle, making the early part of the charge too lean, while, as the suction decreases and the air flow ceases, the inertia of the liquid causes it to continue to flow, making the latter portion of the charge overfat, and leaves between charges probably unsprayed drops of liquid, which fall upon the walls or are drawn into the motor.

Unsprayed Liquid Should Not Be Allowed to Waste.

Such liquid as remains in the passage unsprayed should be retained, and not permitted to run into the motor or upon the ground. This liquid should also, by the shape of the passage or by other suitable means provided, be broken up, sprayed or finally divided at the next suction stroke, so that it may properly serve its purpose within the engine. If, because of a faulty float, the nozzle should flood, the air passage should not fill with gasoline, for, when attempting to start the engine, this would result in a large volume of liquid being drawn into the cylinder, making its contents too fat to ignite. To prevent such flooding, the air passage should have an opening at a proper distance above the bottom to permit the escape of excess liquid, in case such exists.

The nozzle should be closed from above by an adjustable needle, for the inverted conical point of such a needle assists in making a fine spray. This needle-adjusting handle should terminate near the operator and permit him, while operating the vehicle, to vary the proportion of the mixture, and thus secure the greatest power by trial, as well as accommodate the device to the temperature and humidity of different days, and also to the gravity and composition of different fuels. No adjustment while the vehicle is standing can compare with adjustments in actual road service in point of accuracy. Further, the mixer should be adjustable at low speeds, to secure certain ignition and steady running. Gas engines are particularly prone to misfire at their limits, and the perfect mixing device for automobiles will provide superior conditions at these limits in order to secure the most satisfactory range of service. This necessitates provision also for adjustment at normal or high speeds, and by inference the device should automatically compensate at intermediate speeds. Most present-day devices are adjustable for one speed only, and depend for automatic adjustment upon considerable variation in the suction vacuum, and so cannot give good results at widely varied speeds from that to which they are adjusted. This defect need not, and most certainly should not, exist.

That the largest possible charges may be drawn into the motor at high speeds, it is self-evident no needless friction should be caused the air as it passes toward the engine. On this account a single air passage is better than several, because there is less wall surface and friction. It is also evident that the air passage should be easy, and not tortuous or broken. It is undoubtedly true that the tortuous passage will break up the particles of gasoline and help to form a homogeneous mixture, but this is done at the cost of increased suction and of some loss of volume and consequent needless loss of power from the motor, particularly at high speed.

Protective Gauzes and Their Frequent Cleansing.

Since some engines may occasionally backfire through their inlet valves, the mixer should be provided with escape for explosion, for if this is not done the pressure may force into the float chamber and will more certainly interfere with the next succeeding charges than if allowed to escape into the atmosphere freely and promptly. To prevent such explosions from igniting anything on the outside, the pipe entrance should be provided with a gauze

strainer, which mainly serves to keep out particles of dirt that otherwise would enter the engine and likely stick to the walls and cause rapid wear and pre-ignition. Much of the carbon deposit so common in automobile engines is caused by road dust, with enough oil to bind it together.

The rapid evaporation of the liquid not only takes heat from the passages in which the evaporation takes place, but frequently causes a deposit of moisture, which in the presence of low atmospheric temperature becomes ice and clogs the passage. This freezing may be prevented and a more perfect evaporation, with consequent intimate mixture, secured by heating the passage where the mixture is taking place. I therefore favor a heater jack outside the mixture passage, through which hot gas from the exhaust or hot water from the circulating system may flow, and I consider it advisable to place within the mixture passage at this point one or more gauzes of large area to positively intercept large particles of liquid and prevent their being carried into the cylinder. All gauzes should be removable for cleaning purposes, and frequent attention to the various details of this most necessary part of the vehicle is necessary to insure perfect work.

Present-day Faults of the Mixing Valve Summed Up.

We may get a better understanding of the features necessary in a perfect mixer by considering a typical present-day carbureter. This consists of a float chamber, usually at one side of the air passage and with a long, small nozzle for gasoline reaching into the air passage, which at this point is strangled or contracted to increase the velocity of the air past the nozzle. Between the nozzle and the engine an auxiliary opening is provided, closed by a spring valve, which, when the suction is increased sufficiently, opens more or less, admitting a quantity of pure air with which to dilute the overrich mixture coming from the strangled passage. The action of this device is about as follows: At extremely slow engine speeds, say under 200, the mixture is imperfect because the air passage is not small enough to give proper air velocity for a suitable spray. This is one of the reasons why the gas engine is regarded as inflexible, and why many engines fail to develop power as soon as their speeds are reduced. If this passage is small enough for perfect running at very slow engine speeds, say 50 and 100 with throttle practically closed, it is too small to admit a practical amount of air at higher speeds, so the gasoline by itself, or badly mixed with air, is drawn from this passage, while the greater portion of air, with imperfect provision for mixing, enters at the auxiliary valve. Clearly this cannot give a proper mixture or proper proportion. Next it must be remembered that, while the strangled passage is constantly open, the auxiliary passage is closed except when sucked open. Further, the auxiliary valve flutters, and the result may often be that in the early part of a stroke the mixture is exceedingly rich, because it all comes from the strangled passage, while later, the auxiliary having been sucked open, a large quantity of air enters (larger than necessary), with resultant poor mixture, followed by closing of the valve as the suction decreases near the end of the stroke, with consequent rich mixture at this time. Add to this the fact that with a long, slim nozzle the gasoline will continue to flow for some time after the suction stops, because of its momentum, and it will be seen that the beginning and end of each charge are probably overfat, while the center of the charge is very lean.

Wide Range of Suction One of the Difficult Problems.

There is also a wide range of suction, because at the beginning and end of the stroke there is little or no vacuum and the strangled tube offers a free passage, while at the center of the stroke there must be, and is, enough vacuum to open the auxiliary; so it is quite evident that the engine is not drawing uniformly and is not free from that negative pressure or vacuum necessary to get the largest charges and to avoid needless loss of power. The ideal carbureter will avoid this irregularity by opening a passage proportionate to the amount of mixture required, and it will not only open the air passage, but it will adjust the gasoline to suit. If, for

example, a piston or diaphragm is provided, operated by the suction of the engine in one direction and by gravity in the other, with a dash pot so that it cannot flutter, it may be made to open the air passage and to adjust the gasoline so that with little or no increase of suction the proper amount of air and liquid is admitted. With such arrangement the vacuum need only be sufficient to give the air the necessary velocity required to make a proper spray, and higher speeds will not starve the engine because of higher vacuum. The dash pot insures average openings, so that at the beginning and end of the stroke the velocity will be low, at the middle high, but with an average somewhat higher than the least practical velocity, while good results will be obtained even during the slow portions of the stroke.

Ideal Carbureter Should Have Fully Four Adjustments.

Many typical carbureters have quite abrupt corners. This decreases the amount of air that can enter, and thus impairs the efficiency. Some provide for complete vaporization within the carbureter, or very close thereto, with the result that in wet weather the moisture of the atmosphere is condensed, and in cold weather frozen, thus choking the device with ice. It is better practice to carry the spray some distance and thus distribute this refrigerating effect, with less likelihood of ice formation.

The typical carbureter has but a single adjustment for the gasoline. It is argued that the gasoline may be adjusted for low speeds when the auxiliary air valve is shut, but this very frequently does not give the proper quantity of gasoline for high speeds, so it usually becomes necessary to adjust by gases, and after a trial adjust again, until that adjustment which gives fairly good results at high speeds and permits getting along at low speeds is found. That this is not ideal is readily seen. The ideal method would vary the air passage so as to supply the requisite amount of air with the least possible variation in vacuum, and would also vary the amount of gasoline to suit this amount of air. The ideal mixer should be adjustable at low speeds for starting or running the engine idle, and it should also be adjustable at maximum or normal speeds, so that the best possible condition can be had at this time. It should automatically vary this normal or running gasoline adjustment as the proportion of air is varied. In short, it should not have less than four adjustments, two of which (*i.e.*, gasoline and air) are automatic, and two of which are manually operated, as indicated by the behavior of the motor. The typical mixer has but half this number, and these badly deranged. The writer patented, more than a half-dozen years ago, the first automatic air inlet applied to automobile carbureters, but because of the defects of this method did not use it to any great extent, although by careful adjustment of the auxiliary valve springs it may be made to serve better than most carbureters will serve without this auxiliary valve.

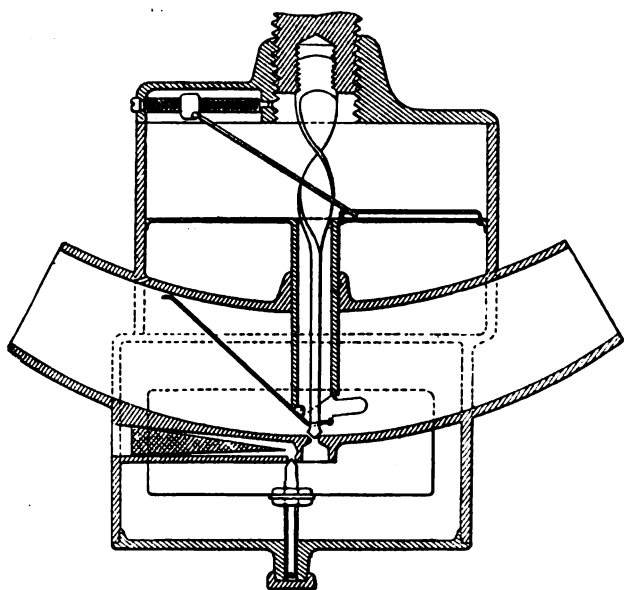
Some Conclusions Regarding the Perfect Mixer.

In conclusion, the requirements of the perfect mixer may be summed up as follows: It must intimately mix, properly proportion and satisfactorily adjust, and also have the following specifications: Float chamber concentric with inlet and nearly concentric with outlet; float of metal with point adjustable to different heads, different liquids and different weights of float; float point easily ground, and moved by any motion of the float; the float should be free from balance-weights or levers; the mixer should be adjustable by the operator while driving; it should have adjustments for very low speeds and also for normal or high speeds, and should automatically adjust between these speeds; it should have a short gasoline passage for quick action, and a large gasoline passage to prevent clogging or ramming; it should retain in the air passage unsprayed liquid, but have provision to let out any excess. A gauze strainer at the gasoline inlet and also at the air inlet are strongly advised. The gasoline should flow in a single direction, either up or down, to the float chamber from the tank. The float chamber must have vent at the top, which should, if possible, open higher than the tank; it should have re-

movable bottom and a means for daily use to shut off the gasoline. The air passage should be easy and single, rather than multiple, and have a removable gauze to prevent unsprayed liquid reaching the engine. This passage should be adjustable to the engine speed by the amount of suction, and should open freely in a reverse direction to permit back explosion to escape. A dash pot must prevent fluttering with change of opening, so that the suction vacuum is closely constant. Provision for heating is necessary in cold weather or with low gravity liquids. A mixing device which meets these requirements leaves little room for improvement.

Characteristics of the Duryea Carbureter.

The Duryea mixer has been designed after a very long experience with stationary, automobile and marine engines of all varieties. As shown in the sectional sketch herewith, it has an air passage nearly horizontal, curved easily, and provided at its for-



CROSS-SECTION VIEW OF THE DURYEY CARBURETER.

ward end with gauze screen to exclude dirt. At the opposite end a disk or other throttle is provided, while midway is located the gasoline inlet, with adjusting needle and an adjustable air gate, spring mounted, so that it may open freely to let out any explosions or back pressure from the engine, but which ordinarily remains closed and causes the major portion of the air to pass under its lower end and intimately mix with the gasoline. The air passage is of necessity rectangular at the portion where the air gate is placed. This air gate is carried by a diaphragm and regulated by the suction of the engine, which withdraws the air from above the diaphragm, raising it and the gate support. This diaphragm is large, so a very slight variation in the amount of suction suffices to change the area of the air inlet. The gasoline passage is extremely short, with level adjustable by the float needle, so that the gasoline can be drawn with very slight suction, which also contributes to full charges and large power. The float and its conical point act as one piece without pivots, levers or weights, but capable of a slight twisting motion, which twisting permits the point to grind itself upon its seat and thus remain tight and clean. The gasoline inlet is protected by a gauze cone, which catches any dirt from the pipes or tank, and which is removed readily for cleaning. The float chamber is closed at the bottom by a cap, screw-threaded, and with a lead gasket, making it absolutely tight. The float needle is adjustable without removing the float or this main cap, by unscrewing a smaller cap and reaching the needle stem with a small screwdriver, the slight leak of gasoline doing no harm. The gasoline-adjusting needle is adjusted by a differential screw on top of the mixer, which may be provided

with a stem carried to a point on the dash or elsewhere accessible by the operator while driving the vehicle. This enables the mixer to be adjusted at any time in order to secure the best results. Ordinarily the screw is set to secure easy starting and certain running at very low speeds. The needle is spirally flattened, forming a sort of screw which passes through a long slot in a radius bar, pivoted at one end to an adjustable nut in the cover and at the other end sliding in a radial slot in the diaphragm.

This arrangement causes the needle to be partly revolved as the diaphragm rises or falls, thus varying its adjustment; and the amount of this adjustment may be greater or less, as the radius bar is, by its nut and screw, caused to be farther from or nearer to the needle. This radius bar is adjusted for nominal or high speeds, as may be desired, and the adjustment is found by trial, either by adjusting the differential screw to produce the desired result, and then changing the radius-bar screw accordingly, or by adjusting the radius-bar nut and screw while the differential remains in a fixed position. This arrangement provides for this mixer superior adjusting facilities not found in others, in that the mixer may be perfectly adjusted for low speeds and for high speeds by the two separate adjusting devices, and, because of the diaphragm, radius bar and twist of the needle, it will automatically adjust itself in a reasonably proportionate manner for intermediate speeds. Since it depends upon suction for this automatic adjustment, it secures the same quality of mixture, regardless of the action of the throttle or the size of the engine, and is therefore more nearly universal than previous devices. It has no working parts exposed to mud, and may, therefore, be placed in any desired position. Its gasoline outlet is slightly to the rear of the center of the float chamber, which slightly increases the gasoline flow when great power is needed, as on hills.

This device may be used without a heating chamber if it is supplied with warm air, or if the quality of fuel is such that heat is not needed; but a heating chamber can be furnished which is attached immediately after the throttle, where the evaporation is greatest and heat most needed, and this chamber is arranged for either water or hot gas, as may be preferred.

Not many power tests have been made of this device, but such as have been made indicate 5 to 10 per cent. more power than other carbureters gave on the same motor.

FIRST FALL MEETING OF A. S. M. E.

The American Society of Mechanical Engineers will hold its first fall meeting on Tuesday evening, October 8, in the main auditorium of the Engineering Societies' Building, 29 West Thirty-ninth street, New York City. The subject of the meeting is Industrial Education, and both college technical courses and student apprenticeship courses will be discussed at length by men who have been in charge of theoretical and practical institutions. Professor John Price Jackson will read a paper on "College Technical Courses and Apprenticeship Courses Offered by Manufacturing Establishments," and Dr. Henry S. Pritchett, president of the Carnegie Foundation, as well as of the Society for the Promotion of Industrial Education, and Professor Dugald C. Jackson, of the Massachusetts Institute of Technology, will deliver short addresses, while a number of manufacturers have been invited to speak informally.

A GENERAL REVIEW OF CARBURETION.

Under the title of *Automobil-Vergaser*, there has just been issued from the press of M. Krayn, Berlin, W. 57, Germany, what is probably not alone the first, but likewise the most complete, special study that has been devoted to the subject of the carbureter and its functions. It consists of a volume of 138 pages illustrated with no less than 130 sketches, showing the principles of the majority of standard European carbureters as well as a number of drawings illustrating the theories of carburetion.

LETTERS INTERESTING AND INSTRUCTIVE

ANSWERED MORE BRIEFLY THAN CORRECTLY.

Editor THE AUTOMOBILE:

[919.]—In reply to a letter, No. 906, printed in "The Automobile" of September 19, in which the inquirer asks for information as to the overheating of the gearcase of his car, and states that he also finds it difficult to keep the grease in it, I think it is most likely caused by the fact that he puts too much grease in the case, which would cause it to both leak and overheat. In all probability the engine overheats through the slipping of the clutch. All beginners, as a rule, cover their cars with grease and oil, thinking they will profit by it, but the result is quite the contrary.

The letters are interesting, but would be more instructive if they were answered *more correctly* than briefly. I hope you will not find this criticism indiscreet, as I think it a benefit to both the editor and the reader.

H. LECONTE.

New York City.

We are always glad to have any of our readers criticise the answers given in this department, or, in fact, any other part of THE AUTOMOBILE, and for this reason we have emphasized that portion of your letter preferring accuracy to brevity by putting it in italics. If we were not brief it would be impossible to answer the number of letters received within a reasonable length of time, and a question long unanswered loses its interest. But to our knowledge we have never intentionally sacrificed the correctness of an answer for the purpose of making it short, and at times have been at pains to devote a column or more to the answering of a question, even though its length necessarily meant the omission of other inquiries until later issues.

In looking over the letter you refer to, it does not strike us that the answer thereto is unusually brief, and, so far as we can see, it covers most of the commoner causes giving rise to the complaint in question, particularly in view of the fact that the inquirer supplied so little detailed information. However, whenever you come across an inquiry in our columns which, from your experience, you feel better able to answer correctly than has been done, we will always be glad to publish your letters.

AN OPPORTUNITY WANTED FOR STUDY.

Editor THE AUTOMOBILE:

[920.]—Not being able to obtain what I want by watching advertisements and otherwise, I am coming to you with my troubles:

I wish to make a thorough study of the ignition and fuel questions as applied to the automobile. It is not practicable for me to attend a college, so I must get it from text-books or some other way. I have studied some of the primary books, such as Homan's "Self-Propelled Vehicles" and "Elementary Electricity," by Swoope. If you help me in any way by suggestions I shall feel much indebted to "The Automobile," from which I have received many profitable lessons.

EDWARD E. DEAN.

New York City.

Apart from obtaining an outline of the theory of the subjects in question, it is unfortunate for your purpose that little or no further help is to be obtained by the aid of textbooks. The matters in question are not yet sufficiently well established to have made this possible. Considerable of value appears from time to time in the technical press, but even this can be of no great help unless supplemented by practical experience. Make the acquaintance of some chauffeur, or try to obtain permission to spend your leisure time watching the repair men in a garage or shop. Under such circumstances, observation alone will be a great aid, and doubtless the workmen will be willing to help you by answering questions as well as by volunteering information, though as a rule one must depend mainly on his own senses in such a situation. Theoretical knowledge is, of course, a necessity, but when carried to an extreme becomes a detriment rather than an advantage. Having obtained a good groundwork in the rudiments you will be able to apply this only by observation and practice.

HOW TO WIRE DRY BATTERIES FOR IGNITION.

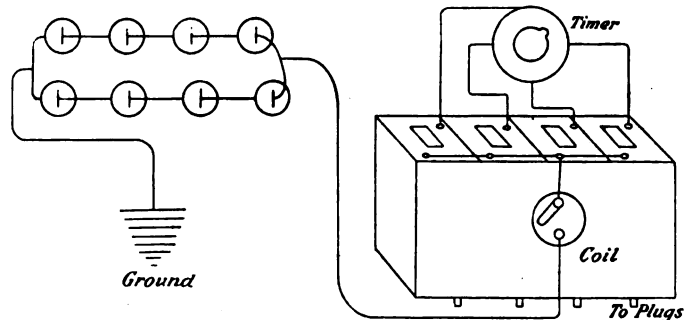
Editor THE AUTOMOBILE:

[921.]—As a subscriber to "The Automobile," I would like to ask the proper way to wire up dry cells for a four-cylinder engine using jump spark, to give the longest possible service. I enclose three rough sketches of wiring diagrams of different kinds and would like to know which is the best.

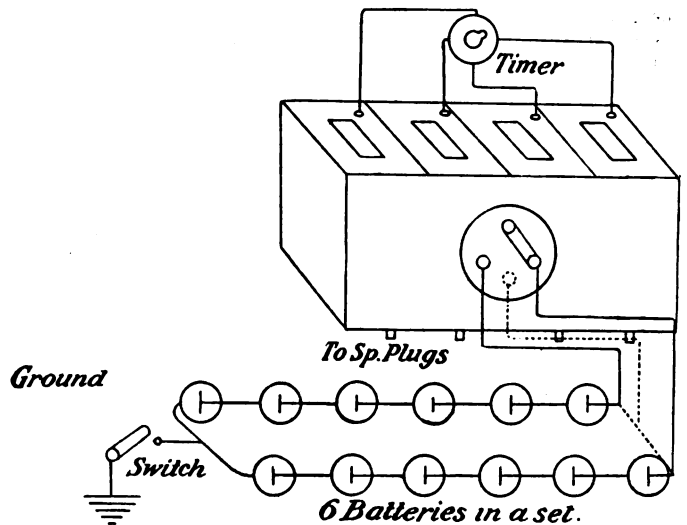
LOWELL ELLIS.

Warren, Mass.

Sketch number 3, showing two sets of six cells each, wired so that either set may be used at will, is the best of the diagrams



submitted, particularly when it is modified by the addition of a third point on the coil box switch, permitting both sets to be used in series-multiple, as indicated by the dotted line amendment we have made to your sketch. This would permit the use of either set of cells singly, or, after they had been run down somewhat, of the use of both together merely by moving the



switch. We do not think it advisable to employ less than six dry cells. Your sketches, numbers 1 and 3, are practically the same, so we have omitted the former; number 2 has the disadvantage of having but four cells in series, thus reducing the voltage at the expense of the current and thereby greatly shortening the life of the battery, nor does it provide any reserve.

HERE'S A MIGHTY HARD NUT TO CRACK.

Editor THE AUTOMOBILE:

[922.]—As I am a subscriber to your very interesting journal and very much interested in automobiles, I wish to ask you to print in your next issue the answers to the following questions. I am about to get out a patent on a transmission, which I term "the sliding key transmission," and also a friction transmission which I

consider superior to any they have got on the market. Now, do you suppose that one or the other or the two will be a success as to advantages and efficiency, and whether they will find a ready market for them or not? Also a patent system of reducing the charge of an internal combustion engine, consequently reducing the consumption of gasoline. Do you think this would be of any advantage? And again, do you suppose there is still a good market for a good air-cooled engine? I would deem it a great favor to see the answers in your next issue.

N. J. G.

Grand Rapids, Mich.

Frankly, you have given us a conundrum in your first query. With absolutely no information as to the details of the mechanism in question, you might just as well have closed your fist and asked us to guess whether you had a button or a gold dollar in it. Many of the most promising inventions fail utterly to materialize the hopes of their inventors, and likewise some apparently worthless ones turn out to be immensely valuable. Yours may be in either the button or the gold dollar class; we do not know, and our guessing would not benefit you, as the man who buys such a thing wants "to be shown."

Anything that tends to make the internal-combustion motor more efficient and more economical should have a good market value. The same is true of the demand for a good air-cooled motor. To put it in the vernacular, it depends entirely upon whether you are able to "deliver the goods" or not. Neither we, nor many who are in an even better position to judge of such things, could tell you to an absolute certainty at the outset whether your invention would be highly successful or not.

DIMENSIONS OF PROSPECTIVE SIX-CYLINDER.

Editor THE AUTOMOBILE:

[923.]—I have been working on the plans for a six-cylinder engine for my own use, and would like to have you make any criticism or suggestions you see fit regarding its dimensions or design. It is intended for a two-passenger runabout capable of making a little speed and still serve for cross-country use. A two or three-speed transmission is to be employed with double chain drive.

The cylinders are to be water-cooled, and have 5-16 inch walls, with a 1-inch jacket space around the valves, which are oppositely disposed, the jacket extending 1 inch below the piston when the latter is at its lowest point. The cylinder and head are in one casting, and the water-jacket wall is 3-16 inch. The bore is 6 1-4 inches, and the stroke 6 inches. The valves are 2 1-2 inches, with a 2 1-4-inch opening; both to be mechanically operated. What should be the proper lift?

The crankshaft has a bearing between each pair of cylinders, the crank pins being 3 1-4 inches long by 2 1-2 inches in diameter, with a 1 3-8-inch cheek, 2 3-4 inches wide, between them. Is this cheek heavy enough? The end bearings are 2 1-2 by 6 inches. The piston pin is 1 1-4 inches in diameter, with a 3-4-inch hole through it. The connecting rod is 12 inches long, with brass bearings measuring 1 1-4 by 3 inches at the piston end. What should the flywheel dimensions be? What speed should the motor have for ordinary use? What would be its speed limit, and how much power would it develop? What size wheels should be used, and what gear reduction employed with a three-speed transmission?

What should the compression be, and would a long stroke be more advisable or not? What speed should an outfit of this sort give in good working order on a good track? Will you kindly tell the engine dimensions and gear reduction, also size of the wheels of the Peerless "Green Dragon?"

A. L. CHAMBERLAIN.

Ames, Ia.

Answering your first question, according to the theory of valve design the inlet should be 1-4 the cylinder diameter and the exhaust 1-3, the theoretical lift for full opening being 1-4 of the valve diameter. According to this standard your dimensions are quite correct; but this has not been followed in recent practise, and you will find many motors of smaller size have 2 1-4 and 2 1-2 inch valves. They could be made slightly larger, reducing the lift correspondingly, thus making a much quieter and smoother running motor; 1-2 inch would be plenty of lift. We think the dimensions of the cheek quite sufficient, provided the crankshaft be made of good material, such as alloy steel. Designers vary considerably on the subject of flywheel dimensions, but we think you will find

a 14-inch wheel, with a 4-inch face and weighing about 85 pounds, most of which is placed in the rim, to be quite satisfactory. The permissible flywheel dimensions must naturally be governed by the other features of your design, such as clearance, material to be employed and the like, the above being for cast iron.

A normal speed of 800 to 900 r. p. m would be about right for a motor of the dimensions you name, and it could probably be speeded up to 1,300 r. p. m. with good effect. According to the recently adopted A. L. A. M. formula, its horsepower would be 98.5, and when speeded up to the limit this would be increased to about 110-115 horsepower. This is based on a compression of 60 to 65 pounds to the square inch. The power could be considerably increased by raising this factor, but in such a case the car would hardly be fit for anything but racing pure and simple. Thirty-six-inch wheels should be employed, and a suitable gear reduction for use with a three-speed transmission would be 1 1-2 to 1. A longer stroke would be more advisable on the score of efficiency, but not for such a car as you contemplate; the weight rises very rapidly with a slight increase in the length of the stroke, without advantages sufficient to compensate for it. Track speed is very largely a factor of recklessness in taking turns, but such a car should do 75 miles an hour without any trouble, and more on a straightway. We do not know the dimensions of the Peerless "Green Dragon" car, but doubtless either the makers will supply them upon request, or some reader who is familiar with the car will do so through this department.

HOW TO PROPERLY TIME VALVES.

Editor THE AUTOMOBILE:

[924.]—Can you give me, through "The Automobile," the proper way to time the valves of a two-cylinder, four-cycle motor, and a four-cylinder, four-cycle motor? The latter has mechanically-operated inlet valves, while the two-cylinder motor has automatic inlet valves; both run at about 1,200 r. p. m., and accelerate to about 1,500 r. p. m.

C. W. BYE.

New York City.

Where the two-cylinder motor is concerned, it is only necessary to time the exhaust valves. Before starting, look the motor over carefully and see if there are no timing marks on the face or side of the rim of the flywheel, usually the former. These are made to coincide with a guide mark on the frame or cylinder of the engine, just back of the flywheel. Failing these marks, remove the oilpan or bottom of the crankcase, so that the position of the cranks can be seen. This will serve as an index to the position of the pistons in the cylinder. As the motor's normal speed is high, the exhaust valve should be given considerable lead, and it should begin to open at a point corresponding to 10 to 15 per cent. of the length of the stroke from the bottom of the piston's travel, and thus bring its complete opening about when the piston is within 5 to 8 per cent. of finishing its downward stroke. Turn the motor over until the position of the crank shows the piston to have arrived at the point indicated, and set the camshaft so that the valve will be fully open. The contour of the cam will, of course, provide for its proper closing, which must be fully completed by the time the piston reaches the upward limit of its travel, so as not to delay the opening of the automatic inlet valve. As the cams are either integral or are pinned fast to the camshaft, timing one cylinder will suffice for both. After having completed the operation and adjusted the springs of the inlet valves, turn the motor over by hand a number of times to note the action of the valves before attempting to start it under its own power.

The operation is much the same in the case of the four-cylinder motor with mechanically operated valves. The exhaust should open and close at the points already indicated, and this valve of the first cylinder may be selected as a

guide for timing all the exhausts in case they are actuated from an independent shaft, and the inlet valve of the first cylinder for all the inlets. If both are on the same shaft either may be taken, for, as already mentioned, the cams are all fixed in place, and if one be properly set the others will be correct. The inlet valve should begin to open some distance before the completion of the exhaust stroke, as it is necessary to give it a lead also in a high-speed engine. It should be fully open either at the exact moment of the closing of the exhaust valve or slightly in advance of it, and it should remain open after the completion of the suction stroke for a period equivalent to 10 to 12 per cent. of the compression stroke. If properly designed and the position of none of the cams has been disturbed, all this is taken care of by their contour and their setting on the camshaft, so that it is only necessary to time either the opening or closing of one valve properly, and the rest must naturally follow.

CARE OF PNEUMATIC TIRES DURING WINTER.

Editor THE AUTOMOBILE:

[925.]—As subscribers to "The Automobile," we would like to obtain some information regarding the care of pneumatic tires throughout the year.

Would you advise removing the tires from the car during the winter and hanging them up in a cellar or similar place, where there is some dampness?
WEIMER & SON.

Rosewood, O.

Dampness is not essential to the preservation of rubber, but rather a detriment, and most rubber manufacturers caution users to store tires in a cool, dry place, which, however, should also be dark, as sunlight is injurious to rubber. If the car be stored in such a situation it will only be necessary to jack it up so that the weight is removed from the tires, although we consider it really an advantage to remove the tires where the car is to be laid up for any length of time. Before storing it might be an advantage to have the tires put in good repair, in case there is any necessity for it, such as cuts and holes in the tread, as this not only puts the tires in condition to be used instantly whenever wanted, but also conduces to their preservation. The maker of the tires will doubtless furnish any detailed information you desire on the subject, on application direct or to the nearest agency.

AS TO THE THERMO-SYPHON COOLING SYSTEM.

Editor THE AUTOMOBILE:

[926.]—Will you kindly answer the following questions through "Letters Interesting and Instructive?"

1. What is the thermo-syphon system of water circulation?
2. Would it be advisable to use it with a four-cylinder, two-cycle engine having no fan back of the radiator, but having a fan in the flywheel?
3. Can the ordinary type of radiator be used with the thermo-syphon system?
MORTON E. MYERS.

New York City.

The thermo-syphon system of water circulation depends upon gravity for its action. As water is heated it becomes lighter, and if it be under pressure this warm water will be displaced by the colder water back of it, which in turn, becoming warmer than the water behind, will also be displaced, thus setting up a constant circulation. This is the principle upon which the ordinary domestic hot-water system, or kitchen boiler, operates. The cold water apparently enters at the top—the same place as the hot water escapes, but actually it is led to a point near the bottom of the boiler, by a pipe on the inside of the latter, before being discharged. An outlet at the lowest point of the boiler connects it with the waterback placed in contact with the fire in the kitchen range, and the return pipe from the latter re-enters the boiler at a point about two feet from the bottom, and almost that distance above the cold-water inlet inside the boiler, so that the two streams never meet.

2. This system is very successfully used on some well-known makes of car, both foreign and American, and there

is no reason why it cannot be applied to the car you mention. The lack of a fan behind the radiator is no drawback, as the Renault—probably the chief advocate of this method of cooling—not only dispenses with a radiator fan, but has a radiator located back of the motor in an apparently very much enclosed position. Considerably more water is required than with systems using forced circulation, and this is the chief objection urged against the thermo-syphon.

3. The ordinary radiator can be employed with such a system, but it should be designed of sufficient capacity to accommodate the greater amount of water necessary. Care must also be taken to provide circulating pipes of larger diameter than where a pump is employed, and the circulation must be facilitated by using bends of large radius and avoiding sharp turns.

MORE ABOUT TYPES OF RADIATORS.

Editor THE AUTOMOBILE:

[927.]—We notice your reply to No. 913 in "Letters Interesting and Instructive," September 26 issue of "The Automobile," and would be pleased if you would send us the address of the writer.

We think you were fair in your reply, but would say to you that a whole lot of the radiating proposition is guesswork. As a matter of fact, we have made up several special coolers of our Rome vertical spiral tubes to take the place of expensive honeycomb radiators on high-priced foreign cars. We have merely taken out the honeycomb core and inserted our cooler in the foreign-made frames, with nothing added in the way of external dimensions, and have succeeded admirably where the original cooler failed. How would you account for that? The next auto show will have a good many recruits in the vertical tube ranks, and you, as news dispenser, should give this condition of affairs as generous attention as you have given our competitors in the past, who now make their entire effort on the cellular and honeycomb type of radiators.

LONG-TURNEY MFG. CO.,

Rome, N. Y.

Geo. M. Turney.

The mere fact that a car is of foreign origin, or high-priced, is not conclusive evidence that every one of its components represents the highest degree of efficiency or the best method of manufacture, as both foreign and high-priced designers, the latter on either side of the Atlantic, have made numerous mistakes. Doubtless your success is due to the fact that you avoided the original designer's errors in addition to increasing the efficiency in other ways.

A MANUFACTURER'S PERTINENT SUGGESTION.

Editor THE AUTOMOBILE:

[928.]—If I may be permitted an editorial suggestion, I would call your attention to the enclosed clipping, being a report of the address of Melville E. Ingalls to the American Banking Association at Atlantic City, N. J. This gentleman, while stating what is undoubtedly a fact, is "following the leader" in blaming the automobile for all the bad things that he thinks are happening. There have been several such comments made recently, and it is about time for an automobile journal to call a halt on the extravagant statements which would put the brunt of any possible bad times on the automobile.

Mr. Ingalls says that in the last one or two years \$400,000,000 has been spent on the automobile. There has never been a year in which the value of automobiles built in this country has been over \$50,000,000, if, in fact, as great as that. It is inconceivable that \$350,000,000 have been spent on up-keep and incidentals, that would not have been spent did the automobile not exist. Mr. Ingalls is talking through his bonnet if he is correctly quoted.

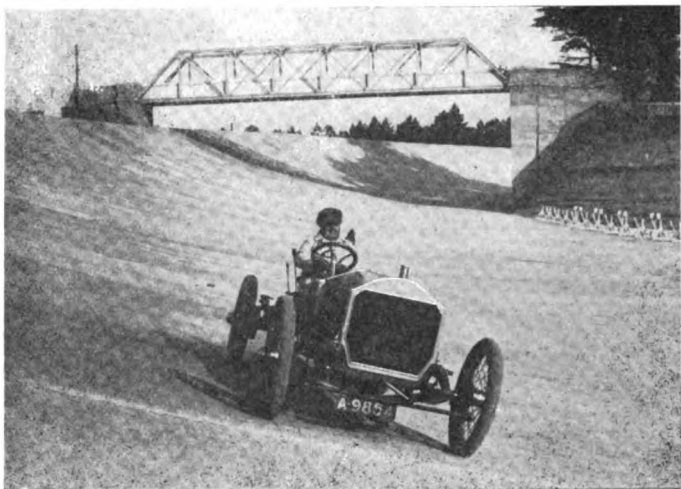
On the contrary, the automobile, after the first blush of extravagance which is now about over, will prove to be one of the greatest possible commercial advantages, just as the steamboat, the railroad, the trolley or any other means of saving time and annihilating distance has proved to be a benefit.

I would suggest that Mr. Ingalls and the other gentlemen who are fond of saying bad things about the automobile, would also figure how much money is spent annually on gin rickys, for example, on diamonds, on "more than enough to eat," "more than enough to wear," or any one of the thousand other national extravagances.

Detroit, Mich.

FRANK BRISCOE.

EDITOR'S NOTE.—As the only reference to the automobile in the clipping in question was its inclusion in the category of national extravagances and the citing of the figures mentioned, it is not reproduced here.



CHAS. J. GLIDDEN SAMPLING BROOKLANDS SPEED COURSE.

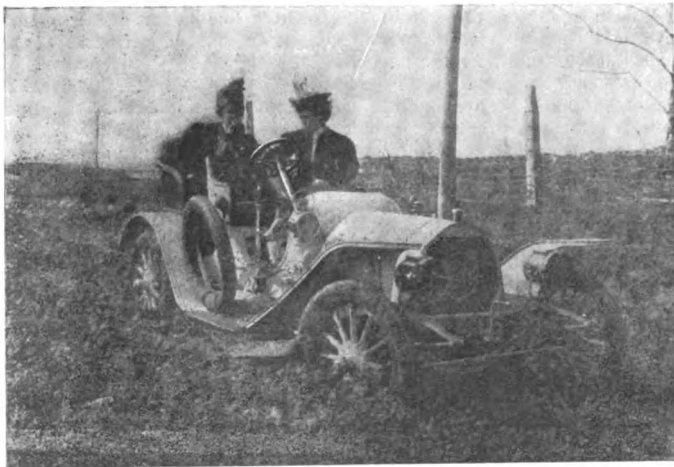
TOURIST GLIDDEN TRIES SPEEDING.

LONDON, Sept. 16.—After adventures in the heavens with intrepid French aeronauts, Globe-Girdler Glidden has descended on London's "suburban" autodrome to taste the joys of a "79" clip. There are no water breakers, no restrictions, there is safety up to ninety miles an hour, but the American world-girdler will not admit that it can equal touring. Without waiting for a brush with Edge or Lancia, Charles J. Glidden got aboard his trusty Napier and jogged off a Land's End John O'Groats trip.

Mr. Glidden arrived in New York on September 24, via the *Kaiser Wilhelm II.*, for a winter's rest at his home in Boston. His total mileage to date is 42,367 miles.

MORE SAMPLES OF AMERICAN ROADS.

Indiana is proud of its gravel roads and of the mileage of them which she is constantly increasing, but there are parts of the State, particularly in the south, where they pass over land only recently reclaimed from swamps, and as these are not built roads it only requires a comparatively small amount of rain to convert them into morasses. How true this is may be judged by the photograph, showing a Premier "24" roadster. The car is owned by a prominent Indianapolis contractor and has seen several thousand miles of service over similar roads, during which time its bill for repairs is said to have amounted to \$15. The portion of the road shown in the illustration leads to a town where the car's owner has buildings in course of construction and the car has been over it daily for almost a year past. Frequently the plastic clay and sand is right up to the hubs.



PREMIER SUCCESSFULLY NEGOTIATING HUB-DEEP INDIANA MUD.

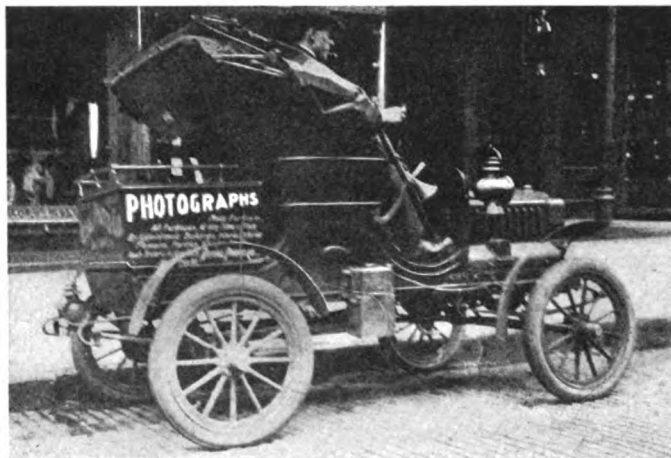
TOURING CAR AND CAB SERVICE FOR GOTHAM.

New York is promised a modern automobile service by the Teuring Car and Taxi-Cab Service Company, a concern just incorporated with a capital of \$1,000,000. Dr. Louis H. Mathez, vice-president of the company, states that arrangements have been made to obtain a large number of high-class autos for public service at prices which shall put the vehicles within reach of the general public. Sixty touring cars will be in operation by the first of the year, and by the end of next year there will also be in operation 125 Renault taximeter cabs of 10 horsepower. Later 250 more of these small vehicles will be put in operation.

Thomas Reed, Jr., is president of the company, Dr. Louis H. Mathez, vice-president, and R. H. Gordon, Jr., secretary and treasurer. The board of directors consists of the above officers and Dr. Preston Satterwhite, W. T. Patterson and D. Nevius.

A PHOTOGRAPHER'S USE OF THE AUTO.

"It probably costs me \$50 a month, I admit," says Royal T. Gillett, one of the Grand Rapids, Mich., hustlers in the photograph business, "but if I didn't use that Maxwell in my business I would have to hire two additional men in order to get all of my outside work done. I am able now, by having the auto, to do it all myself. So I get what is the equal of the services of two



HOW A MICHIGAN PHOTOGRAPHER FINDS THE MAXWELL HANDY.

men for \$50 a month. By its use I fill three and four appointments every afternoon, sometimes miles apart, where I could only do one under ordinary circumstances."

NEW BOOKS FOR AUTOMOBILISTS.

A Four-language Dictionary.—Automobilists traveling abroad, and those members of the industry who have relations with foreign countries, have often felt the need of a special dictionary dealing with automobile terms in the most widely spoken European tongues. Vocabularies of English-French and English-German expressions are notoriously incomplete when called upon to deal with the technicalities of the automobile. The want has been largely supplied by three volumes of the "Dictionary Autotechnic," published by Richard Carl Schmidt & Co., of Berlin. English, German, French and Italian are dealt with, equivalent expressions in each of these four languages being placed in parallel columns. Volume I has a list of German words in alphabetical order, followed by their equivalent in the three other languages; Volume II treats French in the same way, and the third volume arranges English words and phrases in the same manner. Although there are certain shortcomings in the translation of the more technical terms, the dictionary can be recommended for travelers and all ordinary use.



MANY distinctive features of design and construction will mark the 50-horsepower Pennsylvania car for 1908, which will be officially known as Type C. Beginning with the motor, this is of the overhead valve type employing two camshafts and with separate rocker arms for each valve. The cylinder dimensions are 4 3-4 by 5 1-4-inch bore and stroke, respectively, and they are cast in pairs with water jackets integral, an unusually liberal allowance for water space having been made. The camshafts are each carried in four bronze bearings, and are located inside the crankcase, as will be evident from the view of the under side of the motor with the oil pan removed. They are arranged so that they can be withdrawn complete, including their bearings, through the end of the crankcase, and their driving gears are all accurately stamped so as to facilitate proper replacement.

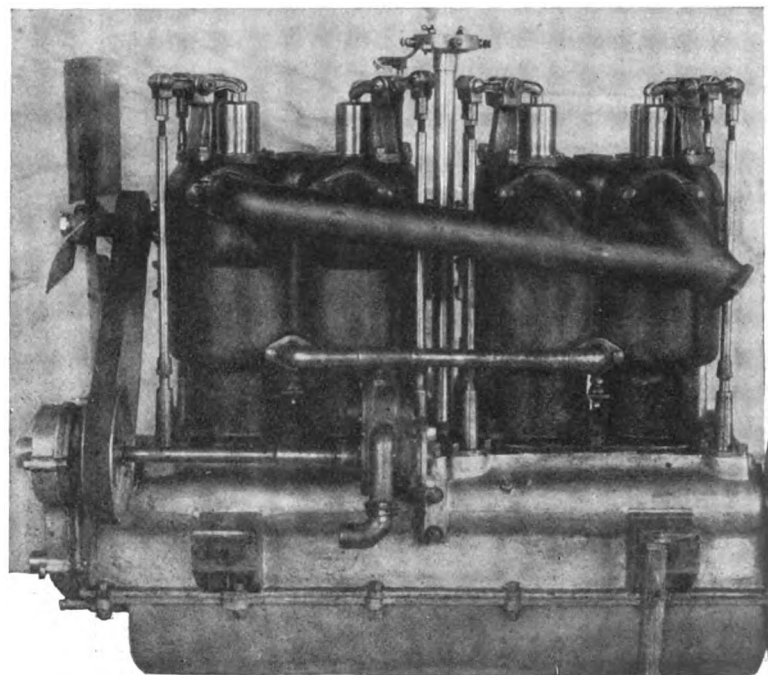
Valves.—The same degree of accessibility is noticeable where the valves are concerned. The latter are mounted in cages housing the spring and other small parts, and combining to form a complete unit, which is locked in position in the cylinder head by means of a ring with a hexagonal inner face. A combination asbestos and copper gasket interposed between the valve cage and its seat insures a gas-tight joint and also allows for expansion. The valves are thus readily removable, and their withdrawal from the cylinder head exposes the interior of the entire combustion chamber, as well as the piston head, which is a great advantage when necessary to clean out carbon deposits. The valves themselves are made with cast-iron heads and nickel stems, while the rocker arms are hardened forgings and the push rods are tubular, with accurately machined adjusting ends.

Crankshaft and Its Kindred Fittings.—The crankshaft is a hollow drop forging, supported on die-cast bearings of liberal proportions, the latter insuring long freedom from undue wear. In addition to providing a great deal of jacket space, the circulating pump, which is of the gear type and gear-driven, has a large capacity, delivering 8 gallons per minute at 600 revolutions. The hollow crankshaft is utilized to facilitate lubrication, which is taken care of by a Kinwood pressure feed oiler, driven by an eccentric and strap from the flywheel end of the camshaft, supplying oil under 90 pounds pressure to the principal bearings. Oil leads are also taken to the timer, the tor-

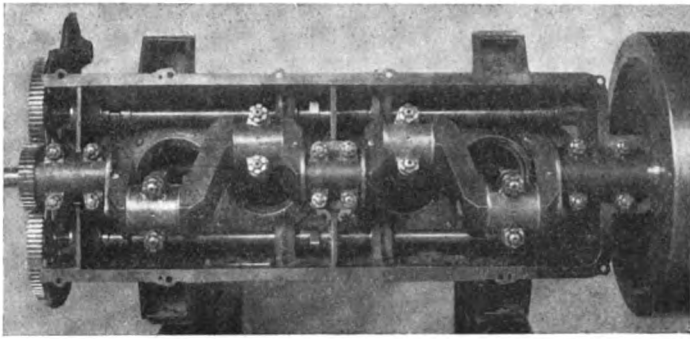
sion hanger and ring, and to the gearset and rear axle, making six in all, besides which other moving parts are supplied with oil or grease cups. The clutch spring and thrust are lubricated from the hollow camshaft, while the wheels are packed with hard grease.

Ignition.—The high-tension system of ignition is employed, the timer being located on an aluminum standard accessible placed between and above the cylinder bearings. It is driven by spiral gears located on the interior of the crankcase and lubricated by splash.

Transmission.—As the first step in the transmission of the power, an internal cone type of clutch is employed, having a broad face, and with its angle so designed that it is free to a very large extent from the objectionable fault of taking hold jerkily. It is fitted with a ball spring-thrust, as well as a ball thrust at the outer end, to take up the strain when disengaged. Hardened steel dowel washers are used between the flywheel and crankshaft flanges and between the clutch cone and flywheel, as well as on all universal joint flanges. A double universal joint is interposed between the clutch and the end of the main driving shaft, these joints being designed with unusually large driving surfaces. The clutch and its universal are so arranged as to be not only accessible, but also easily removable. The reason for the use of these joints is to be found in the fact that the gear-set and rear axle driving mechanism are combined as a unit. The former is contained in the extension of the differential housing, which is made of manganese bronze. The gears are of one-inch face and are all made of chrome nickel steel, which is also true of the shafts, the latter being carried on liberal-sized annular ball bearings. Operation is by the selective method, and two sets of ball-bearings with spacers are placed adjacent to the



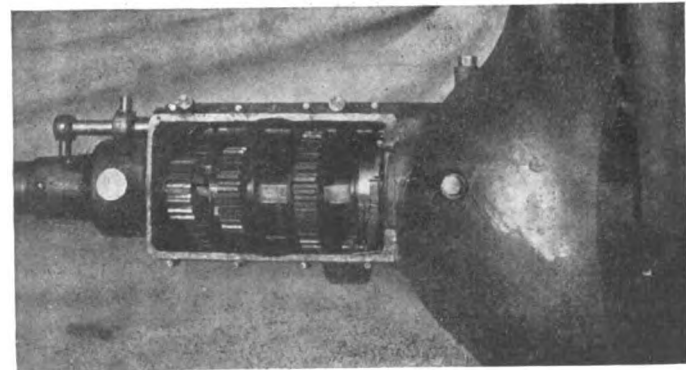
MOTOR OF THE PENNSYLVANIA "50," WITH VALVES IN HEAD.



UNDER SIDE OF MOTOR SHOWING CRANKSHAFT DETAIL.

bevel pinion, thus insuring absolute alignment, further precaution against derangement being found in the cage of roller bearings, fitted to the round end of the main shaft that rotates in the pocket gear. This insures a parallel position of the transmission shafts at all speeds. The driving thrust between the main bevels is taken up by a one-inch steel ball inserted in the pocket gear. In addition, a positive interlocking system is employed, so that the gear-set is not only designed to be extremely durable, but is also proof against accidental injury at the hands of the driver. It is constantly oiled direct from the pressure lubricator on the motor.

Gearset and Differential.—Some idea of the arrangement of this combined rear-axle unit and gearset may be obtained from the illustration, which pictures it with both the gearset and differential housing covers removed. The latter is a spherical casting of Parsons' manganese bronze. In addition to the many obvious advantages of this arrangement, practically every part of the transmission, with the exception of the countershaft, can be readily withdrawn through the open end of the differential housing. The differential itself and the driving shafts of the floating live axle are each self-contained and also easily removable. Five jaw clutches are fitted on the squared ends of the axle driving shafts, and engage their corresponding member mounted on the rear wheel hubs, this arrangement being clearly illustrated in one of the accompanying photographs. The weight of the car and stress of the load are taken care of entirely by large annular ball-bearings, and the differential is also mounted on similar bearings with self-contained ball thrust bearings. Taken all in all, the design is one that lends itself very readily to inspection or dismantling, beside combining with this feature a form of construction excellently adapted for the purpose in view. Chrome nickel steel is liberally employed throughout the components of the transmission, the driving bevels, main driving shaft, axle driving shaft, and the axle itself, as well as the torsion tube, all being made of this material. The last named member is supported at its forward end by a steel hanger, fitted with a spherical bronze ring, permitting the tube to travel longitudinally or circumfer-

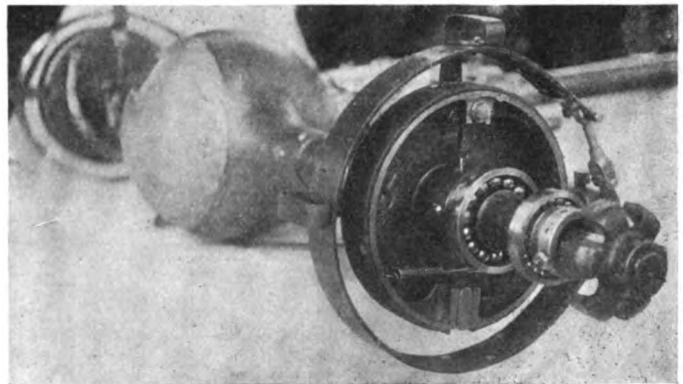


UNIT TRANSMISSION AND AXLE OF THE PENNSYLVANIA.

entially, the whole being attached to the frame. The rear axle is securely anchored to the frame by means of adjustable tubular reach rods.

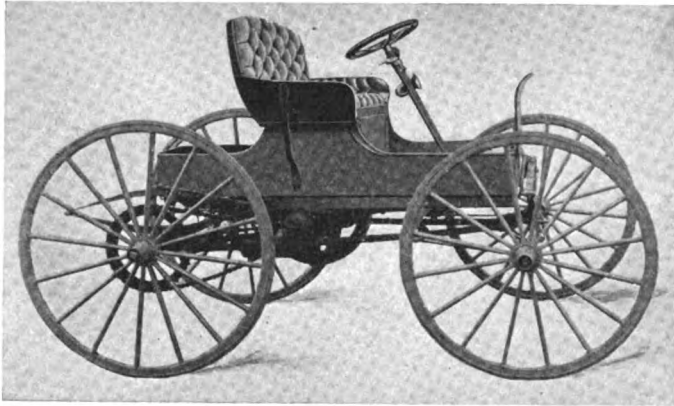
Front Axle, Steering Arm, and Brakes.—The front axle is a one-piece drop-forging with the spring saddles integral, while both the axle itself and the steering arm have been designed with an exceptional factor of safety. The weight of the car and pivot action is carried on one-inch steel balls, located in the dome of the yoke, and secured by a bronze bushing. A recess is made in the top of the spindle to receive the ball, this construction making it necessary to lift the entire weight of the car before the spindle can be removed from the yoke. The steering arms are attached to the spindles by means of tapered broached holes, and are securely locked, while the cross connecting rod is placed behind the axle. Two sets of brakes are fitted, the pedal or foot brake being of the external constricting type, while the emergency brake, actuated by a lever traveling in the change-speed guide, is of the expanding type. The wheels are carried on annular bearings, set to shoulders with spacers, this arrangement, as well as the brake construction, being clearly illustrated by the photograph showing one of the axle driving units.

Chassis.—The foundation of the chassis consists of the usual type of channel section pressed steel frame, heavily reinforced, and carried on a pair of 2x38-inch semi-elliptic springs forward with 46-inch rear longitudinal springs,



EXTERNAL AND INTERNAL BRAKE, AND REAR WHEEL BEARINGS.

shackled at the forward end, and tied to a transverse spring anchored to the frame by means of a steel bracket at the rear. The steering gear is of the external and internal worm and nut type, fitted with a spring socket tie rod end. The wheels are 34 inches in diameter and are fitted with 3 1-2-inch front and 4 1-2-inch tires rear. The steering column passes through a base attached to the dash and footboard, making it perfectly stiff, while the housing of the steering mechanism is securely fastened between the main and sub-frames. The spark and throttle controls are mounted in the customary fashion on a stationary sector over the steering wheel and are designed so as to be conveniently operated with the left hand. The body is made of aluminum and is designed to withstand road shocks without injury. Leather and hair upholstery on a liberal foundation of springs complete this essential of the car, the lines of which are neat and attractive, as will be apparent from the photograph illustrating the car ready for the road. Numerous pockets and compartments for storage, as well as a foot rest and robe rail, together with other similar fittings that go to complete the interior of the tonneau, are fitted. The wheelbase is 114 inches and the tread standard, while in complete running order the car tips the scales at 2,800 pounds. With the usual equipment of lamps, tools, and the like, the car lists at \$2,800, the makers being prepared to furnish an imported magneto at an additional charge of \$200. The same chassis is also equipped as a high-powered runabout by making several modifications.



MONARCH MODEL C, A NEW IOWA PRODUCTION.

ANOTHER BUGGY-TYPE AUTO FROM THE WEST.

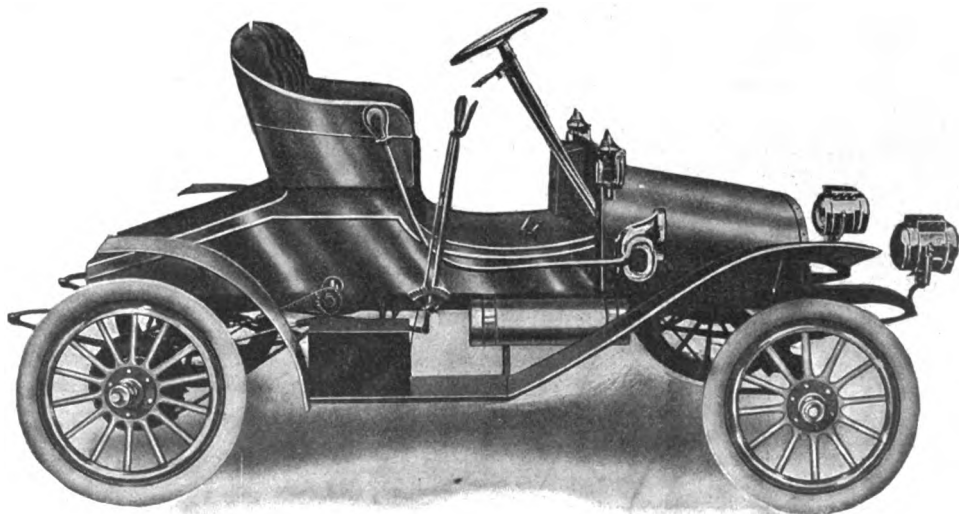
"Monarch Model C" is the official title of the car which will constitute the 1908 product of the Monarch Machine Company, Des Moines, Ia. As will be apparent from the illustration heading this column, the car belongs to that aptly-named class the buggyabouts, which are destined to form such an important factor in the automobile production of this country in the near future. The power plant consists of a single-cylinder, four-cycle water-cooled engine, with a 4-inch bore and 6-inch stroke, the latter making for economy in fuel consumption and consequent efficiency. It is rated at 5 horsepower, and, owing to its position on the chassis, it has been found possible to employ a flywheel so proportioned as to overcome to a large extent the infrequent impulses of the engine, and which also enables it to carry the load smoothly at low speeds. The cylinder and crankcase are cast together, of close-grained charcoal iron, and the engine complete is suspended from an angle iron frame in such a manner as to insure proper balance when working at its maximum load. The cylinder is bored, reamed and faced with special care, the same pains being taken in its construction as are employed in the making of much more expensive engines. The piston is cast of close-grained iron, of sufficient length to give proper bearing surface, and is fitted with rings cut at an angle in accordance with the best standard practice. The wrist pin is of steel, and of ample diameter, while the connecting rod bearings are of bronze, carefully machined. The valves are placed in the head, are mechanically operated, and the timing gears are machined from solid blanks. The valve action is taken direct from a single cam keyed solidly to the pinion. The valves are accurately ground to their seats and are held by tempered steel springs.

The illustration practically suffices to describe the remainder of the car. It has the typical buggy body, measuring 39 by 63 inches, with a hardwood floor, swell front spring cushion, heavy steel steps and good quality patent leather dash. The suspension consists of amply proportioned full-elliptic springs, three in all being employed, one placed transversely forward and the other two longitudinally in the rear. Both the front and rear axle are of 1 1/8 inch solid steel, the latter being of the coach style. A wheel steer is employed, the usual fifth wheel, consisting of a full-circle, double plate wrought iron construction with clip king bolt, constituting the remainder of the steering gear.

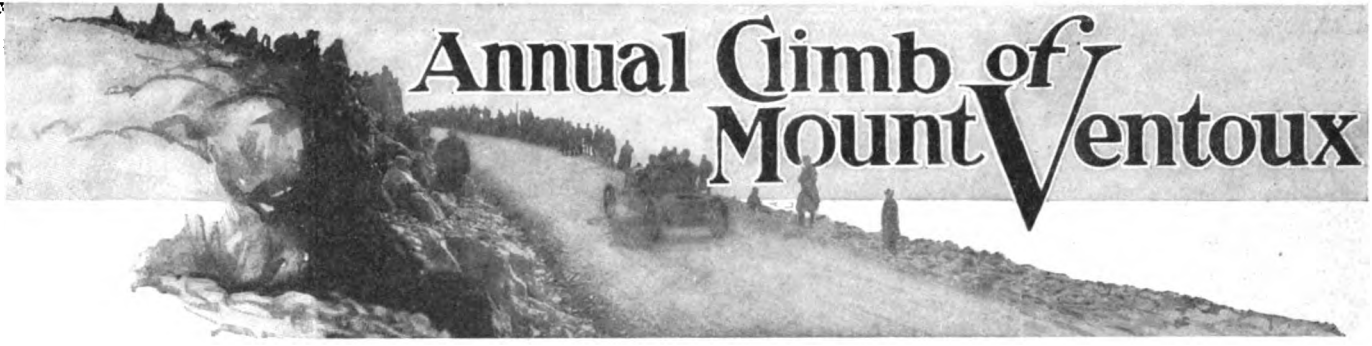
HERE'S THE EVERYBODY'S AUTOMOBILE.

The name Everybody's given this new car, which hails from St. Louis, is suggestive of a machine designed for the use of the average man, and such has been the purpose of its makers, the Everybody's Motor Car Manufacturing Company, St. Louis, Mo. In fact, it combines many of those features which seekers after the ideal in automobile construction and design have agreed are indispensable to an automobile reduced to the lowest terms of simplicity. For example, its power plant consists of a two-cylinder, four-cycle, horizontal-opposed, air-cooled engine, which is rated at 10-12-horsepower. This is located transversely under a bonnet forward. The design gives a perfectly balanced engine with a minimum of parts for the power output required. Provision is made for cooling by casting the cylinders with a liberal amount of surface in the shape of fins, air being blown over them constantly by the large fan embodied in the flywheel, which is placed forward of the motor, thus producing a strong blast of cool air over the numerous deep and thinly cut fins. The cylinder dimensions are 4 1/16-inch bore by 4-inch stroke, both cylinders being made in a single casting. The cranks are set at 180 degrees, and the crankshaft is mounted on two liberal-sized bearings. The inlet valves are of the automatic type and are accessibly placed, while the removal of the large crankcase cover permits of reaching the entire interior of the motor. Lubrication is by splash, the supply in the crankcase oiling all the main bearings as well as the timing gears for the exhaust valves ignition timer, two sight-feed compression cups being placed directly on the cylinders and a third on the crankcase to maintain the supply in the latter. The normal speed is 900 r.p.m., and the engine may be speeded considerably above this with a consequent increase in power, though it develops ample power at low speeds.

The transmission is of the friction type, the friction disk being constructed of a special composition driving against a specially impregnated fiber pulley, the two materials having a maximum coefficient of friction and, consequently, great holding power. The contact between the two is controlled by a roller thrust bearing coupled to the clutch pedal. The change speed lever shifts the friction pulley horizontally across the face of the composition friction disk, giving a range of speed varying from a standstill to 30 miles an hour forward, and from nothing to 17 miles an hour on the reverse. Every part of the mechanism is made accessible by placing the engine under a bonnet and the transmission directly under the seat, permitting of its adjustment or oiling merely by lifting the cushion flap. Final drive is by means of double chains. The wheelbase is 78 inches and the weight 800 pounds; with pneumatic tires the car lists at \$450.



"EVERYBODY'S" RUNABOUT, AN AIR-COOLED WESTERNER FROM ST. LOUIS.



AVIGNON, FRANCE, Sept. 20.—At the foot of a wild, cloud-capped mountain, in a romantic, sunny, south country, with strong attachments to the past, loud-lunged automobiles are being started by a medallioned official up a rough grade guarded by red-legged troopers. Exactly 13.42 miles away, in the calm and cold of the Government Observatory, a second official is recording the time of arrival of the diversified vehicles. Between those two points the machines, big and little, have been put to a rude test—as the French term it—for the hill is terribly difficult to climb, with its grades varying from 8 to 20 per cent., its stony and dusty surface and its sharp turns by the side of yawning precipices, unprotected by wall or barrier. Five years ago it was the "Mountain Despair" of all automobilists.

Yet these 13.42 miles were covered in less than twenty minutes—to be exact, in 19:59 2-5—by Rougier on the Grand Prix Dietrich. An average of 41.2 miles an hour on such a climb to the clouds is indeed fast going. It left Collomb's Rochet-Schneider record of last year a long way behind, but failed to lower the record climb, established by Cagno on a Fiat, by the narrow margin of 17 seconds. It had been damp during the night, and the turns were rather too wet to expect record performances. Bablot, handling the Brasier Grand Prix racer, with which he broke a world's five-kilometer record down in the plain at Salon a few days before, made a very poor start, went terribly fast as he neared the top, but was 29 seconds slower than his rival from the

north. Both were equipped with Michelin tires and derived their ignition from a low-tension Simms-Bosch magneto.

The going was fast throughout on this second day, for all the stripped tourists were powerful machines. Classification was according to cylinder area and weight. An exception was made for the six-cylinder class, allowed to run irrespective of size of cylinders or weight. It was in this division that a Rossel, handled by Jenné, made the fastest time of any tourist—24:54 4-5. A second Rossel was three minutes behind, and an Aquilla Italiana third. Last year's records were all made to appear small.

A Cottin & Desgouttes, in the 117 to 125 mm. bore class, was next best in 25:16 4-5 for the 13.4 miles. Brouhot won in the class approximating 24-30-horsepower, time 28:04 3-5; Mors made 28:22 in the 30-40-horsepower class, and Radia won in the 40-60-horsepower series with 25:44 1-5.

There was less public interest in the first day's event, devoted to motorcycles and small runabouts selling at something round \$800, but there was an excellent demonstration for supporters of popular automobiles. Some of the drivers had not the experience of Rougier and Bablot, and gave the hazardous spectators an occasional scare on the turns, but not a single machine showed weakness. Little 110-pound motor bicycles reached the top in less than 40 minutes, and, at the other end of the scale, an eleven-passenger Ariès omnibus made the climb with full load in 1 hour 27 minutes.

COMING EVENTS AS SHOWN BY THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
- Oct. 26.....—New Haven, Conn., Second Regiment Armory, Third Annual Automobile Show, New Haven Business Men's Association.
- Nov. 2-9.....—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
- Nov. 9-16.....—Philadelphia, First Regt. Armory, Automobile Show, Philadelphia Automobile Trade Association.
- Nov. 16-23.....—Baltimore, Third Annual Automobile Exhibition, Automobile Dealers' Association. B. R. Johnson, manager, Piper Building.
- Nov. 29-Dec. 6.—Chicago, Casino Garden, Second Annual Auto Parts Show. A. M. Andrews, secretary, 184 La Salle street.
- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 14-21.....—St. Louis, Mo., New Coliseum, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
- Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.
- Feb. 3-8.....—Buffalo, Convention Hall, First Annual Power Boat and Sportsmen's Show, auspices of Buffalo Launch Club. Dai H. Lewis, manager, 760 Main street, Buffalo, N. Y.
- Feb. 20-Mar. 7.—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsmen's Show.

- Mar. 9-14.....—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dai H. Lewis, manager.
- Mar. 21-28.....—Toronto, Canada, St. Lawrence Rink, Automobile Show. R. M. Jaffray, manager.
- Apr. 5-12.....—Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Races, Hill-Climbs, Etc.

- Oct. 4-5.....—Trenton, N. J., Inter-State Fair Automobile Races, Includes 24-hour Event.
- Oct. 19.....—Kansas City, Mo., Kansas City Jockey Club Track, Race Meet, Automobile Club of Kansas City.
- Oct. 21.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

FOREIGN.

Shows.

- Sept. 28-Oct. 7.—Denmark, Copenhagen International Auto Show.
- Nov. 11-23.....—London, Olympia Motor Show.
- Nov. 12-Dec. 1.—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
- Nov. 22-30.....—London, Agricultural Hall, Stanley Show.
- Dec. 5-22.....—Berlin, Germany, Automobile Show.
- Jan. 18-Feb. 2.—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.

Races, Hill-Climbs, Etc.

- Oct. 1-15.....—Paris Electric Vehicle Competition. A. C. F.
- Oct. 20.....—France, Gallon Hill Climb.
- Nov. 1-15.....—France, Voiturette Contest near Paris.
- May 16, 1908....—Sicily, Targo Florio, Automobile Club of Italy.
- June 20-July 5, '08—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)



EVEN had the automobile and the fashion of touring been current at such a time, to have suggested an auto tour of Bosnia thirty years ago would have been the same as suggesting a tour to the head waters of the Nile. Not alone would no trace of roads or of accommodations have stared the prospective traveler in the face, but his very life would have been endangered by the peoples of the localities. Today a tour of Bosnia would be one of the most delightful in Europe.

This is chiefly so from the fact that Bosnia, although nominally a part and parcel of the Ottoman empire, is *de facto* an Austrian province, but under military government—which tolerates the delicious fallacy that the occupation is but a temporary one, and that everything is still in the "field." Permanent post-offices, railway lines, roads, and bridges are all labeled "field appliances" in order to keep up the fiction. Howsoever that may be, the military government gives the civil authorities despotic power to order this, that and the other improved, and there are thousands of soldiers sent down each year to do this work, at no cost whatever to the government. On the other hand, the hatred between Austria and Hungary keeps the officers of either side in the joint government of Bosnia in line, and all the evils which autocracy usually imposes on a people are eliminated.

Ideal Roads Are Everywhere in Evidence.

As a consequence the roads in Bosnia to-day are the pink of perfection. Taking the course of the donkey trails, they follow blue foaming rivers into narrow canyons, where even at the present time brigandage seems possible, and where the lone cavalry police at an occasional turn of the road is the sole guarantee of one's safety. But these roads are so picturesque that they weave a spell, causing one to wish to return again and again. There are the donkey-trains, laden with panniers of ruby-red apples or with the hay piled so high about the animal's flanks as to make one wonder as to the whereabouts of the donkey itself. There are the Christian peasants, the men ahorse, the women and children following afoot, one and all in gay costume, and, over all, the red braided turban, which, though the replica of the headwear of the Riffians of India, marks the Bosniac from the Mussulman in Bosnia.

Moslems there are, too, along the road; and while up to the time of the occupation Turk and Christian lived in towns carefully apart, to-day their farms adjoin in the villages. The home

of the Moslem, however, is marked by the lattices at its windows, the little latticed porticos and the high walls with the knockers to the doors—that the women may take an airing unseen by passing men. In the occasional kavana, or coffee-house, the tavern of the Nearer East, one meets these hooded damsels—the fingernails and the hair dyed with henna, the face shrouded in veils of white, with a slit just over the eyes. Behind them trudge the children—the girls in bloomers, tied in at the ankles, their hair in two stumpy braids down the back, and likewise fiery red with henna; the boys in more openly bisected bloomers and a calico waist much befowered.

A Government-Controlled Hotel System.

Beyond the road is the town, and there one finds the true delight of autoing in Bosnia. In order to encourage the traveler, the government has taken over the hotel system, and has erected splendid hotels, as fine as any in the world. These it leases out, but only after setting the price that may be asked for each room, each service, each item of the bill of fare, and then posting these printed lists conspicuously over the building. In this wise the hoteliers of Bosnia become the most honest in the world.

The cities, and notably the capital, Sarajevo, are taking on the street-building mania, and at this isolated capital asphalt ways lead on as they would in the suburb of an American metropolis. Shopping with the automobile at Sarajevo would be true delight indeed, for there is built the grand bazaar, hundreds of the open shops, all of one kind together and all exposing their wares in the low booth at the front. Colors that dazzle and please the eye are everywhere in this perpetual exposition.

Then, too, for him who has the love of adventure within him there can be made a long ride—a two days' trip over the border into Turkey—following in the wake of the mail caravans, when soldiers ride upon the seats of the stages and the entire roadway is policed. After that one goes through at his peril, but so gorgeous the scenery in these Balkan uplands that all thought of risk is forgotten. As yet the auto tour of Bosnia is unknown. In Budapest there is a semi-governmental bureau which sees to it that the touristy of all the Austro-Hungarian domains is exploited. One of these days it will take up the matter of autoing in Bosnia, and with the affable Austrian and Hungarian military officers for one's hosts—the most charming officialdom in Europe without a doubt—such trips will be a rare treat indeed.

As an automobile country Servia soon falls on the traveler. Endless plains, grain-fields, and occasionally oak forests where mass the famous herds of Serb swine, and then some little brown-walled red-roofed village, with the somewhat clumsy inhabitants in a deep chocolate-brown woollen suit and cap of the same material. Servia, too, is not sufficiently primitive to interest, nor are her highways so modern as to make autoing for the pure love of the thing exhilarating. So, unless one simply cares to establish a record of having made a tour in every country of Europe he may as well leave this kingdom out.

Roumania, however, is another question. Poverty-stricken, suffering Roumania is interesting for all that it lacks. To auto in Roumania, more than in Turkey in fact, one must carry his own supplies, his own repair-shop, his own commissary with him. In the little villages there are



THE BAZAAR AT SARAJEVO.

not taverns, but mere grog-shops, so poor that there is only the *pele*, or native wine, and the round, unsalted pretzels, strung across the ceiling, to be had, and, hungry as the tourist may be, if he has not taken food from the nearest big city he must keep growing hungrier still. The secret lies in the agrarian conditions in Roumania. Such is the poverty, due to the holding of the land by the great *patroons*, or land-owners, that the peasant is but too glad to sell all his crop as soon as marketable, all his dairy produce as soon as made, that he may have cash to pay debts perhaps already long overdue. For himself and family he reserves just enough to keep him until next harvest-time, and even then the wolf is ever at the door. The real wolf and the figurative both, for in the cruel winters sweeping these Wallachian plains the wolves come around

the villages and bay all night.

In the harvest season

ter, and this perhaps tinted in pale lavender, with a broad band of blue at the sides. To the one-story houses there is a little narrow porch and there hang the peppers and the mangoes, ripening in the sun, while upon the earthen floor of the portico the corn is gathered in great golden piles.

And the people, the simple, tanned, and not unkindly peasants—they are pretty, for their costumes of lavender, all with stitchings in a deeper violet or in purple, and with clean white shirts beneath the coat, to afford the needed contrast. Still more primitive are the gipsy villages, mere burrows in the earth, with the orifice extended and hedged in with boughs, as to some cyclone cellar of Kansas. There the happy-go-lucky nomads swarm the roads, women and children striking their faces and pulling their hair to invoke the passer's pity, that he may throw them a few centimes for "sugar."

Of course, there is the other side to the picture. If one is willing to stick to the



THREE GENERATIONS OF SERVIANS.

Roumania is at her best. Out in the long, unbounded grain-fields picturesque peasants—men, women and children—garner the crop. As in old Bible times, the child sits upon the plow to keep it deep in the furrow, but unlike Bible times, and despite the fanaticism of pope-power in this land, the ox is muzzled at the plow, that he may not devour one morsel of what might be sold for hard-earned silver.



A BELLE OF SARAJEVO.

As for scenery, it is variant. There is the enormous hay-stack, tall as an East Side tenement and almost as redolent, to which landlord and peasants one and all bring their hay as precaution against incendiaries. There is the wheat, or the corn, or the barley, and the meadow, and now and then a beet field or melon-yard. Between are the villages, woe-begone and smacking largely of Dahomeny in Africa. Houses are of a wattling of the branches of the willow, or else of a reed from the Danube, here and there coated over with adobe for plas-

cities, notably Bucharest, he will have as easy riding as he would in France. Streets are wide and of macadam or asphalt; there are handsome cafés, with plate-glass windows, gipsy orchestras, and polite waiters everywhere; there are *chaussées* leading out to parks, as the Bois de Boulogne; there is a clearly-defined right-of-way for vehicles bound in each direction, and in fact every accompaniment to autoing in a big city is to be enjoyed. That presents little of the unusual. It is the interior of Roumania that would provide the unique. And as for it—it has hardly been visited by the automobilist.

In order to improve touring conditions in France the national authorities are particularly busy at the present time in the organization of touring centers where travelers may have a central point from which to make excursions to spots of interest. Each center will be provided with the necessary guides, maps, and information on touring within that district. Good results are expected from a competition now being held by the A. C. F. for improvements in the management and organization of hotels.



BOSNIAN YOUTH.

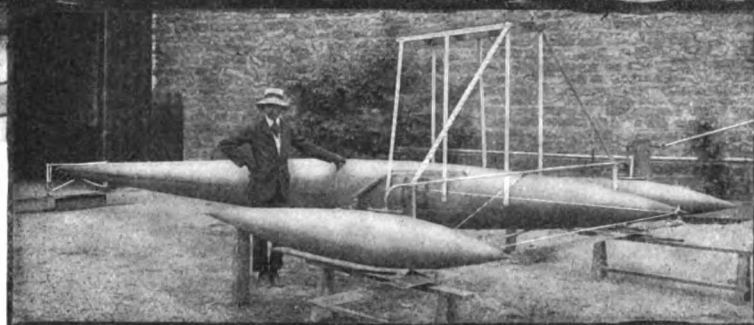


WOMEN OF THE HERZEGOVINA.



THE PICTURESQUE NATIVE MALES.

Next A Mile-a-Minute on Water



TRIPLE CIGAR-SHAPED HYDROPLANE DESIGNED FOR RECORD SPEED BY SANTOS-DUMONT

PARIS, Sept. 23.—Santos-Dumont has made such progress with the hydroplane guaranteed to cover more than sixty-two miles in the hour that an attempt to realize on water this stupendous speed hitherto deemed impossible might be looked for in about two weeks. It will be remembered that Santos-Dumont made a bet with Fernand Charron, the well-known sportsman and automobile constructor, that he would travel on water 100 kilometers (62.1 miles) within the hour. The stakes were \$10,000.

This week, at his private workshop in Neuilly, the young Brazilian aeronaut gave an opportunity to a few friends to inspect the machine with which he expects to accomplish his record-breaking clip. The hydroplane consists, as will be seen from the illustration, of three cigar-shaped floats, built of aluminum and wood and covered with a silk waterproof envelope. The center float is a little more than 32 feet in length, the two others being about a third that size. The three floats are united by a light metal cross frame, and above the center cigar is a raised skeleton platform on which the motor will be mounted. At the rear is a transverse wood float attached by means of metal stays to the tail of the cigar. It is above this frame that the operator's saddle has been fixed, the rudder to be placed later almost directly under.

Without motor or propeller, the hydroplane weighs less than two hundred pounds, which is one of the lightest constructions ever made for its size. In all probability the three cigar-shaped floats will be filled with compressed air. Arrangements have

been made for the supply of a special 16-cylinder Antoinette motor to develop 120 horsepower and not to weigh more than one kilogramme per horsepower; thus the weight of the engine will be about 260 pounds. M. Levavassor, the maker of the Antoinette, has supplied all the motors for Santos-Dumont's latest machines and has made such progress in the construction of light motors that he guarantees weight not to exceed one kilo per indicated horsepower.

Santos-Dumont declares that he bases his success largely on the great saving of weight he has been able to accomplish. Previous attempts at producing high speed hydroplanes have failed, in his opinion, because of needlessly heavy construction. It is certain that the latest addition to the hydroplane world will not err in this respect. No. 18, as the Brazilian inventor has christened his apparatus, for it is the eighteenth in a varied line of balloons, hydroplanes and aeroplanes, is a masterpiece in the art of eliminating skin friction, and appears likely, driven by a reliable motor, to attain the prolonged speed for which it has been built.

Nothing is known as to the place where the trials will take place. The conditions of the wager stipulating that sixty-two miles shall be covered within the hour, and not that the boat must travel a few seconds at that rate, an open sheet of water must be found. At the same time the water must be calm for a hydroplane is essentially a fine weather and smooth water craft.

FRENCH BALLOON AND AEROPLANE CONTESTS.

PARIS, Sept. 29.—A drizzling rain and a strong southeast wind marked the start of the third annual balloon race of the Aero Club of France from the Tuileries Gardens. M. De Nobel, piloting *Le Nord*, was picked up in the North Sea, 25 miles from Ostend, and is probably the winner.

M. Bleriot has traveled a distance of 600 feet, at a height of 50 to 60 feet from the ground, in the aeroplane bearing his name, thus winning the bronze medal of the Aero Club for a flight of over 490 feet. Unfortunately Bleriot retarded his ignition too rapidly at the end of the flight, bringing the machine to the ground so suddenly that it was demolished. The 16-cylinder Antoinette motor was intact and no injury befell the pilot.

During his visit to Paris, Charles J. Glidden took a course in aeronautics under the direction of expert French balloonists. The longest ascension of the American automobilist was 54 miles, covered in four hours, maximum height being 1 3-4 miles.

GERMAN PILOTS FOR BENNETT CUP EN ROUTE.

Captain von Abercron, the well-known aeronaut, accompanied by Herr Erbsloeh and Hecker, left Bremen on September 24, on board the German Lloyd steamer *Kronprinz Wilhelm*, on their way to St. Louis, where they will participate in the balloon contest. They brought with them the two balloons to be used in the race.

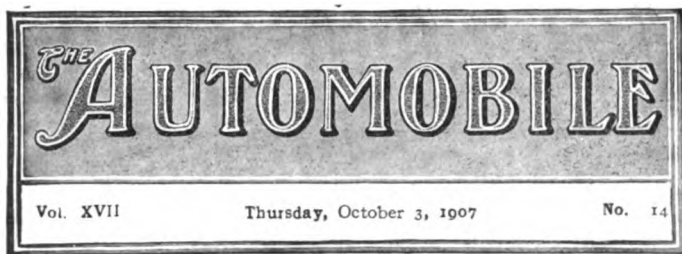
GOVERNMENT AID FOR GERMAN AIRSHIP.

FRIEDRICHSHAFEN, GERMANY, Sept. 24.—According to balloon experts and members of the Imperial Government who witnessed the renewed experiments of Count Zeppelin's airship over Lake Constance, the German aeronaut has developed his system to a remarkable degree of efficiency. A Government subsidy of \$40,000 has been made to assist him in his experimental flights.

One of the weaknesses of the Zeppelin airship is the impossibility of making an ascent without the use of the regular anchorage structure. If the airship were obliged to come down away from its base or from an open sheet of water, it would certainly be damaged, for it would be without means of rising again, and, owing to its size, could not be transported across country. It is about 400 feet in length and 50 feet broad.

DIRIGIBLE AND AEROPLANE TESTS AT ST. LOUIS.

In connection with the balloon competition for the Gordon Bennett aeronautical cup, to be started from St. Louis on Monday, October 21, the Aero Club of that city will offer special prizes amounting to \$5,000 for aeroplane and dirigible balloon competitions. There will be distinct races for the two classes held within the club enclosure, over a course three-quarters of a mile in length. The first prize winner in each will receive \$2,000 and the second \$500. Entry blanks have been issued and can be obtained from J. W. Kearney, club secretary.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor

R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT

A. B. SWETLAND, Business Manager

LOUIS R. SMITH FRANK B. BARNETT

W. I. RALPH, 1035 Old South Building, Boston, Mass.

C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00

Other Countries in Postal Union, including Canada - - - - - One Year, 3.00

To subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hiffe & Sons, Limited, 20 Tudor Street, London, E. C.

FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.

GERMANY:—A. Seydel Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor
Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903,
and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905, - - - - -	730,000
“ “ in 1906, - - - - -	791,000
“ “ This Issue - - - - -	17,250
“ “ Since January 1, - - - - -	655,900

“Good Roads and the Sane Use of Them.” That was the rallying cry of the first good roads and legislative

convention held by the automobilists of the country—to give credit where credit is due: held by the far-seeing Automobile Club of Springfield in the commonwealth of Massachusetts. 'Tis well that the autoists have elected to work openly for the improving of the roads, and equally fit that they have publicly shown willingness to discuss with those entrusted with the building of the roads as to the new needs of highway construction resulting from the coming of the motor-driven vehicle. And the lawmakers were participants in the convention, which thus touched upon the building of roads in such manner as to meet changed conditions and also debated how to use these same highways sanely and with due consideration to one another.

Facts are stubborn things sometimes, and a condition and no theory confronts automobilists as a class. Increased mileage exacted from the roads inevitably wears out the thoroughfares more quickly, and the man who travels a hundred miles in a day, as compared to one who covers only ten miles, cannot object to paying more for the upkeep of the highways. An annual registration fee should attend to this phase of the situation, and such a solution has been accepted in one State, with others likely to follow the same plan. This is where the autoist, for his

greater use of the road, pays more than does the owner of the horse-driven vehicle, which has much the lesser mileage.

But as to whether the automobile wears out the road—except by greater mileage—any faster than does the sharp-shod horse and its narrow-tired wagon, is a subject that can be discussed very forcibly from the standpoint of the automobilist.

Nevertheless, the roads are wearing out faster than ever before because of greater use, and something more enduring is demanded. Therefore, it is up to the roadmakers to meet the emergency and they are not averse to asking the automobilist for aid and suggestions in the premises.

Sane use of the roads, and laws to compel such sane use, has become the task of the automobilist, and daily it is more apparent that the owners of the motor-driven vehicles for their own protection, as well as for the purpose of being good citizens, must assist in the suppression and extinction of these heedless buccaneers of the highways. The antagonism of the public is not discriminating, but it is aroused to a degree that results in annoyance and often persecution of law-abiding autoists, who must in self-defense turn upon the erring ones and bring them to their senses or else to their just deserts. Condoning by silence the criminal driving of the few is no longer possible nor excusable; the guilty must be singled out and the executors of the law assisted in doing their duty. Only in this way will the day of the ineffective and unjust speed-trap be brought to its close.

The present administration of the A. A. A., unless we are much mistaken, may be trusted to continue nationally and through its State associations the work so convincingly begun by the successful initiative of the wideawake Massachusetts club.



Opportunities Offered by the Automobile Industry.

Due to the influence of what most aptly may be termed the “fast” element in the automobile business, a popular misconception that the latter was something which, in the vernacular, offered opportunities galore for “easy money,” became prevalent several years ago. Under this misguided impression, numerous small capitalists plunged their all into the business of “manufacturing” automobiles, which meant buying stock parts of questionable value and assembling them in a manner even less commendable; others have invested their entire available capital in procuring agencies and then sat back to wait for the vast profits that never came; and, more numerous than either of these classes, hundreds of young men have found that work and faithful service are as much requisites of success in the automobile business as in any other line of endeavor.

Of the many who have rushed headlong to this new El Dorado, only to find its promises of untold wealth fade on closer contact, doubtless the ones most sorely deluded have been drawn from that large class that is ever on the *qui vive* to find berths that promise large returns as a reward for little or no effort. Like the opening of a new mining camp, it was inevitable that the overnight growth of such a great industry should have been attended with more or less profligacy, and it is equally true that hundreds of incompetents and ne'er-do-wells profited greatly thereby. Attracted by the thought of being able to do likewise, many have looked upon the automobile industry as an easy path to fortune, only to find to their sorrow that the reality did not correspond with their dreams. The frequency with which queries regarding the advisability of entering the automobile business come to light, many of them appearing in these columns from time to time, makes the occasion opportune to comment upon it, and the statement of a practical man taken from a contemporary and reproduced elsewhere in this issue furnishes an adequate answer as well as one that carries considerable weight. While it was inevitable that such conditions would obtain in the early days of the industry, it was likewise equally certain that their duration would not be a matter of great length, and it is fortunate for all concerned that the end is in sight.

“GOOD ROADS AND THE SANE USE OF THEM”

THE good roads and legislative convention of the Automobile Club of Springfield, Mass., held September 24-25, marks an epoch in the advance of automobilism, and the promoters of this get-together gathering deserve unstinted commendation. That one club should have had the foresight to show the way the national organization of automobilists is honor indeed, and tracing back the growth of the idea one finds that H. E. Marsh was the original suggester, and a trio—consisting of Dr. V. J. Irwin, president; S. L. Haynes, ex-president, and Dr. W. R. Weiser—lost no time in moving a hearty second. Then the work began, and culminated in a well-attended session and a bumper banquet.

These are the A. A. A. clubs which sent delegates: Automobile Club of America, New Jersey Automobile and Motor Club, Automobile Club of Buffalo, Bay State Automobile Association, Massachusetts Automobile Club, Rhode Island Automobile Club, Long Island Automobile Club; Automobile Club of Pittsburg, Automobile Club of Germantown, and Wilkesbarre Automobile Club, all of Pennsylvania; Worcester, Brockton, Pittsfield, Wachusett and Malden, all from Massachusetts; Hartford, Bridgeport and New Britain, of Connecticut; New York, Albany, Rochester, Adirondack and Richmond County, from New York State.

President William H. Hotchkiss, First Vice-President Lewis R. Speare, Secretary F. H. Elliott, R. P. Hooper, chairman of the Good Roads Board, and A. G. Batchelder were the national representatives of the A. A. A.

Highway Commissioners McDonald of Connecticut, McClintock of Massachusetts, Edwards of Rhode Island, Sargeant of Maine and Deputy Beman of Pennsylvania supplied the good roads artillery, and Dr. A. S. Cushman, assistant director of public roads, Department of Agriculture, was another speaker listened to with intense interest, for he spoke in a governmental tone. Then there was Congressman Gillett, State Senator Hayes, Editors Langtry and Howard of Springfield dailies, a goodly amount of legal talent and an overflowing room of listeners. All around, it was a mixture of road builders, road users and law expositors. Of course, good couldn't fail to result, and the inevitable outcome was the decision that the A. A. A. must hold a much more extensive event of the same character some time next summer.

Herewith are extracts worthy of repetition in printed form:

W. L. Dickinson, ex-treasurer of the American Roadmakers: "This is the first meeting of the kind that has ever been held in the United States. Autoists have not concentrated their actions toward good roads in the past, and I am proud that the Automobile Club of Springfield is a pioneer in this work, and I hope that the good example it has set will be followed by all of the automobile clubs in the United States."

Dr. A. S. Cushman, assistant director of Public Roads, Department of Agriculture: "The modern road problem has two important aspects: First, the public road is a feeder of our civilization. We take pride in our crops and products, but it is the public roads that must connect them with their market. It is a strange paradox of American progress that we have developed wonderful harvesting machinery and at the same time overlooked the construction of those roads over which the harvested grain must be carted."

William E. McClintock, Chairman Massachusetts State Highway Commission: "The first talk that I ever gave on the good roads question was before an old bicycle club in 1893. The State made its first appropriation for improved roads in 1894, and since then to date has appropriated a total of \$6,500,000. Modern use of roads has brought about changes that tax the skill of roadbuilders."

James H. McDonald, Connecticut State Highway Commissioner: "This is the starting point that means a new era in road building, and the more of these meetings that are held the better for this country. In the last twelve years Connecticut has given \$3,000,000, and has now appropriated \$4,500,000 to make good roads. The speaker has seen the havoc wrought on highways by automobiles, but there was no dissenting voice to the passage of Connecticut's liberal law, so automobilists are free to use any road in the State.

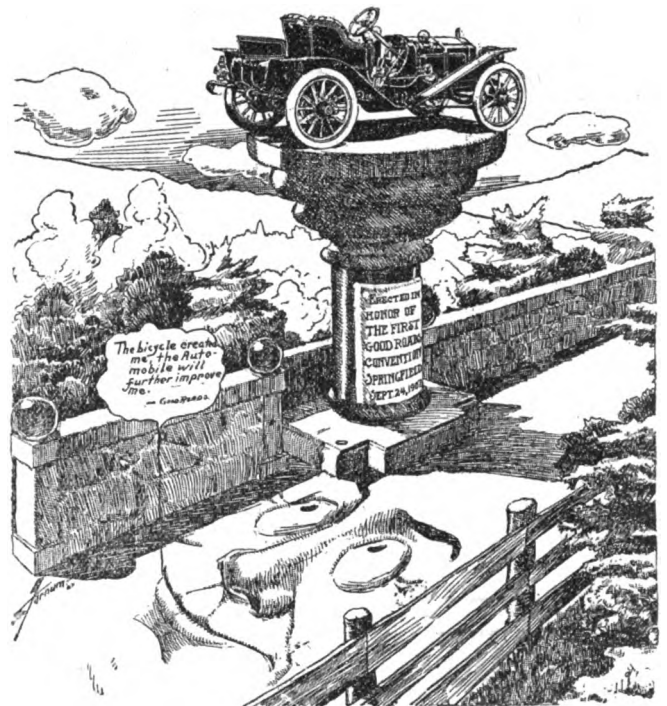
The object of the law was to fix the fool and the hog and do away with the grafter."

J. H. Edwards, Chairman Rhode Island State Board of Public Roads: "A good road may not always be an ideal one in every respect, but it must meet the requirements of all normal uses. Automobiles are subjecting roads to an abnormal strain and wear not contemplated by builders. They are to become a permanent factor in our traffic, and the road builders must solve the problem which they present."

William H. Hotchkiss, President, American Automobile Association: "No club in this country out of over 150 and more has had the courage to hold such a convention, and the national association must see to it that such conventions be held every year."

Robert P. Hooper, Chairman, A. A. A. Good Roads Board: "I think it is time that some one told of what the autoists have done. The movement for good roads was begun by the bicyclists, and

GOOD ROADS REGARDS APPROVINGLY THE MOVEMENT FOR HIS IMPROVEMENT



THIS CARTOON APPEARED IN THE SPRINGFIELD "UNION."

has been taken up and advanced by the autoists. Our damage to the roads has been more than offset by the good work we have done in their behalf. I say that it is proper for the autoists to be compelled to obey the law, but we do object to the existing laws. We think that the money paid in fines ought to go to the State highway commissions. Why should the automobilists pay a tax, when any wagon can draw any load over the same roads? I see no reason why the wagon drivers should not help to support these roads. The time has passed when the farmers can think we are of no use and are criminals."

Congressman F. H. Gillett of Massachusetts: "I like your motto, 'Good roads and the sane use of them.' I am glad that it is the spirit of this convention. The last half of it particularly all automobilists should emphasize and live up to, for unless we do use the roads sanely, reasonably, and moderately, we are likely not to get the good roads at all."

What an A. C. A. Delegate Thought of the Convention.

J. F. Plummer, Jr., a member of the A. C. A. Good Roads Committee, who, with W. W. Niles, chairman of the A. C. A. Law and Ordinance Committee, attended the Springfield convention, expressed himself in this manner as to the gathering:

"I was very favorably impressed with the whole idea of the meeting. It was really the first time that the two interests have gotten together in an amicable way. I mean by that the users and the builders of good roads; and the legislators also figured in the proceedings. I think the friendly feeling shown on both sides, particularly by the Highway Commissioners, indicates excellent results for the future. To use an old expression, it is possibly the beginning of the dawn of a new era. The annual national convention, which will grow out of this first affair, ought to prove a great benefit to automobiling in general. The club deserves a great deal of credit. Personally, I believe the A. C. A. should support a movement of this character, and I am confident that its influence will be unhesitatingly given to such commendable work."

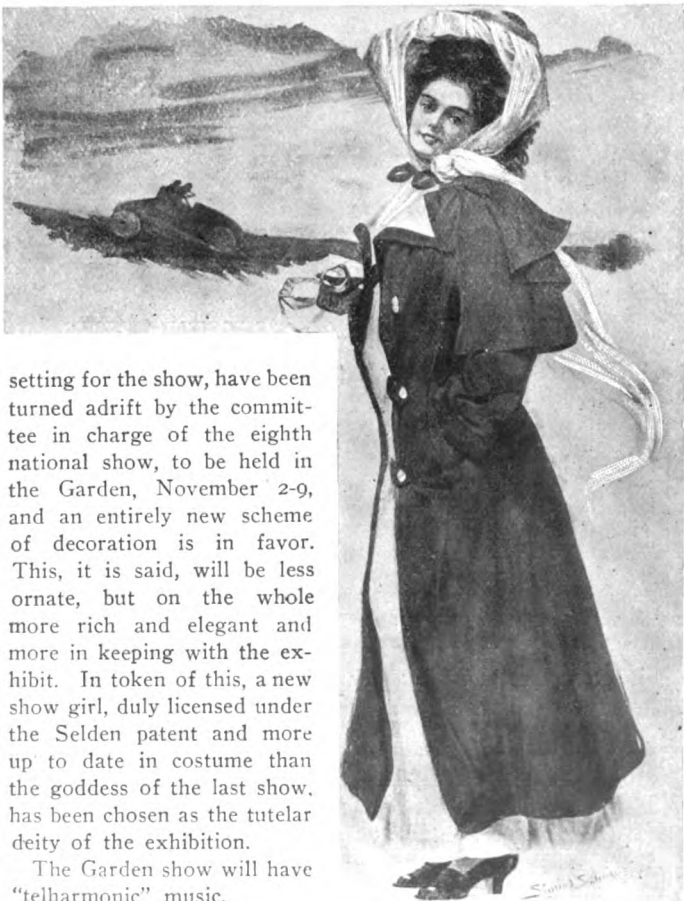
WHY "RAINIER" CANNOT BE TRADEMARKED.

WASHINGTON, D. C., Sept. 30.—A decision has been rendered by the Commissioner of Patents wherein registration of the word "Rainier" as a trademark for automobiles is refused the Rainier Co. Registration was refused on the ground that the word "Rainier" is geographical and on the further ground that it is the mere name of an individual not written in a particular or distinctive manner. That the word "Rainier" is the name of an individual was not controverted by the applicant, but it was contended, first, that it is not merely the name of an individual, and, second, that if it is merely the name of an individual it is written, printed, or impressed in a peculiar and distinctive manner and therefore registrable.

THE GARDEN GODDESS LOSES HER JOB.

From A. L. A. M. Show Publicity Department.

"The chaste plaster goddess who presided over the last automobile show in Madison Square Garden has lost her job. She and her attendant nymphs, who peered impertinently at show patrons from the many pillars of the Swiss garden scene, which was the



setting for the show, have been turned adrift by the committee in charge of the eighth national show, to be held in the Garden, November 2-9, and an entirely new scheme of decoration is in favor. This, it is said, will be less ornate, but on the whole more rich and elegant and more in keeping with the exhibit. In token of this, a new show girl, duly licensed under the Selden patent and more up to date in costume than the goddess of the last show, has been chosen as the tutelary deity of the exhibition.

The Garden show will have "telharmonic" music.

CHAIRMAN THOMPSON ON EUROPEAN EVENTS.

Although but a few hours disembarked from the White Star liner *Baltic*, in from Liverpool, buried under a shoal of correspondence and inundated with telephone calls, Chairman Jefferson DeMont Thompson readily pushed back his chair when a request was made for a chat on automobile events in Europe.

Being one of the leading spirits in the Long Island Parkway, Mr. Thompson was particularly interested in the autodrome constructed by a syndicate of British sportsmen at Brooklands, near London. As a special racing and testing ground for automobiles, Mr. Thompson declares the track to be the most wonderful thing of its kind ever seen. Although there has been one fatal accident, of which he was a witness, the track is as safe as human ingenuity can make it, the appointments are excellent, and the management absolutely clean and sportsmanlike. A large number of influential sportsmen with no trade interests were enthusiastic over the course and would certainly make it successful.

The venture has not been a financial success, though this did not surprise the promoters, who declared before the course was opened that they did not expect it to be a money-making affair. The only drawback to the Brooklands track was the difficulty in reaching it by automobile, for although only thirty miles from London, roads are so narrow and winding and so carefully watched by the police that the journey cannot be accomplished in less than two hours.

Mr. Thompson was much interested in the challenge of S. F. Edge to race a team of six Napier cars against a team of six from any other factory. Mr. Edge gave an assurance that he would take part with a six-cylinder Napier in the next race for the Vanderbilt Cup.

Considerable attention is being paid by Britishers to the tarring of highways, there being hardly a town or village in the popular touring districts which has not been treated in this way. A wonderful example of the value of tarring was shown in the Avenue du Bois de Boulogne, at Paris, which, before being treated was constantly in bad condition as the result of heavy automobile traffic. Treated in a scientific manner with tar, its surface does not disintegrate and it is always free from dust. Mr. Thompson stated that he had obtained particulars of this system and would strongly recommend its use on the Long Island Parkway.

All European constructors were closely interested in the Vanderbilt race and regretted that it had been impossible to hold that event this year. In France, Darracq, Panhard, Dietrich, Hotchkiss and Bayard-Clement all offered one or more cars for next year's race, and a full Italian team was assured by Fiat, Itala and Bianchi. Germany would send a couple of Mercedes and possibly one Zust. The Minerva firm, of Belgium, also showed some interest in the event.

What particularly struck Mr. Thompson was the number of American cars touring in France. At the Bousquet garage in Paris he saw twenty-five or thirty of the best-known makes, and a large number at Fournier's garage. Three years ago an American touring in an American machine was a rarity. There appeared to be no opening for the sale of American cars in France, but in England conditions were different. The prejudice which once existed against American-made automobiles had almost entirely disappeared and prospects of an increased trade seemed bright. American lamps were a conspicuous feature on automobiles throughout Europe.

Germany this year is rather in disfavor among automobile tourists owing to the clumsy and ill-advised tax according to length of stay. Trouble generally befalls tourists through ignorance of the laws. When these are carefully observed foreigners may always rely on courteous treatment. Much is being done by the personal influence of Emperor William to popularize automobiling. At Homburg Mr. Thompson had an opportunity of inspecting the Imperial garage under the charge of Werner, for many years chauffeur and race driver of the late Clarence Gray Dinsmore.



AUTO FUNERAL OF ROY REHMS, CONDUCTED BY THE CALIFORNIA CHAUFFEURS' ASSOCIATION—THE SECOND CAR IS THE HEARSE.

ANOTHER FATALITY CONCLUDES CALIFORNIA TRACK RACING

By R. R. L'HOMMEDIEU.

SAN FRANCISCO, Sept. 25.—The track racing game in California has undoubtedly been brought to an abrupt ending by the sad accident last Saturday on the Del Monte track, when Roy Rehms was killed. This unfortunate occurrence, coming close on the heels of the taking away of Ernest Kelly the previous Saturday, has caused the dealer, owner, and public to demand that the game be stopped. Rehms, at the time of the accident, was driving a beautiful race, had taken the Matheson car over twenty-four miles of the fifty-mile contest in grand style, and was just making the first turn on the twenty-fifth mile when the inner tube in the rear inside wheel blew out, which caused the car to swerve inwards, and Rehms, evidently cranking his car too sharply to avoid the fence, undoubtedly brought the full weight of the car and momentum broadside on the forward wheels, dishing the inside one. The car turned over once and a half times before it stopped. Those who saw the accident say that Rehms was thrown clear of the car and was on his hands and knees when the car rolled over the last time. When found, the hub of the rear wheel was pinning his head to the ground, having crushed the base of the skull, the jaw bone and the bones of the neck, producing instant death.

Herbert Martin, who in the Fourth of July races on the same track drove the big six-cylinder Stevens-Duryea to victory, was acting as machinist at the time. Luckily he was thrown clear of the car and only sustained a broken collar bone and shoulder blade, with some internal injuries near the base of the spine. The latter, however, are not serious, and at the present writing he is supposed to be well out of danger and on the road to recovery. The fifty-mile race for touring cars of 25 horsepower and over, in which the accident happened, was the last event of the day. Up to that time all the contests had been run off smoothly without the slightest apprehension of what was to follow. The track was in fine condition, there being no dust at all, and the killing of Rehms fell like a bombshell.

From an investigation made yesterday of the tires, it looks as if the direct cause of the disaster was the use of a four and a half inch lug in a five inch tire. There are signs on the inner tube of pinching where it rested on this lug, and continuing on a line with this pinching is a small blow-out. The Diamond casings are perfect, and good for many miles more. Another bad feature brought out in the investigation was that on this heavy car only five lugs were used, two of them being four and a half inch. The club which gave the races is one of the wealthiest organizations in this State, and of late has taken a very active part in the advancement of automobilism. Several other events were planned before the rainy season sets in, but it now appears as though the season closed with last Saturday's tragedy.

The California Chauffeurs' Association, of which the dead driver was a member, took charge of the obsequies. There were about fifty automobiles that attended the funeral and went to the grave. The body was carried from the undertaking parlors to its last resting place on a chassis.

Clean Scores of the Endurance Run.

The races were preceded by an endurance run from San Francisco to the noted seaside resort. Sixteen cars started, of which four touched the several checking stations on the second, making actual perfect scores. These were J. S. Conwell's Tourist, L. E. Washburn's Tourist, A. Piepenberg's White steamer, and J. J. Boree's White steamer. The others who made perfect scores coming within the six-minute limit at San Jose, Gilroy and Del Monte were President R. P. Schwerin, in his Winton; Tony Nichols, in a Franklin; Homer Boushey, in a Pope-Hartford; William James, in an Oldsmobile; C. A. Hawkins, in a White steamer; and J. H. Eagle, in a Studebaker.

Several of these drivers undoubtedly would have been among the four winners had it not been for the fact that the watch of the official timekeeper at Gilroy was an erratic instrument. The officials thereupon decided, under these circumstances, that the records at Gilroy should be expunred. They failed, however, to make allowance for the starting time of the cars from Gilroy to Del Monte, which brought in several of the owners a few seconds late. Those who failed to make perfect scores were S. H. Page, in a Packard; Freemont Older, in a White steamer; B. D. Merchant, in an eight-cylinder Hewitt; A. E. Noreen, in an Elmore; William Wagner, in a White steamer runabout; and Sol J. Levy, in a Matheson.

CHRISTIE'S RACING DAYS ARE NOT OVER.

Walter Christie says he is not through with automobile racing, even on circular tracks. He anticipates driving again at Pittsburg, October 5, on the same track on Brunot's Island, where he met with his recent mishap. Christie desires to have it known that the promoters of that meet paid him his prize money, and the next meet is under the same management.

W. Gould Brokaw is now the owner of the famous Christie racing car, but its builder is to have the use of it for competition and record attempts.

Christie now holds the world's one-mile circular track record of 52 seconds, made at Minneapolis, September 7, and this mark is not to be confused with Morris Park performances, which are placed in a separate class, owing to the fact that the track is 1.39 miles in circumference.

GATEWAYS OF THE METROPOLIS.

Automobilists generally, whether dwellers of New York City or only occasional visitors, have usually found it difficult and always confusing to make their way in and out of the city by either the most direct or pleasantest route, and there has been a widespread demand for information of this kind in a concise and convenient form that has only been met by the appearance of the "Metropolitan Automobile Guide." This is a handy book of 382 pages, which in a way may be said to form a sort of key to the "Official Automobile Blue Book," as it gives all the gateways to the metropolis, beside showing their interconnection with the extended routes given in the Blue Book. But it is vastly more than a mere guide for entering the city, as it covers the territory round about New York for a radius of 75 to 100 miles in a manner never before undertaken. There are no less than 74 complete routes given, each one of them outlining a one or two-day round trip and covering in all some 6,737 miles of roads. The routes are illustrated by maps and city diagrams, which are in turn copiously supplemented by much needful information concerning hotel accommodations, garages, repair and supply stations, and the like. Exact mileages are given for every town, together with every turn and landmark of importance along the routes which were all traveled and carefully noted in the course of compiling the volume. The territory covered, in brief, is New York City and its immediate environs, with routes extending to Newburgh, Poughkeepsie and Pawling, on the north; Danbury, Waterbury and Bridgeport, Conn., on the east, including all Long Island routes, as well as to Greenwood Lake, N. Y., the Ramapo Valley, N. J., Morris-town and Bernardsville on the west, and with extensions to Princeton, Lakewood and the North Jersey Coast to the south and west. The routes are uniformly laid out in pairs, and any of them may be taken in either direction. Each trip is planned so carefully and concisely that one can easily travel every one of them without stopping to ask questions and by merely setting his odometer to correspond it is possible to pick up the route at any intermediate point.

DETROIT TO HAVE TWO AUTO SHOWS.

DETROIT, Sept. 30.—As the result of the dissatisfaction arising on the part of the dealers over the plan put in force two years ago to make the agent assume the entire burden of local exhibitions, Detroit is to have two shows this winter. The dealers have considered it only just that the maker should bear some part of the expense, and this fact, coupled with the early date of the Chicago show this year, is responsible for the announcement that the Detroit Automobile Dealers' Association will hold a show of its own at Riverview Park Auditorium in December, shortly after the close of the Chicago event, from which many of the exhibits will be transferred. The second show will be held by the Tri-State Auto and Sportsmen's Association in the Light Guard Armory in February, 1908.

PALACE EXHIBITORS TO GIVE DEMONSTRATIONS.

Even if the exhibitors at the coming Palace show had agreed among themselves not to give demonstrations during the course of the show, it is probable that circumstances would have proved too strong for them. This because of the fact that the show is to be held in an ideal month for driving and prospective purchasers will, in numerous cases, want to be shown the superiority of the six-cylinder car, of which no less than fifteen different distinctive models, representing as many makers, will be staged. Both the makers and the average autoist are agreed that cars as a rule have reached a point where the demonstration is entirely superfluous, but while admitting the lack of need for a try-out to be convinced, the public still asks for demonstrations, and doubtless will do so to a much greater extent this year, as the conditions will be more favorable.

AKRON AMERICA'S TIRE-MAKING CENTER.

AKRON, O., Sept. 30.—With the passing of 1907, Akron's claim to be the "City of Tires" will be so strongly established that it cannot be longer disputed. Due almost entirely to the great expansion of the rubber industry here, the city's population has been considerably increased in that time, and the influx of rubber workers bids fair to be maintained, as it is learned from interviews with officers of the various companies whose plants are located here that there is scarcely a tire factory in Akron that is not completing, building or planning enlargements.

By the end of the year, the B. F. Goodrich Company will have added 300 to 400 men to its force. One additional five-story building, now in course of erection to increase its facilities, will house 300 new operatives alone. The company advertises for tire makers constantly, but the supply never seems sufficient.

The Diamond Rubber Company expects to complete a substantial addition to its plant by December 1, meaning an increase of 150 men by that time, the addition to the working force totaling 2,300 men by the end of the year. Consequently, for the present twelvemonth, this company will add no less than 400 men.

The Goodyear Tire & Rubber Company expects to add 150 men to its forces by the end of the year, while the Firestone Tire & Rubber Company will also increase its already large payroll. Though this company only completed an addition to its plant but a short time ago, another and much larger increase in its facilities is already being planned. Another large company which is not ready to announce its plans definitely expects to add a tire department as a new feature, and will employ 100 men. Still another is doubling its capacity and will have 350 men at work when additions are completed.

In announcing its plans for 1908, the Diamond Rubber Company has made it known that it will market a greater variety of types and styles of tires than ever before. In addition to the regulation clincher and quick-detachable clincher in round, flat, non-skid and Bailey treads, Diamond tires will be made in the several types of tread for Fisk rims, and there will also be a Diamond mechanical or Dunlop type in a limited number of sizes. The clincher type will be made in all the American and foreign sizes, that is, both inches and millimeters. The Diamond guarantee for 1908 will cover all of the established makes of quick-detachable rims, which is a departure from the rule adhered to during the present year.

THE AMERICAN MICHELIN PLANT.

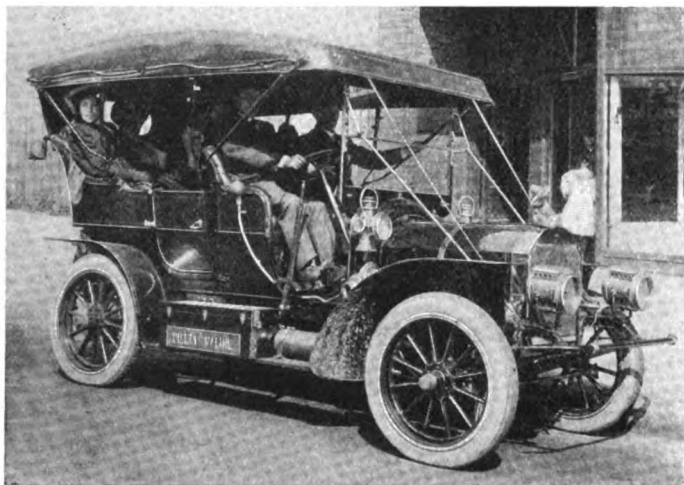
A few months after the announcement that Michelin, the great French tire manufacturer, would produce in the United States, a statement is issued that the firm's American factory is completed and that output will appear almost immediately. During the visit of M. Edouard Michelin, president of the European companies, to this country, a short time ago, purchase was made of the plant, machinery and building of the International A. & V. Tire Company, at Milltown, N. J., and a company incorporated with a capital stock of \$3,000,000. It was decided to use the existing buildings for store houses and offices only, eight new buildings being erected on the plans of the Turin factory in Italy, built in 1906.

Although the contractors only broke ground on June 3, seven of the buildings are completed and stocked with special machinery sent from Europe. A new 2,440 horsepower plant, operating two one-thousand kilowatt turbines, made by Westinghouse, have been installed, and auxiliary power is obtained from a 700 horsepower engine. The products of the American plant will be identical with those of Clermont-Ferrand, France; Turin, Italy; and London, England. Michelin tires will be made in American sizes, quick detachables and clinchers will be produced, and the Michelin dismountable rim, together with the anti-skid used in the great racing events of Europe, will be manufactured in the New Jersey factory. It is intended to establish branches in all the large cities of America, where complete stocks will be carried.

A LEISURELY AND INTERESTING JAUNT.

With the double purpose of giving the 1908 Pierce-Racine car a thorough testing out, such as not even its native Wisconsin hills could afford, and to collect data for the Chicago Automobile Club, showing not alone the feasibility but the practicability of the average autoist making the same trip with his family and unaided, Sales Manager S. E. Wherritt, accompanied by a party of four and a driver, left Chicago, and two weeks later turned up in New York. The route lay via South Bend, Ind., Toledo, Cleveland, Buffalo and Albany to New York City, and no attempts whatever were made at speed or any other kind of records, the party coming along leisurely, as would the average autoist when on tour. The data compiled includes the gasoline and oil consumption of the engine, distances, roads, hotel accommodations and the like, and was also intended to include the time and nature of the different repairs made, but, according to Mr. Wherritt, who visited the offices of THE AUTOMOBILE while in New York, the trip had been a close approach to the millennium of touring, roads and weather excepted, of course.

"We have never had to stop five minutes for repairs since leaving Chicago, and, as for tires, we didn't even bring a spare one with us. You would hardly believe it possible,



SALES MANAGER WHERRITT AT WHEEL OF PIERCE-RACINE.

but we haven't pumped our tires since starting on the trip, so that blowouts and punctures alike have been unknown. And that's a pretty good record with six people in the car," said Mr. Wherritt, speaking enthusiastically of his successful trip and the excellent performance of the car's Goodyear tires. "There is absolutely no reason why any man with a good car can't take his family and do the same thing," he continued. "There was only one time on the whole trip when we were in danger, and that was at a bad grade crossing on a curve in Ohio. The train could not be seen until one was almost on the track. The return will be via Philadelphia, Atlantic City, Baltimore, Washington, Pittsburg, Columbus and Indianapolis, and in the same leisurely manner.

AEROCAR COMPANY'S PLANT BID IN.

DETROIT, Sept. 30.—Sold under the hammer to satisfy the claims of creditors, the Aerocar Company's plant brought a trifle more than 50 per cent. of its appraised valuation, which was admittedly about one-half the actual investment. The property, equipment, unfinished cars, patents and all outstanding accounts went for \$96,500, to a local real estate firm. Although the identity of the party or parties back of the deal was carefully concealed, it is understood that A. Y. Malcomson secured the plant. As head of the defunct concern he was heavily involved, and it is said he bid the plant in to protect himself.



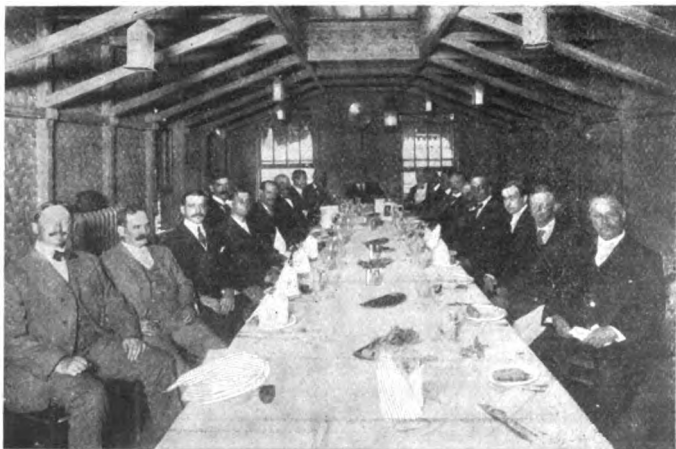
OUR STRENUOUS CHIEF EXECUTIVE IN THE WHITE.

PRESIDENT ROOSEVELT AGAIN TRIES THE AUTO.

As a fitting wind-up to their season of strenuous service at the summer capital, the government's White steamers ended their work at Oyster Bay by conveying the President and his family from Sagamore Hill to the railroad station, quite in contrast to the use of horse equipages in former years. The departure of the chief executive from Oyster Bay is a momentous event in the annals of the town, and the entire population turns out en masse to bid its most distinguished inhabitant a fitting farewell. The president has come to regard the automobile so favorably as the result of the two White steamers which have been an important adjunct to the summer colony, and which have been under his constant observation, that he departed from previous precedent in utilizing them, even going so far as to express his delight with the satisfactory service that the cars had rendered.

PRELIMINARY TO THE GARDEN SHOW.

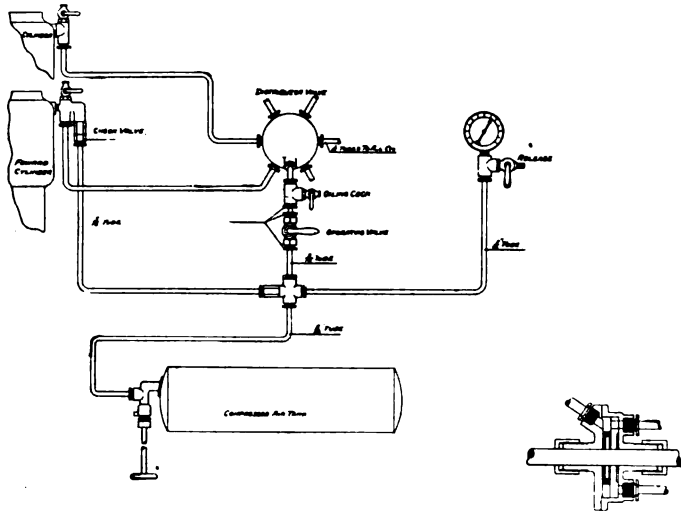
As a kind of opener, or rather an appetizer, the show committee of the Association of Licensed Automobile Manufacturers entertained the Madison Square Garden staff at a banquet at Mouquin's on Sixth avenue last week. Colonel George Pope, chairman of the committee, presided. The speakers included Secretary James Young, of the Madison Square Garden Company; Marcus I. Brock, of the show committee; M. L. Downs, its secretary; T. J. Reynolds, superintendent of the Garden; Antoni Pellegrini, head of the ticket-selling forces; Enos Joseph, in charge of the gatemen; C. N. Schroeder, business manager; M. J. Pike, receiving superintendent; James S. Stewart, electrician; Warner K. Paxon, chief engineer; H. T. Clinton, Arthur N. Jervis and Henry Caldwell, of the A. L. A. M. publicity bureau. Others present were Charles Spect, W. J. Brennan, T. W. Fenn, Fred. Fralick, Thomas Jones, John A. Smith and E. J. Hazard.



MADISON SQUARE GARDEN'S STAFF AS A. L. A. M. GUESTS

THE WINTON SELF-STARTING DEVICE.

Complying with the demand for a self-starting device on the modern car, the Winton company has made a compressed air equipment for this purpose a feature of the new Winton "Six-Teen-Six," the apparatus being the result of close study devoted to the problem for some time past. The first cylinder of the six is relied upon to supply the motive power, and only a part of its compression is necessary to maintain the apparatus. This is piped through a check valve to a storage tank located between the driving shaft and the left frame rail under the rear seat. The check valve on the cylinder is spring-controlled and the spring has sufficient pressure to withstand the compression of the fresh charge,



DETAILS OF THE NEW WINTON SELF-STARTING DEVICE.

so that only the spent gases are utilized. To start the motor the valve on the dash, as indicated in the accompanying sketch, is opened. This permits the pressure to flow from the tank to the distributor valve, which is driven by the camshaft and timed so that the entire pressure of the tank is led to the cylinder that is about to fire, each cylinder except No. 1, being equipped with a check valve, to which is attached the usual compression cock. The pressure entering the cylinder that is about to explode forces its piston downward and the charge is fired, compelling the motor to take up its cycle. Should the first cylinder not accomplish this, however, the pressure is then automatically shunted into the cylinder that is next to fire in the regular order and forces its piston past the firing point, having previously compressed whatever charge remained in it by the revolution of the crankshaft and drawn a fresh charge into the third cylinder to fire. The motor will continue to turn over under the pressure of the storage tank automatically distributed through the moving valve, just as if it were operating under its own power. As the capacity of the tank is calculated with a generous factor of safety the motor will turn over for a number of revolutions and cannot fail to start, if in good order. The other components of the system are the pressure gauge, mounted on the dash, to which is attached a release cock; a cock for oiling the distributor valve, the latter being shown in section, in the small sketch at the bottom of the drawing, and the cylinder connections with their check valves. Five-sixteenths inch tubing is employed on the supply side of the apparatus with 1-4 inch tubing from the distributor valve connections.

AMERICAN ALL CHROME NICKEL STEEL CAR.

With a view to bringing the selling price of a car designed along the best approved lines and embodying the best of materials, down to a fair level, J. M. Ellsworth, 518-520 West Twenty-second street, New York City, has installed a special plant at this address and will exhibit his first cars at the Grand Central Palace show this month. A larger plant is to be established outside of New York City for the manufacture of cars, while the New York shop will be devoted to the production of replacement parts in alloy steels—a special service of great value to makers, garagemen and owners, which has been developed by Mr. Ellsworth's chief engineer, Thomas J. Fay.

It is claimed by Mr. Fay that parts can be produced in chrome nickel steel at about the same cost as for carbon steel under suitable conditions, and he has under him a skilled staff of machinists who have been trained to this work. Owners of foreign cars can thus have parts of the same materials replaced in a fraction of the time, as well as with a saving in expense.

ANNOUNCEMENT FROM THE HOL-TAN COMPANY.

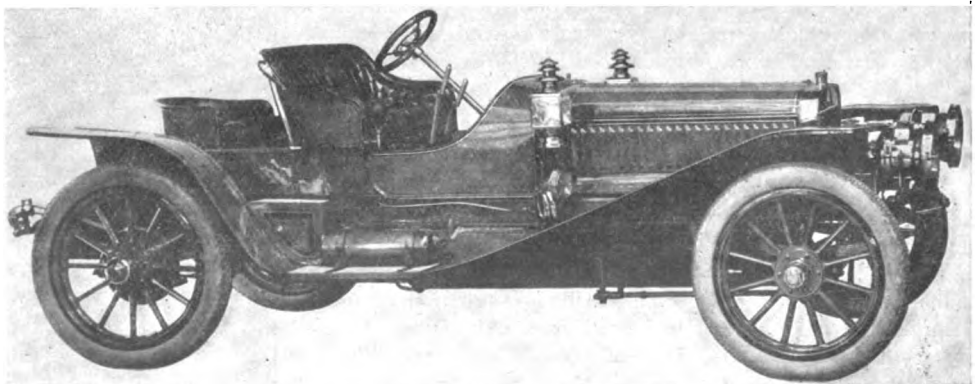
It is definitely known that the Hol-Tan Company, of New York City, will shortly make an important announcement in reference to its future program. While this concern has handled the Fiat car in this country, it is understood that it will have extensive territory in the East for a well-known American make of car. Naturally President C. H. Tangeman and Vice-president Harry Fosdick were much elated at the Fiat victory in the 24-hour Morris Park race, but it is known that for some time they have had plans which embrace the handling of a high-priced American car, even though responsible for the success of the Fiat.

ADAMS GARAGE AT ROCHESTER BURNED.

ROCHESTER, Sept. 30.—While William Adams was preparing to take a car out to run to Brockport, where his brother was stranded, the wiring became short-circuited in some manner and set fire to it. The building, situated at 485 Lake avenue, was completely destroyed, together with adjoining property and five cars. In attempting to run the blazing car out of the garage it stuck in the doorway and young Adams was severely burned. Frank Adams, the proprietor of the garage, recently installed \$2,000 worth of machinery, so that this loss will reach \$4,000.

NEW WINTON SIX-TEEN-SIX ROADSTER.

It was a foregone conclusion that the builders of the Winton, while announcing their intention of adhering strictly to one type of car for the season of 1908, would bring out a runabout body on the same chassis, and some idea of the result of their efforts in this direction may be obtained from the accompanying illustration of the new car. Except for the body, this newcomer is an exact duplicate of the Winton six-cylinder chassis.



LATEST ADDITION TO THE RANKS OF THE HIGH POWERED, SIX-CYLINDER ROADSTERS.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANEA

Many guesses have been hazarded as to the signification of the odd title of the latest Winton, the Six-Teen-Six. Its aptness is to be found in the fact that it is the sixteenth Winton model and has six cylinders.

Heald Machine Company, Worcester, Mass., makers of the Heald ring and cylinder grinders, have just completed two large additions to their plant, 150x90 and 30x45, giving the concern 28,000 square feet floor space.

James M. Sholl, recently appointed receiver for the St. Louis Motor Car Company, Peoria, Ill., has been elected trustee in bankruptcy of the concern and will manage its affairs until finally wound up.

Having tested out the Truffault-Hartford suspension to their entire satisfaction, the Nordyke & Marmon Company, Indianapolis, Ind., have decided to equip their entire output of Marmon cars with these shock-absorbers during 1908.

All rights and patents covering the Rutenber carbureter have recently been acquired by the Western Motor Works, Logansport, Ind. The latter concern is well known as the manufacturer of the Rutenber motors, and will now make the carbureter of the same name as well.

Upon the return of R. E. Olds, president of the Reo Motor Car Company, Lansing, Mich., from abroad, the directors voted every employee in the plant a bonus of 5 per cent. on his annual salary in recognition of faithful service. The gratuity affected 900 people.

The Standard Roller Bearing Company, Philadelphia, Pa., has just increased its capital from \$3,500,000 to \$5,000,000, and large additions are now being made to the plant and equipment for the purpose of enlarging the company's department for the manufacture of roller bearings.

A meeting of the creditors of the defunct Deere-Clark Motor Car Company, of East Moline, Ill., has been called for October 5, and will be held in Rock Island, Ill., at the office of the referee in bankruptcy, Adair Pleasants. The liabilities are \$100,000, and the nominal assets \$125,000.

Due to the recent sale of his personal holdings in the Angier Automobile Supply Company, the Motor Mart, 222 Eliot street, Boston, Mass., by Mr. Angier, the impression has gone abroad that the Angier Company, 735 Boylston street, Boston, and its branch at 9-11 Dorrance street, Providence, R. I., had sold out. Except for certain contract relations still extant, there is no connection between the two companies.

Since the establishment of the American Michelin Company's factory at Milltown, N. J., many visitors have been desirous of going through it, but the same rigid policy which has been adhered to abroad has been adopted here. When on tour the Queen of Italy visited one of the Michelin factories, but neither her rank nor a special telegram to Eduard Michelin at Clermont-Ferrand sufficed to disturb the precedent.

The Warner Instrument Company, Beloit, Wis., has just closed a contract with the Electric and Ordinance Accessories Company, Ltd., Birmingham, England,

one of the largest English companies making electrical instruments of precision, to manufacture the Warner Autometer on a royalty basis. This concern is controlled by Vickers Sons & Maxim, and is said to have the finest equipment of automatic machinery in Great Britain. It was about to undertake the manufacture of a centrifugal type of instrument, but abandoned it in favor of the magnetic principle of the Warner, and will popularize the latter on the other side.

Through the efforts of the Premier Motor Manufacturing Company and the Gibson Automobile Company, the children of the Indianapolis orphan asylums were treated to their annual automobile outing last week. There were twenty-one Premier cars in line, including some loaned for the occasion by private owners, and they accommodated seventy-six of the youngsters, many of whom were then given their first view of Indianapolis outside the asylum walls. The procession started west on Washington street, continuing out the beautiful Capitol avenue boulevard, and across to Riverside Park, where the children were given an opportunity to enjoy themselves. Some of the children would have put A. A. tourists to shame for real dust on the completion of their enjoyable trip.

NEW AGENCIES ESTABLISHED.

The Automobile Sales Corporation of New York, 1661 Broadway, has just taken the distributing agency for the Panhard oils, Comstock shock absorber and the Webster gasoline gauge.

The Puritan acetylene gas tanks, made by the Old Colony Light Company, Boston, Mass., will be represented hereafter in New York State, New Jersey and Connecticut by the Pierson Motor Supply Company, of New York and Brooklyn.

Smith Brothers, Los Angeles, Cal., have been appointed agents for the Rainier cars for the Southern California territory, the contract having recently been closed by General Western Sales Manager Ezra E. Kirk, while in Los Angeles on a trip through the coast territory.

The H. H. Franklin Company, Syracuse, N. Y., now has five branch houses, three of which—Boston, Chicago and New York—have been opened during the past year. The New York branch, at Broadway and Seventy-third street, is in charge of Winfield S. Jewell, assisted by C. E. Apgar as salesman. A separate building has been leased at 211 West Eighty-seventh street and a complete repair shop installed.

The Warner Instrument Company, Beloit, Wis., has found it necessary to open independent branch offices in Michigan and Ohio in order to properly handle its autometer business in those States. O. C. Foster, who formerly covered this territory, has been assigned to Ohio, with headquarters at Cleveland, while George G. Weidner, one of the western representatives, will cover Michigan, his headquarters remaining at the old stand at 260 Jefferson avenue, Detroit.

R. M. Owen & Company have just completed negotiations for the handling of the Reo and Premier lines in Chicago, formerly taken care of by a branch house, with the Walden W. Shaw Com-

pany. The latter concern now has in process of erection a large modern building at the corner of Twenty-second street and Michigan avenue, and in addition to the Reo and Premier lines will still continue as western distributors of the Berliet. Mr. Herz, who has been identified with the Electric Vehicle Company for several years past, has become connected with the new Chicago agency.

The Oto Sales Company, manufacturers' agents, 2923 Olive street, St. Louis, has been formed by T. K. Shannon, formerly of the Behen-Faught Company, of that city, and Charles E. Halliwell, formerly St. Louis representative of the Warner autometer. Mr. Shannon is president and general manager and Mr. Halliwell is vice-president and secretary. The new company expects to conduct a manufacturers' agency of the first class, carrying no two lines that will conflict with each other, and will protect the firms with whom it does business in every way possible against losses.

PERSONAL TRADE MENTION.

Charles G. McCutcheon has just been elected vice-president of the American Distributing Company, Cleveland, O., and beginning October 1 will devote his attention to the selling end, probably taking the East as his territory.

Fred Titus, of cycle racing fame, who has acted as sales manager of the Harry S. Hought Company, New York, agents for the Thomas cars, has just been appointed manager of the New Jersey branch recently opened by that firm in Newark.

Carl Page, for a number of years identified with the White interests in New York City, has taken the New Jersey and Connecticut agencies for the Peerless cars. At present Mr. Page is engaged in remodeling the selling forces of R. M. Owen & Company, agents for the Reo and Premier lines.

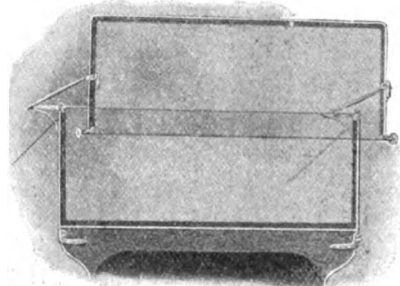
George H. Strout, sales manager of Apperson Brothers, Kokomo, Ind., left for a trip to the Pacific Coast on October 1 which will keep him in the far west for the next three weeks, during which time he will close arrangements now pending for the handling of the Apperson car in Los Angeles, San Francisco, Portland, Ore., Salt Lake City, Utah, and Seattle, Wash.

An addition to the executive officers of the E. R. Thomas Motor Company, Buffalo, N. Y., has just been made by the appointment of R. B. Jackson as general manager. Mr. Jackson received his technical training under some of the best known engineers in the country, and for the past few years has been associated as factory manager with some of the country's largest auto manufacturers.

Frank C. Riggs, up to a short time ago vice-president of the Fisk Rubber Company, Chicopee Falls, Mass., has joined the forces of the Packard Motor Car Company, Detroit, Mich., and took charge of the commercial vehicle and enclosed body departments on October 1. The company has been experimenting constantly for the past two years with motor trucks, and will now begin an active commercial vehicle campaign, the first cars being ready within the next few months.

INFORMATION FOR AUTO USERS.

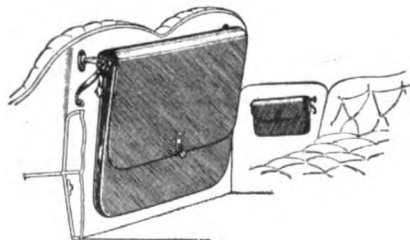
Common-Sense Auto Fronts.—Under this title Colonel Sprague, of automobile top fame, otherwise the Sprague Umbrella Company, Newark, O., has recently brought out a glass front of unique design. That it is a Sprague idea and



SPRAGUE'S NEW COMMON SENSE AUTO FRONT.

works in the Sprague way will probably be sufficient description for the many who are acquainted with the products of this firm in other lines. It is made of the best French plate glass, split horizontally in the center and enclosed in a neat and substantial brass frame, its chief feature of interest, however, lying in the simplicity and ease with which it may be manipulated. It locks in place by a simple and efficient device, and does not fold upside down as is usually the case. Instead of being hinged and folding over, it is only necessary to move the upper half of the frame to the right a short distance, after unlocking, and it drops into place, folded; while replacing it entails merely a reversal of this operation. It is simplicity itself, and cannot rattle in either position, while the quality of the material and workmanship employed insure its durability. It will make its debut at the coming Palace and Garden shows in New York this fall.

Security Apparel Holder.—As an addition to its line of automobile specialties, the Imperial Brass Manufacturing Company, 241-249 South Jefferson street, Chicago, has recently brought out a device termed the Security Robe and Ap-

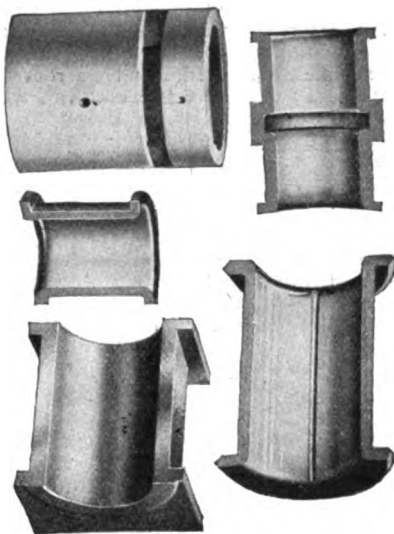


SECURITY APPAREL HOLDER IN PLACE.

parel Holder, designed to be attached to the rear panel of the front seats of the car for the convenient accommodation of robes, overcoats and the like, which are otherwise always in the way and encumber the tonneau. The holder consists of a horizontal collapsible frame work, to the outer rods of which is fastened the bag or receptacle. The side toggle arms of the framework are pivoted, and are fitted with lugs having elongated holes or slides in them. When opening, the mouth of the bag is swung to its full telescopic adjustment, and, the lugs on the toggle arms becoming engaged, bring

the center rod to a level with the opening of the bag. The frame is then pushed slightly backward, the lips on the toggle arms become engaged with the lugs of the main brackets by which the device is attached to the car, and the receptacle is thus rigidly held open, permitting the proper arrangement of its contents on the center rod. To close, the frame is pulled forward slightly, disengaging the lugs, and the mouth collapses, permitting the bag to close regardless of the amount of its contents, either operation naturally taking but a fraction of the time necessary to describe it. The metal work is of handsome design, highly finished, and includes a pair of grasp handles, one at each end.

Die-Cast Bearings.—Within the past few years the antiquated method of pouring babbitt or other alloy bearings has been superseded to a very large extent by the employment of special die-

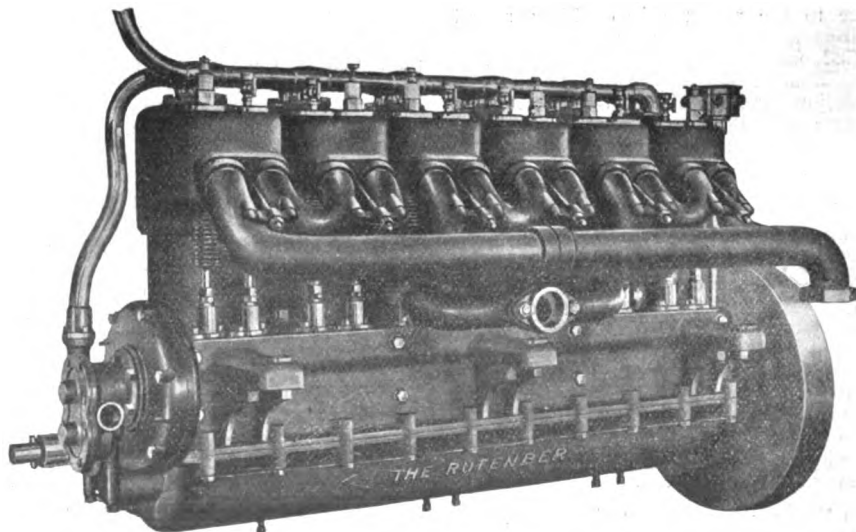


SPECIMENS OF AMERICAN DIE CASTINGS.

cast bearings possessing many advantages. The system has been developed very largely by the American Die Castings Company, 815 South Delaware street, Indianapolis, Ind., the successful production of this class of bearings by

this method being the result of a special process. The many claims of such bearings to superiority over the old forms will be obvious. They may be die-cast of all bearing metals accurate to .001 inch, are smooth and true, as if machine finished, and have the great advantage not only of being absolutely uniform mechanically, but the makers also guarantee them to always contain the same percentage of alloy as the metal furnished. The process is applicable to every form of plain bearing, whether of a simple or intricate nature, and the makers will furnish estimates on any class of work of this kind.

Rutenber Motors.—Under the title of Rutenber, Model U, the Western Motor Works, Logansport, Ind., has just placed on the market a new 40-horsepower model for 1908, which embodies numerous features of merit. The cylinders are cast separately, and their dimensions are 4 3-4-inch bore by 5-inch stroke, the motor developing its rated output at the moderate normal speed of 1,000 r.p.m., while its speed range is from about 150 to 1,500 r.p.m., developing an excellent torque at low speeds, which is a quality sought for in the up-to-date automobile motor. The valves are mechanically operated and are all placed on the same side, while the pump and timer are placed at the forward end of the motor, the former being located on a vertical standard and having all its moving parts securely encased, as is true of all the gearing. Quite a departure has been made in the magneto drive, which is taken directly from the crankshaft through spiral gears, instead of from the camshaft or an independent special shaft solely for this purpose, as is usually the case, thus eliminating this complication. Particular attention has been paid to the design of the valve-operating mechanism, and tests have shown it to be highly effective. With this addition the Rutenber line now includes motors ranging from 30 to 60 horsepower, three sizes being made in the four-cylinder type, 4 1-2 x 5; 4 3-4 x 5 and 5 x 5 inches bore and stroke, and 4 1-2 x 5 in the six-cylinder type. The plant of the Western Motor Company is now one of the largest in the country devoted exclusively to the manufacture of motors, every part entering into their construction being made in the firm's own factory. Its capacity has been largely increased during the past year or two in order to keep pace with the demand for Rutenber motors.



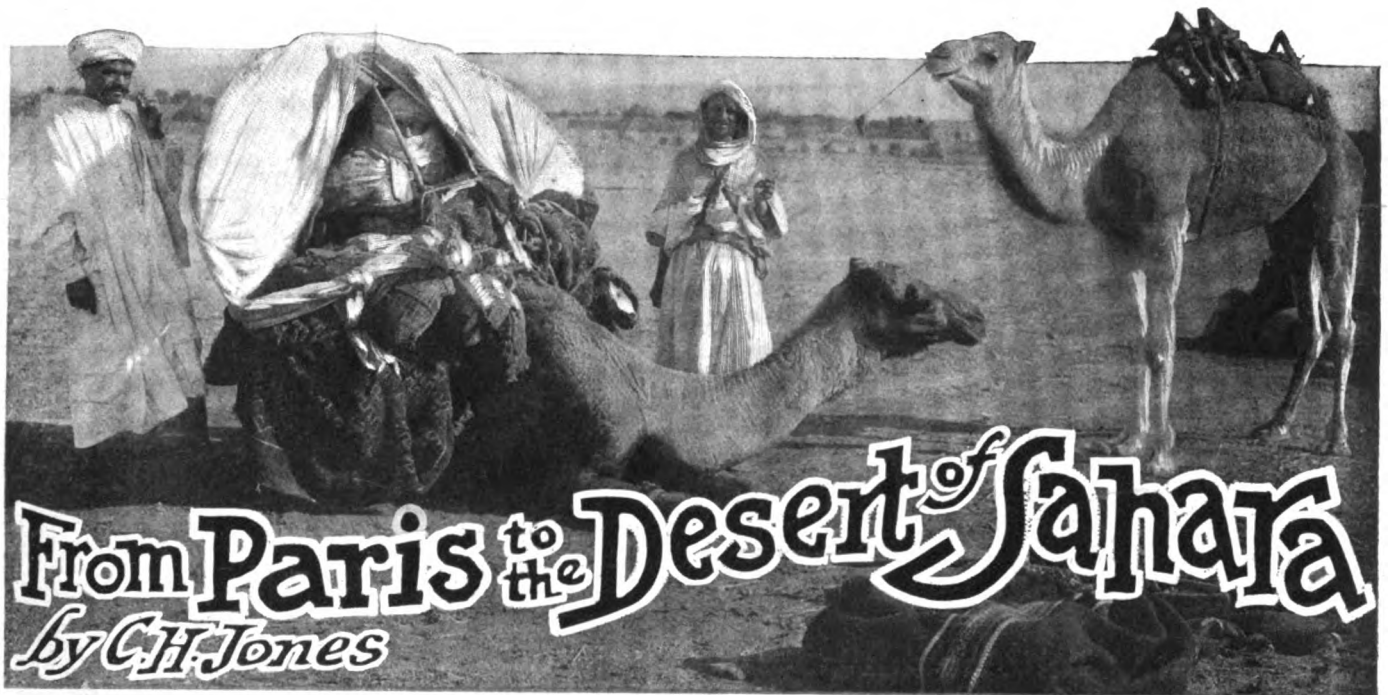
NEW SIX-CYLINDER 40-HORSEPOWER RUTENBER MOTOR, MODEL U.

THE AUTOMOBILE

Vol. XVII.

NEW YORK—THURSDAY, OCTOBER 10, 1907—CHICAGO

No. 15



DESIRING to learn of a country in which automobiling could be done in winter under enjoyable conditions, I made inquiries in New York and Paris at all the usual sources of information, and was told that in the French colonies of Algeria and Tunis I would find what I sought. The only information obtainable was that the roads were good, the climatic conditions favorable, and automobilists were going to Northern Africa in increasing numbers. Neither in New York nor Paris could be obtained that specific information that is so much desired by automobilists proposing to enter a new field, and it was found later that in Algiers itself such information of a trustworthy character is extremely difficult to procure.

From books very little can be learned that is of any use at all to automobilists. "Murray's Guide to Algeria and Tunis" is out of print and not obtainable; a new edition is promised for next Fall. Miss Cronnse's "Algiers" is of no practical value at all. "Cook's Practical Guide to Algeria and Tunis" contains a great deal of information that is helpful and interesting to the ordinary sightseeing tourist. "Reynolds-Ball's Mediterranean Winter Resorts" tells about all one wants to know concerning climatic and health conditions, though it is apt to mislead those who have not already acquired some definite idea as to the North African climate. And the "Guide Joanne" (in French) to *Algérie et Tunisie* is the best of all, because its general information as to hotels and places of interest is ample, well arranged and up-to-date (last edition 1906). Some helpful data were found in the last pages of the "Guide Routier Continental" for 1906, but the figures as to distances, etc., contained therein appear to be based on guesswork and not on exact knowledge. For automobilists the most helpful information is still to be found in an article written by Cortlandt F. Bishop.

It is to furnish readers of THE AUTOMOBILE with up-to-date and trustworthy information that this article and two others that

are to follow it are written. I wish to state with emphasis at the outset that they are not intended to be a substitute for or even a supplement to the descriptive guide books. Their sole aim is to give such definite, specific and practical facts as will enable automobilists to determine, in the first place, whether or not they care to take their cars to Algeria and Tunis; and, in the second place, to avoid those difficulties and annoyances that are likely to result from ignorance of existing conditions.

A Winter Run from Paris to the Mediterranean.

On Friday, March 8, at 5:40 P.M., we ("we" consisting of self and chauffeur) made our exit from Paris. Our purpose was to catch the Monday boat from Marseilles to Algiers, to accomplish which it was necessary to reach Marseilles Sunday night. We had estimated that, in the absence of disabling accidents and with reasonably favorable conditions, we could do this by leaving Paris not later than 2 P.M. on Friday, staying at Avallon the first night and at Lyons the second night. Although our departure was some three and a half hours later than this, we hoped, with good luck, to make the journey within the limit of time. Our car was a 24-horsepower Panhard (model 1906), with demi-limousine body and weighing in all 4,168 pounds—the pertinence of these details will become evident further on. It had been sent to the Panhard repair shops for a thorough overhauling, but it had not been "tried out" or "tuned up," and all the way down to Marseilles we were delayed at intervals by the necessity of making adjustments of the mechanism which the layman cannot help fancying should be made in the repair shop, but which for some inscrutable reasons never are.

It was partly owing to these delays that we made only half the distance to Avallon the first night, passed through Lyons on the afternoon of Sunday, and did not reach Marseilles (499 miles) until 6:30 P.M. Monday—too late for the steamer. But

it was chiefly due to the condition of the roads. Beyond doubt the roads of France are the best in the world, but after the winter's wear and before the spring repairs are made their condition is such as to render high speed impossible for long distances, especially when, as in our case, a streaming rain accentuates all the bad places. It will be well for automobilists to bear this in mind when they plan to anticipate the usual season for autoing. Another fact that may interest them is that in winter and early spring the cost of gasoline (called "essence" in France and her colonies) is from 20 to 25 per cent. higher than in summer. At Villeneuve-St. George, where most of the automobilists leaving or entering Paris by the great southern route fill up their reservoirs, and where the regular summer price of gasoline is 28 centimes per liter (about 22 cents a gallon), we had to pay 40 centimes; and at Chalons, at Macon and at Avignon, where the usual summer price is 35 centimes a liter, we had to pay 45 centimes.

On the trip from Paris to Marseilles, 225 liters of gasoline were consumed, at an average cost of 42 1-2 centimes per liter. The cost per kilometer (a kilometer is five-eighths of a mile; the term will usually be used in these articles, partly for convenience and partly because automobilists in Europe and Africa must accustom themselves to this measurement of distance, the mile being unknown) was almost exactly 12 centimes, as compared with an average of 10 centimes per kilometer in France and Germany during the summer of 1906 with the same car. The average consumption was one liter to three and a half kilometers (about a gallon to nine miles), as compared with one liter to four and a fourth kilometers (about a gallon to eleven miles) in 1906; the latter figures showing the difference in the condition of the roads, the car presumably being equally efficient on both occasions.

Shortly before noon of Wednesday, March 13, the machine having in the meantime been again thoroughly overhauled in a Marseilles repair shop, our car was hoisted by ship's winch to the deck of the steamer *Maréchal-Bugeaud* of the Compagnie Générale Transatlantique line, securely fastened and covered with a tarpaulin. At 1 p.m. the steamer sailed, and at 3:30 p.m. the next day we arrived at Algiers and the car was landed the same afternoon. The requirement of a certificate from the customs authorities caused some delay, but next morning the car was available for use, having been embarked and disembarked with no damage except a few scratches of the paint. The cost of transportation, including the embarkation fee at Marseilles and the fee at Algiers, was 192 francs 50c. (\$38.50).

First Impressions of Sunny Africa Were Chilling.

In Paris the weather was as cold as in New York, and in Marseilles it was colder than in Paris. As we approached the coast of Africa, long before Algiers itself came into view, we were surprised to see the majestic rampart of mountains a little back from the coast snow-clad a third of the way down from their summits. The effect of this was evident in Algiers when we landed, the men being overcoated and the women wearing furs, precisely as in Paris. At the hotel, wood fires hardly sufficed to take the chill off the bedrooms, and the sitting rooms and dining room were heated just as they would have been in New York. The thin clothing we had expected to don as soon as we landed was left in the trunks, and the writer's travel party, which had preceded him by steamer, was found at the hotel, shivering and disgruntled, anathematizing Algiers and its climate and counting the hours until we could leave for Biskra and the genial warmth of the desert. Of course, we were assured that the weather was "unseasonable" and that "such



STREET SCENE IN SIDI OKBA.

a winter had never been known before."

Algiers as a city has been too often described for it to be worth while to detail it again here, even if description were the purpose of these articles. It is beautifully situated, climbing from the harbor up the side of a steep hill, backed by mountains, and overlooking a lovely bay. From the high-lying suburb of Mustapha the views are entrancing, and seen in the distance from either sea or shore its white radiance dazzles in the sunshine. But anyone who goes to Algiers expecting to find an Oriental city will be disappointed. Viewed from afar or inspected close at hand, it is a distinctly French city with many European counterparts. Arabs in the streets, in white burnouses and headdresses, add a touch of picturesqueness, and there are an Arab quarter and a few native mosques and other buildings that are worth visiting; but the dominant note is altogether European.

In the streets of Algiers one sees almost as many automobiles as in any French provincial city of similar size, but most of them are obviously for city use only. The leading hotels manage to house automobiles in some fashion; there are in the city four good garages, with two more approaching completion; three agencies for the sale of automobiles, and some four or five shops at which tires and other accessories are kept in stock. Gasoline is readily obtained, the price being uniformly 2 francs 50c. for a five-liter *bidon* (about 40 cents a gallon).

Off for the Warmth of the Sahara.

From Algiers three or four excursions may be made with comfort by automobile over good roads. Perhaps the most enjoyable of these is to Medea via Blidah. This involves a climb up to the great plateau which lies between the minor Atlas range that borders the coast and the major Atlas mountains that confront the Desert of Sahara from Morocco to Tripoli. Blidah (31 miles) is the center of an extensive orange-growing region, and Medea (60 miles) of the best wine-making district of North Africa. More interesting than either town is the Gorge of the Chiffa, which lies about nine miles beyond Blidah; and from Blidah the famous baths of Hammam R'hira, where is an extensive thermal establishment, may be visited—they are about fifty miles distant. Another excursion is to Cherchel, on the seacoast, about seventy-three miles from Algiers, over a road that during the latter part of the journey hugs closely the shore of the Mediterranean. It was the ancient Caesarea of the Romans, a capital of Mauritania, and offers to the tourist some interesting Roman ruins. One of the grand national routes leads westward from Algiers to Oran 461 kilometers (about 300 miles), but it traverses an uninteresting country and in places the road is said to be very bad.

We made none of these excursions, partly because they did not solicit us very strongly, but chiefly because of our desire to get as quickly as possible to the warmth of the Sahara. It was intimated to us at Cook's, and by the secretary of the local automobile club, that we might encounter snow in going over the mountains to Bougie, but here as elsewhere the information obtainable as to routes and conditions was very indefinite, and we had only the vaguest idea of what lay ahead of us.

We left Algiers, a party of five, at 9 a.m. on Saturday, March 16. As far as Azazga (135 kilometers) the road, bad in places but fairly good as a whole, traversed a level country without a single interesting feature except the backward view of Algiers. The cultivated fields were green with wheat from three to six inches high, and occasional almond trees showed their pink blooms. The only tree that is at all numerous is the eucalyptus, which is popular because of its quick growth and its ability to send its roots down to incredible depths in search of moisture.

At Tizi Ouzon (100 kilometers) we stopped for lunch, and the proprietor of the Hotel Lagarde confirmed our information that we should encounter snow in crossing the mountains. Here the gasoline tank must be filled, as no fuel can be obtained before reaching Bougie, 160 kilometers away by a mountainous road. The charge was 2 francs 75c. for the *bidon* of 5 liters (at the rate of 44 cents a gallon).

At Tizi Ouzon the fact was brought home to us for the first time that we were in an Oriental land. A native market was being held, the town swarmed with Arabs and Kabyles, and for ten kilometers the road was thronged with a motley crowd returning home astride of donkeys about as large as Newfoundland dogs, or driving sheep, goats and the diminutive cattle of the country. At Tamda (115 kilometers) the first camel was seen.

A Wild Ride Across Snow-clad Mountains.

At the small village of Azazga the foothills of the Atlas are reached, and a climb begins that is almost uninterrupted for 45 kilometers. At first the road winds up through the vast cork forests of Kebouch, which are a source of large revenue to the French Government, but soon all vegetation is left below and then the route ascends an apparently endless succession of bare, desolate and stony steeps. It is a lonely land, bleak and forbidding of aspect, with no signs of human habitation except here and there, at infrequent intervals, a Kabyle village of stone or mud huts nestling on the precipitous declivity of a distant hill. Between Azazga and El Kseur, at the foot of the mountains on the other side, a distance of about 110 kilometers, no food or supplies, no help of any kind, could be obtained in case of accident or delay; and the road is such that it would be in the highest degree dangerous to attempt to travel any portion of it at night. For this reason it would be more prudent for automobilists, especially those with heavy cars, to leave Algiers in the afternoon, spend the night at Tizi Ouzon, and give themselves the whole day for the journey across the mountains to Bougie. This should certainly be done when the trip is made earlier than the end of March. For a distance of ten kilometers on either side of the summit, March 16, we drove through snow which lay on the road from three inches to a foot in depth; long stretches of the road were soft and spongy; there were places where the roadbed had been washed out and hastily repaired with broken stone; other places where precipices yawned on one side while steep cliffs towered on the other.

For many reasons the climb from Azazga is one to be remembered; not the least being the impressive scenery. The descent to El Kseur is less steep and over a better road, the latter part through another extensive cork forest, whose foliage resembles that of our live oaks at home. El Kseur was reached just at dusk, and then a quick run of 26 kilometers over a level road brought us to Bougie, where we arrived at 8:10 P.M. and found comfortable if not luxurious quarters at the Hotel d'Orient.

Looking out of our windows next morning the beautiful situation of Bougie was revealed to us. It lies at the head of a deep bay, in an amphitheater of enclosing mountains, directly under the Gourara. Anciently, under the Carthaginians, the Romans and the Vandals, it was a flourishing commercial seaport, and under the Barbères in the eleventh century it had 20,000 houses and over 100,000 inhabitants. When the Turks captured it in the sixteenth century decay set in, and it is now a rather dingy town of 14,000 inhabitants.

After filling the gasoline tank at a cost of 2 francs 75c. for the *bidon* of 5 liters, we left Bougie at 9:20 A.M., March 17, skirted the seashore across a level plain for 22 kilometers, and then climbed steeply

around the face of Cap Aokas, with exquisite views seaward, reminding one of the road from Sorrento to Amalfi in Italy. At kilometer post 34 the road to Sétif (which we followed) turns off directly south. The continuance of the Cap Aokas road eastward skirts the seashore amid magnificent scenery, winding along the front of steep cliffs and passing through tunnels, with the surf beating over the roadway in places, and ends at Djidjelli, the Ingilgitis of Roman times.

Turning south at kilometer post 34 we ascended a swift-flowing stream which, in its descent to the sea from the high tableland, breaks through the coast range of mountains, forming the Gorge of Chabet-el-Akra. The gorge begins about kilometer post 40 (from Bougie) and ends at kilometer post 58. For the greater part of the distance it is disappointing, but the last eight kilometers are a stupendous cliff-enclosed ravine, with a tormented torrent rushing and foaming at the bottom, and the road hewn at tremendous cost along the frowning face of overhanging precipices.

At the upper end of the gorge is the small Kabyle town of Kerrata. From this point the road ascends in long windings, by easy grades, through a desolate, treeless and sparsely inhabited country, to the summit of the coast range (3,800 feet above the sea), and then makes an almost imperceptible descent of 400 feet to Sétif, 112 kilometers from Bougie.

The road through the gorge of Chabet-el-Akra, ordinarily a good one, was in places almost impassable. Deluging rains had swept sections of it into the swollen stream, and these gaps were being repaired with broken stone shoveled in and left loose and uncovered, threatening to cut the tires at every revolution of the wheels. Near the summit of the pass we again passed through snow-fields, and on many of the hill-slopes the roadbed was so soft as to make very heavy going. At Sétif we learned—what ought to have been told us at Algiers—that there is another comparatively level road from Algiers, which, though far less attractive scenically, is at this season of the year much safer for automobilists.

Over the Plateau to El Kantara.

We arrived at Sétif at 1:40 P.M. and found fair, if somewhat frigid, accommodations at the Hotel de France. Here we were told that a road directly across the level plateau to El Kantara had recently been made practicable, and as it would save the long detour and climb to Constantine we decided to try it. The distance as given us was 150 kilometers (it proved to be 173), but as the actual state of the road was unknown and as there are no towns en route at which supplies of any kind can be obtained, we deemed it best to remain at Sétif over night and make an early start next morning. The gasoline reservoir was filled at a cost of 3 francs for the *bidon* of 5 liters (about 48 cents a gallon), and we started at 7:25 A.M. on March 18.

Sétif, anciently the Roman Sitifis, lies almost in the center of the high plateau of the Tel, which has already been described as extending east and west between the two ranges of the Atlas mountains. It is surrounded by a fortified wall, has a military quarter with barracks for 3,000 troops, and its native population of about 11,000 is about equally divided between Arabs and Kabyles.

The road from Sétif to El Kantara traverses the plateau of the Tel in a south-easterly direction and was described to us as very good. As a matter of fact, it was fairly good for carriages or wagons, but for automobiles it has too many ruts and inequalities that try springs and make rapid going impossible. One shoe and two inner tubes were our tribute to it. The country traversed is fertile when irrigated, but sparsely settled, with only a few small



A TYPICAL ALGERIAN SHEIK.

villages along the line of the road. As there is no other source from which the information can be obtained, it may be useful to give our schedule of such places: Sétif; Mestong, 14 kilometers; Ampère, 50; N'Gaus, 87; MacMahon, 148; El Kantara, 173. At MacMahon our road merged into the national route from Constantine, and about eight kilometers from El Kantara a swift descent is made from the high central plateau to the level of the Desert of Sahara.

The Gorge of El Kantara (El Kantara means "The Bridge") has been famous since Roman times and has been more written about, perhaps, than any other spot in Algeria. What is most striking about it is that on emerging from its southern end the green oasis of El Kantara, with 90,000 palm trees, bursts upon the view, while away to the south stretches the arid level of the limitless desert.

Just at the northern entrance of the gorge is situated the small Hotel Bertrand. It is generally full, and persons desiring to stop there over night will do well to write or telegraph in advance. We reached it at 4 P.M., and as no rooms were to be had decided to go on to Biskra, after buying 30 liters of gasoline at 3 francs 75c. the *bidon* (about 60 cents a gallon).

Colonial Government Has a Thought for Desert Road.

The road across the desert to Biskra (58 kilometers) is on the whole much better than we had expected, or rather feared. In parts it is simply a camel's track. A small portion of it is over bare rocks where it seems impossible at first glance that any wheeled vehicle, much less a heavy automobile, should make headway; and there are ravines to cross which look as if no automobile could either get down into or climb out of them. The French Colonial Government is building a national highway between the two places, which is now finished for about half the total distance; and the finished portions are as good as any road in Algeria. In about two years, when this road is completed, the journey by automobile from El Kantara to Biskra will be one of the most novel and enjoyable in the world, for even under existing conditions it has a weird fascination. The desert surface is rather stony than sandy; there is a total absence of vegetation; it is a land with a face but no features; and one seems to be chasing the horizon into distances filled with mystery. As we surmounted one obstacle after another, the oncoming of sunset spread over the desert and the distant hills (for there are still hills) a wonderful canopy of color. Biskra, though we knew it must be near, was not visible until after a very steep climb over the last range of desolate hills through the pass of the Col de Sfa. From its summit we saw in the distance an oasis of vivid green that seemed to spread over half the space ahead of us (it contains 250,000 palm trees); above the green rose a white minaret and a tower; and far beyond to the south, unbroken as a sea horizon, stretched the level line of the real Desert of Sahara.

"The Queen of the Desert."

Thus the Arabs name Biskra, the capital and commercial emporium of the Desert of Sahara. Here the great caravan routes from the south converge; here ends the railroad that links the desert with the outside world; and here is the center of the French political administration. France's military outpost in this direction has been moved down to Touggourt, but Biskra is still the guardian and center of the Algerian Sahara. Being a fortified town with a garrison, the uniforms of the different classes of French troops, including that of the gorgeous native *Spahi* cavalry, are frequently seen on the streets. But the dominant note of Biskra, even in the European quarter, is not military or even European, but native. Here the native life is seen to better advantage than in any other easily accessible town of Algeria or Tunis. The Arabs are most numerous, but one may also see in considerable numbers Berbères, Bedouins, Bishriens, Touregs, coal black negroes, and Jews, with a few Turks. The Ouled Nails, who have a quarter to themselves and

whose dancing in the Moorish cafés is one of the sightseeing attractions of Biskra, belong to a tribe whose habitation is in one of the remote southern oases, to which they return after they have accumulated the requisite fortune in tawdry jewelry and strings of coins. The life they have led in Biskra and other garrison towns is no bar to their marriage subsequently among their own people; in fact, they are much sought after for the "dowries" they can bring, and are said, like the Japanese Geisha girls, to make good wives and mothers.

The Royal Hotel is a first-class establishment, built in the Moorish style, with a tropical garden in an interior court and surmounted by a tower from which a memorable view may be obtained, especially at sunset. There are four or five other hotels that may be described as good, and a number of lodging houses. All are apt to be crowded during the season from December to the end of March, and intending visitors should be careful to engage rooms well in advance of arrival.

An Enchanted Garden in a Desert Town.

Several small parks and gardens beautify the European quarters at Biskra, but the great show place is the Villa Benevent, which has been made famous by Robert Hichens' novel, "The Garden of Allah." No matter what expectations may have been formed of this wonderful garden, the reality is sure to surpass them. Situated on the edge of the oasis, directly on the bank of the stony river bed of the Oued Biskra, across which one looks to the arid expanse of the desert, it furnishes perhaps the most marvelous existing illustration of the wonder-working power of water upon the most inhospitable soil and of the teeming opulence of nature. Crowded with palms of every known variety; containing fine specimens of every tree and plant that will flourish in the tropics; challenging the eye with a color scheme that ranges from cool and restful greens through all the vivid tints of flowers and climbing vines, and soothing the ear with the ever-present murmur of running water; kept in immaculate cleanliness and order by a small army of gardeners; inviting to repose here in dense shade and there amid scintillating sunbeams sifted down through the canopy of foliage; and surrounded on every side by a wall or hedge that gives a sense of isolation and remoteness, it is the embodiment of a poet's or painter's dream of an earthly paradise. Created and now owned by Count Landon, a wealthy French nobleman, it is accessible to the visitor on payment of a small fee that places all the attractions of the garden at his disposal for a whole day or such part thereof as he can devote to it.

In the Vicinity of Biskra.

Two short excursions may be made by automobile from Biskra. One is to the Fontaine Chaude (Hot Springs), lying five miles away in a particularly solitary and jackal-infested part of the desert. We burst one shoe and two inner tubes in making this short trip, which renders any description of the road unnecessary. The other excursion is to Sidi Okba, a typical native town of 8,000 inhabitants, situated in an oasis twelve miles from Biskra, and noted for its mosque, which is thought to be the oldest Mohammedan building in Africa and which houses the tomb and shrine of the famous saint and conqueror, Sidi Okba, who in the Seventh century brought all Northern Africa, from Egypt to Tangier, under the rule of the Khalif.

Touggourt, the last outpost of France in the Desert of Sahara, 212 kilometers (about 132 miles) south of Biskra, in an oasis of 150,000 palm trees, has been reached by two or three autoists out of a dozen or so who have made the attempt. The road is little more than a caravan route, barely practicable at best and extremely bad in places. It would be useless for a heavy car to essay the trip. Gasoline and all other supplies for the trip there and back must be carried from Biskra, and for the benefit of automobilists it may be mentioned that at Biskra the price of gasoline is 5 francs for the *bidon* of 5 liters (about 80 cents a gallon).



AN ENGLISH VILLAGE: CRAWLEY, A PICTURESQUE HALT ON THE ROAD TO BRIGHTON.

LONDON, Oct. 1.—Another fuel test is announced by S. F. Edge to be run under the control of the Royal Automobile Club. It will be remembered that a few weeks ago Edge made comparative tests of the best grade of gasoline and a marketed product known as benzol. This week he will undertake a test of benzol only, a British fuel with a specific gravity of .880, and which is sold retail at about twenty-four cents per gallon. The trial will be a three-thousand-mile run over the Great North road, with a view to obtaining reliable data as to the effect of this fuel on the engine.

The recent tire pressure tests on the Brooklands track indicated that the air pressure in a tire made practically no difference to the speed of the car. Experiments were made with tires of 100 and 120 millimeters and with pressure varying from 35 to 100 pounds, without the speed of the car being affected. To get the maximum wear out of a tire it is necessary to use a pressure which sacrifices much of the comfort of riding. The Brooklands experiments, by proving that no speed is lost by low pressures, indicate that there would be an all-round advantage in the production of a tire capable of long use on a lower pressure than at present necessary.

Lessons from Britain's Commercial Tour.

BIRMINGHAM, ENG., Oct. 1.—Although the army of commercial vehicles united in the Royal Automobile Club's trials has been on the road eight days, it is too early to make any close deductions as to their mechanical ability or the ultimate results of the demonstration.

A certain number of enthusiastic salesmen appear to be disappointed that orders have not flowed in all along the line, forgetting that heads of business houses do not visit commercial motor exhibitions with a check book in their hands. Manufacturers in the western district, comprising such towns as Bristol, Chippenham, Worcester and Gloucester, are somewhat conservative and are not likely to change their methods of haulage before receiving full proof of the value of the new vehicles. Even Birmingham, important as it is commercially, is not a very good field for the sale of commercial automobiles and probably not until Liverpool, Manchester, Sheffield, Leeds and the smaller industrial towns of Lancashire and Yorkshire have been visited will any real business be done. It is to be regretted that the tour does not extend further north, for there is an interesting field to be exploited in the coal, iron and shipbuild-

ing centers of Durham and Northumberland.

The first public exhibition was arranged at the Old Avonside Engine Works at Bristol, a most difficult place to enter, the gateway leaving but a few inches leeway for many of the vehicles and the ground being so soft that the heavier trucks sank to their axles. Fortunately at the last moment Secretary Orde was able to arrange for the use of the spacious open-air cattle market, a perfect place for a public exhibition. It was not long before those having struggled into the old quarters backed out and invaded the new camp. One dollar per vehicle for two nights was not an excessive charge for good lodging. All the vehicles belonging to one firm are grouped together in the exhibition ground, thus giving an opportunity for an attractive business display. At Birmingham

the depot is the Aston Villa football ground, with city headquarters at an hotel adjoining the London and North Western railroad station.

At the last moment five vehicles found themselves unable to take part in the competition, bringing the number of actual starters down to 55. The two Fiat five-ton trucks did not arrive in England in time; the Wolseley-Siddeley ran off the road in the dark and rain when proceeding to the starting point and was damaged; the Turgan light delivery van was found to be geared too high for the hills and went out on the second day; and the Atkey-Gimson withdrew owing to a defect discovered in the center-bearing of the gear box. There have been probably more mechanical defects than were expected, some of the best known firms being victims of breakdowns, as much to their own surprise as to that of the public. In several cases the managers of important companies, traveling on their own vehicles, have had a first experience of the cussedness of an automobile when put on the road without a preliminary tuning up. One of the 16-horsepower Darracqs was in danger of withdrawal owing to the fracture of a cylinder wall, but by reason of the prompt dispatch of a new casting from Paris—four cylinders in one piece—it was able to continue with the loss of two stages.

As the result of a collision with a steam tractor, a Durham-Churchill was in danger of retirement. After a delay of twenty-three hours, a non-stop run of 105 miles was made over the regulation route, and the main body was caught up, the driver and mechanic remaining on duty thirty-five hours without rest. Bad luck befell a one-ton Milnes-Daimler owing to the frequent bursting of the 36 by 6 inch steel-studded tires. Fixing these tires was a labor of several hours, and after two blowouts, in the first of which two men were injured, and in the second the rim was damaged, it was decided to withdraw the vehicle. There are three or four accidents to report, none of them, however, of a serious nature. At Birmingham a trolley car ran into the Dennis lorry, damaging the rear; a Maudsley slipped into a ditch near Alcester, but was brought out under its own power; the three-ton De Dion gave trouble on the hills and had to be temporarily withdrawn for changes in its gear box.

On the first day the percentage of those having clean scores was 70.9. This proportion had been able to leave the garage without adjustments, had not had any stops on the road for mechanical adjustments, or lost time from tire or any other kind of trouble. On the second day 38 per cent. of the vehicles



WOLSELEY PETROL-ELECTRIC TAKING A STEEP GRADE.

had perfect scores; the percentage was 52.7 on the third day; 54.5 on the fourth and 60 per cent. on the fifth. Thirty per cent. of the contestants went through the first five days of the tour with clean scores. An observer appointed by some rival firm was carried on each vehicle and was charged to note all stoppages from mechanical troubles.

Frequently machines have gone astray on the road owing to the lack of signs and the inability of the observer to advise. In some cases this loss of road has led to excessive speeding on the part of drivers, simply through a desire to arrive at control on time, though late arrival did not bring any penalty. Generally the schedule is fixed to allow the vehicles to travel rather less than the legal rate of speed; in some cases it is distinctly low, as, for instance, in the three-ton class, where drivers are obliged to hold in their vehicles with disadvantage to their fuel consumption average and average efficiency performance.

Solid tires are not giving complete satisfaction. At least half a dozen different firms have had some difficulty and it would not be surprising if one or two firms dropped out before the end of the five weeks' demonstration entirely, owing to defects of solid tires. The test is not a normal one, for all the vehicles are constantly running under full load—many of them are largely overloaded—whereas in actual daily work they run alternately loaded and light. But notwithstanding this, tire upkeep is too high in several instances. None of the wheels shod with metal rims have given trouble up to the present.

CHAIRMAN THOMPSON DISCUSSES ROAD-TARRING.

"Road tarring has been treated scientifically and developed in a remarkable manner in England and France," said Jefferson De Mont Thompson, chairman of the A. A. A. Racing Board, in



A TAR SPRAYER AT WORK ON THE ENGLISH ROADWAYS.

an interview with THE AUTOMOBILE representative on his return from Europe. "Owing to imperfect methods, some of the earlier attempts at treating road surfaces with coal tar were far from satisfactory. The tar failed to act as a binder; it was injurious to the eyes of drivers, as was clearly shown during the race for the French Grand Prix of 1906, and it lay in small pools, where it could be thrown up by the road wheels, to the injury of finely-finished body work.

"This year the tarring of the Grand Prix circuit was perfect; there was no dust and the drivers did not suffer in the least. In England special attention has been devoted to the developing of perfected and economical methods of treating a road surface with coal gas tar, the competition held near London a short time ago bringing before the public a number of efficient machines. The road surface needs to be specially treated, the tar must be put on at exactly the right temperature and under favorable atmospheric conditions. In short, it is the substitution of scientific methods for a rule of thumb procedure.

"From observation of road surfaces in France before and after treatment with tar, I am convinced that the best of these processes, in addition to abolishing the dust nuisance, hold the surface of the road together as nothing else will. My experience is that pneumatic tires do quickly spoil roads that have first been cut up by horses and iron-shod wheels. The continual washing out of water and earth from every depression of the road quickly deepens the hollow until the top surface entirely disappears. When properly treated with tar the surface is held together in such a way that tires have very slight effect on the road. Treating a new road with tar increases the first cost but proves economical in the end."

MOTOR 'BUS VERSUS TROLLEY CAR.

The work of the motor omnibus is once again held to be that of feeding tramways and railways from outlying districts, and for heavy street traffic work the electric tramway is easily first says the *Engineering Record*. If motor omnibuses are made smaller than at present, the advantage will be still further with the tramways, so that again lower fares can be charged, which will once more react favorably on the results. The plain truth is that for street service the motor omnibus has never competed successfully with the tram. The advantage in carrying capacity is at present entirely on the side of the tram, and the additional facts that whereas the tramway authorities have to maintain the rails, the roadway between them, and a further margin, and are rated on the track, go again to show that as regards public advantage the trams are much to be preferred. Undoubtedly the motor 'bus will improve. A cheaper fuel and better construction are to be desired, and for the present, at any rate, it cannot compete with the electric tram for urban traffic. These views are upheld by Herr Vellguth, as to experiences in Berlin. Here petrol costs more than in London, where, by the way, it is still rising. In addition, as regards estimates, the short life of the motor 'bus is never properly allowed for. Depreciation allowances are usually quite inadequate.

HOW AN AUTO SAVED THE DAY.

Every newspaper man who has done general work and at some time in his career covered a railroad wreck will appreciate the plight of Houston newspaper men recently when news of a wreck thirty miles away was received at night and they found on trying to reach the scene that they would not be allowed on trains going there. When the Houston reporters tried to board a train going to the wreck they were ejected. For a time it looked like a case of no story. Just then one of them happened to think that Hubert S. H. Wilson, the owner of a Thomas Flyer, might be willing to help them out. Several minutes later Mr. Wilson, his brother, and the newspaper men were on their way to Strang, thirty miles away.



ARTISTIC DECORATIVE SCHEME THAT HAS BEEN ADOPTED FOR THE GARDEN.

IN the procession of varied events that hold forth in New York's largest show place, none has succeeded in so completely transforming the interior of Madison Square Garden as have the automobile shows in the past few years. All the familiar lines of the interior of the structure have been eliminated with a view to the production of a complete picture and at the same time a uniform setting. The idea adopted for the coming show, to be held November 2-9, is that of a terraced garden, and the criticism of former years has been heeded and an over-lavish scheme of ornamentation avoided. There will be less staffwork and on the whole a far simpler setting.

The color scheme is to consist of a blending of gray, crimson and white, the girders of the roof being screened by a canopy of the first-named color in place of the artificial sky of last year. The exhibition spaces will be carpeted with crimson, set off by the gray of the aisles. Entering from the foyer, the visitor will be confronted with a towering gateway, a replica of that of the Florio Torresca villa in Florence. It is to have real iron gratings and through them will be visible a garden wall and trees.

The plan of having the elevated platform above the arena boxes extend slightly over the main floor, and of covering the high rear seats to provide a mezzanine floor, will be repeated, and the idea further extended in order to gain more space by decking over the first balcony so as to have the flooring extend beyond the balcony railing, overlapping the elevated platform.

- 34. Rauch & Lang Carriage Co.
- 35. General Vehicle Co.
- 36. Pope Motor Car Co.
- 37. Columbus Buggy Co.
- 38. Electric Vehicle Co.
- 39. Baker Motor Vehicle Co.

Basement—Commercial Vehicles.

- 41. Knox Automobile Co.
- 42. Royal Motor Car Co.
- 45. General Vehicle Co.
- 46. Northern Motor Car Co.
- 47. Pope Motor Car Co.
- 48. Packard Motor Car Co.
- 49. Studebaker Automobile Co.
- 50. Alden Sampson, 2nd.
- 51. Champlon Wagon Co.
- 52. Cadillac Motor Car Co.
- 53. H. H. Franklin Mfg. Co.
- 54. E. R. Thomas Motor Co.
- 55. Hewitt Motor Co.

Mezzanine Platform. (Accessories.)

- 56. Diamond Rubber Co.
- 57. C. F. Splittdorf.
- 58. Goodyear Tire & Rubber Co.
- 59. Shelby Steel Tube Co.
- 60. Dayton Electrical Mfg. Co.
- 61. G & J Tire Co.
- 62. Gray & Davis.
- 63. The Veeder Mfg. Co.
- 64. R. E. Dietz Co.
- 65. Atwater-Kent Mfg. Works.
- 66. Byrne, Kingston Co.
- 67. National Carbon Co.
- 68. Baldwin Chain & Mfg. Co.
- 69. Brennan Mfg. Co.
- 70. N. Y. & N. J. Lubricant Co.
- 71. Schwartz Wheel Co.
- 72. The Autocoll Company.
- 73. Hess-Bright Mfg. Co.
- 74. Webb Manufacturing Co.
- 75. Swinehart Clincher Tire & Rubber Co.

LIST OF EXHIBITORS.

Main Floor.

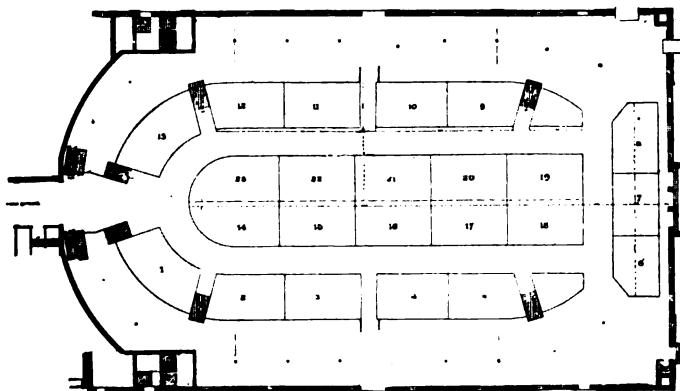
- 1. Pope Motor Car Co.
- 2. Royal Motor Car Co.
- 3. Bulck Motor Co.
- 4. Autocar Company.
- 5. F. B. Stearns Co.
- 6. Elmore Manufacturing Co.
- 7. Northern Motor Car Co.
- 8. Lozier Motor Co.
- 9. Knox Automobile Co.
- 10. Haynes Automobile Co.
- 11. Electric Vehicle Co.
- 12. Apperson Bros. Automobile Co.
- 13. Locomobile Co. of America.
- 14. Packard Motor Car Co.
- 15. Cadillac Motor Car Co.
- 16. The George N. Pierce Co.
- 17. E. R. Thomas Motor Co.
- 18. H. H. Franklin Mfg. Co.
- 19. Stevens-Duryea Co.
- 20. Peerless Motor Car Co.
- 21. Pope Manufacturing Co.
- 22. Olds Motor Works.
- 23. Winton Motor Carriage Co.
- 76. Light Mfg. & Foundry Co.
- 77. Warner Instrument Co.
- 78. Morgan & Wright.
- 79. Columbia Nut & Bolt Co., Inc.
- 80. Hartford Auto Parts Co.
- 81. Cook's Standard Tool Co.
- 82. The Auto Pump Co.
- 83. Leather Tire Goods Co.
- 84. Duff Mfg. Co.
- 85. Precision Appliance Co.
- 86. Stewart & Clark Mfg. Co.
- 87. Janney-Steinmetz & Co.
- 88. Chandler Company.
- 89. Globe Machine & Stamping Co.
- 90. Kilgore Manufacturing Co.
- 91. Firestone Tire & Rubber Co.
- 92. Oliver Manufacturing Co.
- 93. Hartford Suspension Co.
- 94. Phineas Jones & Co.
- 95. Jones Speedometer Co.
- 96. Pennsylvania Rubber Co.
- 97. Mottsinger Device Mfg. Co.
- 98. Timken Roller Bearing Axle Co.
- 99. Warner Gear Co.
- 100. Remy Electric Co.
- 101. The Manufacturers' Foundry Co.

Elevated Platform

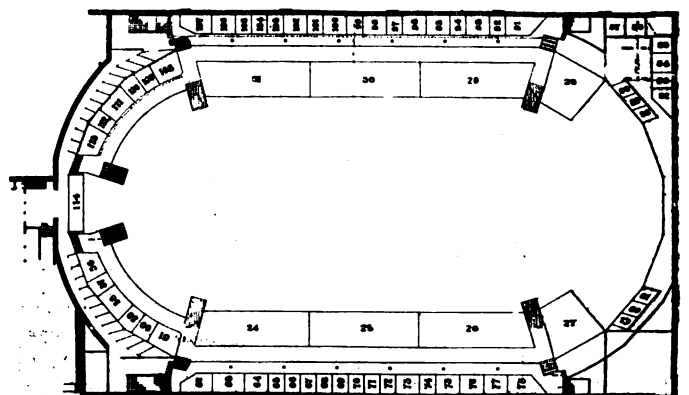
- 24. Waltham Mfg. Co.
- 25. Matheson Motor Car Co.
- 26. Walter Automobile Co.
- 27. Selden Motor Vehicle Co.
- 28. Alden Sampson, 2nd.
- 29. The White Company.
- 30. Corbin Motor Vehicle Corp.
- 31. Studebaker Automobile Co.
- 102. Brown-Lipe Gear Co.
- 103. Pittsfield Spark Coll Co.
- 104. Whitney Mfg. Co.
- 105. The Standard Welding Co.
- 106. The American Ball Bearing Co.
- 107. The Badger Brass Mfg. Co.
- 108. The Fisk Rubber Co.
- 109. Hvatt Roller Bearing Co.
- 110. Whitlock Coll Pipe Co.
- 111. Rose Manufacturing Co.
- 112. Midgley Mfg. Co.
- 113. Hartford Rubber Works Co.
- 114. The B. F. Goodrich Co.

Exhibition Hall.

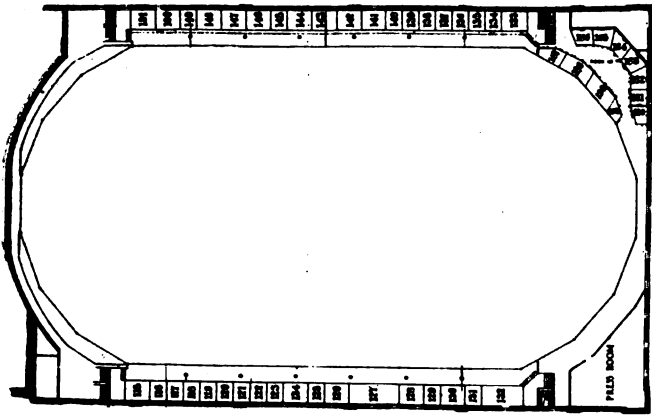
- 32. Babcock Elec. Carriage Co.
- 33. Studebaker Automobile Co.



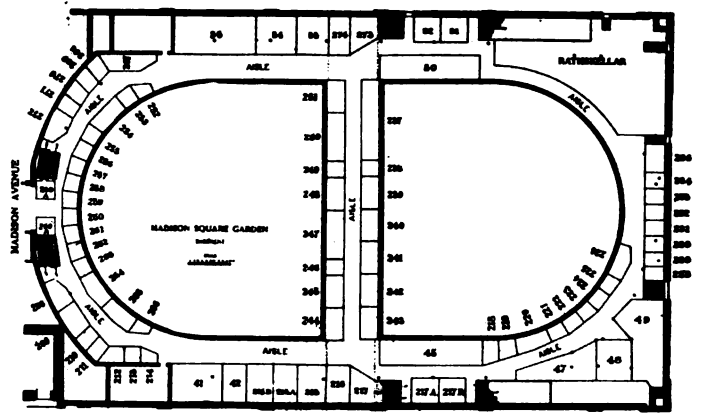
FLOOR PLAN OF THE MAIN EXHIBITION HALL.



ALLOTMENTS MADE FOR THE ELEVATED PLATFORM.



WHERE THE BALCONY EXHIBITORS WILL BE LOCATED.



BASEMENT ASSIGNMENTS OF SPACE ARE WELL ARRANGED.

- Balcony.**
- 115. Witherbee Igniter Co.
 - 116. Joseph Dixon Crucible Co.
 - 117. Valentine & Company.
 - 118. Eastern Carbon Works.
 - 119. A. R. Mosler & Co.
 - 120. R. E. Hardy Co.
 - 121. F. H. Wheeler.
 - 122. O. W. Young.
 - 123. National Battery Co.
 - 124. The Edmunds & Jones Mfg. Co.
 - 125. The Gilbert Mfg. Co.
 - 126. The Uncas Specialty Co.
 - 127. Bethlehem Steel Co.
 - 128. Wm. Cramp & Sons.
 - 129. J. H. Sager Co.
 - 130. American Elec. Novelty & Mfg. Co.
 - 131. Adam Cook's Sons.
 - 132. Carpenter Steel Co.
 - 133. The Republic Rubber Co.
 - 134. Hotchkiss Mfg. Co.
 - 135. Gray-Hawley Mfg. Co.
 - 136. Weed Chain Tire Grip Co.
 - 137. Winchester Speedometer Co.
 - 138. The Lipman Mfg. Co.
 - 139. Vesta Accumulator Co.
 - 140. Spicer Universal Joint Mfg. Co.
 - 141. Auto Improvement Co.
 - 142. R. H. Smith Mfg. Co.
 - 143. Herz & Co.
 - 144. McCord & Co.
 - 145. Index Speed Indicator Co.
 - 146. Holley Bros. Co.
 - 147. Gabriel Horn Mfg. Co.
 - 148. Consolidated Rubber Tire Co.
 - 149. Wm. C. Robinson & Son Co.
 - 150. Standard Roller Bearing Co.
 - 151. Noera Mfg. Co.
 - 180. The Randall-Falchnev Co.
 - 181. Isaac G. Johnson & Co.
 - 182. Acetyvone Company.
 - 183. J. S. Bretz Company.
 - 184. Voorhees Rubber Mfg. Co.
 - 185. Manhattan Screw & Stamp- ing Works.
 - 186. The Westinghouse Machine Co.
 - 187. Breeze Carbureter Co.

- 188. Rushmore Dynamo Works.
- 190. English & Mersick Company.
- 192. Thos. Prosser & Son.

Concert Hall.

- 152. Sprague Umbrella Co.
- 153. Auto Accessories Mfg. Co.
- 154. American & British Mfg. Co.
- 155. Indestructible Steel Wheel Co.
- 156. S. F. Bowser & Co., Inc.
- 157. Rands Mfg. Co.
- 158. Springfield Metal Body Co.
- 159. Wm. J. Duane Co.
- 160. Pantasote Co.
- 161. The Prest-O-Lite Co.
- 162. Ajax-Grieb Rubber Co.
- 163. The Sherwin-Williams Co.
- 164. C. Cowles & Co.
- 165. Motor Car Specialty Co.
- 166. Gemmer Mfg. Co.
- 167. Wray Pump & Register Co.
- 168. Aurora Automatic Machinery Co.
- 169. Diamond Chain & Mfg. Co.
- 170. C. T. Ham Mfg. Co.
- 171. The Hoffecker Co.
- 172. Avery Portable Lighting C.
- 173. Stackpole Battery Co.
- 174. Electric Storage Battery Co.
- 175. Hancock Mfg. Co.
- 176. Muncie Auto Parts Co.
- 177. L. C. Chase & Co.
- 178. Coes Wrench Co.
- 179. Conn. Telephone & Electric Co.

Second Tier Boxes.

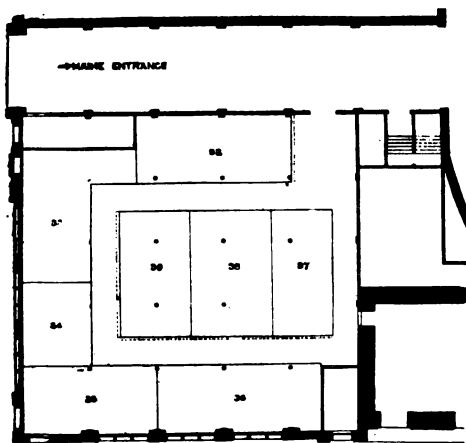
- 193. Chas. E. Miller.
- 194. The A. Z. Company.
- 195. H. A. Allers & Co.
- 196. E. M. Benford.
- 197. Traver Blowout Patch Co.
- 198. John W. Masury & Son.
- 200. Antioak Tire Company.
- 202. Delta Mfg. Co.
- 203. Igniter Appliance Co.
- 204. Watres Mfg. Co.
- 205. Jeffery-Dewitt Co.
- 206. C. A. Shaler Co.
- 207. Continental Caoutchouc Co.

- Basement.**
- 208. New York Sporting Goods Co.
 - 209. Michelin Tire Co.
 - 210. Merchant & Evans Co.
 - 211. Healy Leather Tire Co.
 - 212. Robert Boach, N. Y., Inc.
 - 213. Havoline Oil Co.
 - 214. Class Journal Co.
 - 215-A. Dow Tire Co.
 - 215-B. American Motor Co.
 - 215. Blue Ribbon Auto & Carriage Co.
 - 216. Amos Shirley.
 - 217. Manhattan Auto Top & Body Co.
 - 218. Gould Storage Battery Co.
 - 219. P. Rielly & Son.
 - 220. Lavalette & Co.
 - 221. Lavalette & Co.
 - 222. Pierson Motor Supply Co.
 - 223. Albert Champion Co.
 - 224. Columbia Lubricant Co. of New York.
 - 225. Auto Supply Mfg. Co.
 - 226. New Departure Mfg. Co.
 - 228. Troy Carriage Sun Shade Co.
 - 229. American Aluminum Coating Co.
 - 230. Ventilated Cushion & Spring Co.
 - 231. Glaenzer & Co.
 - 232. L. J. Muttly Co.
 - 233. Charles J. Downing.
 - 234. The Kalb & Berger Mfg. Co.
 - 236. Leon Mann.
 - 237. Hendees Mfg. Co.
 - 238. Bicycling World Co.
 - 239. Reliance Motor Cycle Co.
 - 240. G. H. Curtiss Mfg. Co.
 - 241. Light Mfg. Fdy. Co., Motor- cycle Dept.
 - 242. Thomas Auto-Bi Co.
 - 243. Pope Mfg. Co.
 - 244. Reading Standard Co.
 - 245. Ovington Motor Co.
 - 246. Brown Mfg. Co.
 - 247. N. S. U. Cycle & Motor Co.
 - 248. Excelsior Motor & Mfg. Co.
 - 249. Armac Motor Co.
 - 250. Consolidated Mfg. Co.
 - 251. Merkel Motor Co.

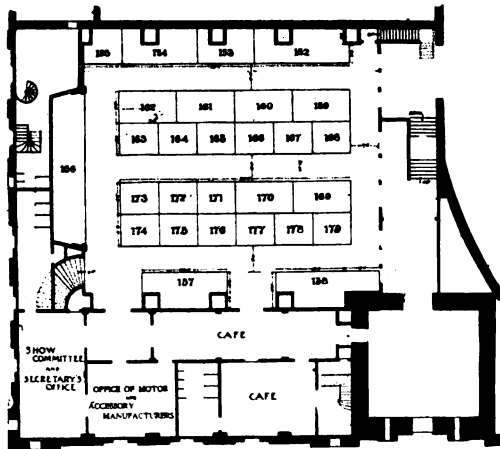
- 252. Automobile Topics.
- 253. Livingston Radiator Co.
- 254. National Oil Pump & Tank Co.
- 255. S. Smith & Son, Ltd.
- 256. A. W. Harris Oil Co.
- 257. Hopewell Bros.
- 258. Motor.
- 259. John T. Stanley.
- 259-A. Motor Print Co.
- 260-A. New England Automobile Journal.
- 260. Standard Brake Co.
- 261. Trade Advertising & Pub. Co.
- 262. Vacuum Oil Co.
- 263. Julius King Optical Co.
- 264. Patterson, Gottfried & Hunter, Ltd.
- 265. Empire Auto Tire Co.
- 266. Horseless Age.
- 267. Briscoe Mfg. Co.
- 268. Helnze Electrical Co.
- 269. Hicks Speed Indicator Co.
- 270. Comstock Shock Absorber Co.
- 271. Motz Clincher Tire Co.
- 272. The Post & Lester Co.
- 273. Norton Company.
- 274. Newmastic Tire Co.

Third Tier Boxes.

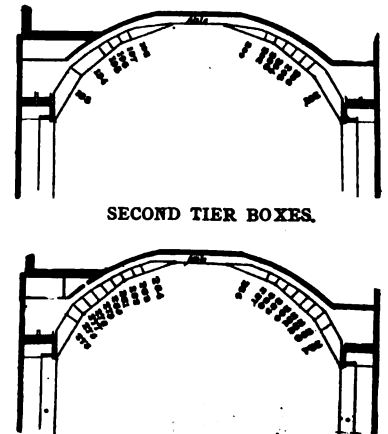
- 275. Kitasee Storage Battery Co.
- 276. Peerless Igniter Mfg. Co.
- 278. Allen Auto Spec. Co.
- 279. The Turner Brass Works.
- 280. Geisler Bros.
- 281. Ed. Dubied & Co.
- 282. Tavernier & Quezin.
- 283.
- 284.
- 286. Automobile Utilities Co.
- 287. Aluminum Solder & Refining Co.
- 288. Norris Auto Co.
- 289. Victor Shock Absorber Co.
- 290. The Atlantic Refining Co.
- 291. Loring Auto Appliance Co.
- 292. Empire State Tire Co.
- 293. Clover Mfg. Co.
- 294. The Perfection Spring Co.
- 295.
- 296.
- 297.



EXHIBITION HALL FOR ELECTRICS.



CONCERT HALL DEVOTED TO SUNDRIES.



THIRD TIER BOXES.

SCIENTIFIC TIMING OF AUTOMOBILE RACES*

By ALDEN L. McMURTRY.

IN a race having two or more competitors accuracy of timing is not of prime importance, unless a record is established, for the contest is won on place and not on time, and place is easily determined by the eye of the judges without regard to the timing system. There is room for error, however, even in placing the finishers in a close race between half a dozen or more contestants. But it is in record-breaking attempts and in hill-climbing trials, which are decided solely upon time, that scientific accuracy is required.

The watches called for by the racing rules and generally used for timing automobile events and horse races cannot indicate any divisions of time shorter than one-fifth of a second. This interval is much too long for the purpose, as a race can be won or lost or a record broken by a smaller period of time. The present mile record, made in January, 1906, on the Ormond-Daytona course, is 28 1-5 seconds. This represents an average speed of more than 187 feet a second. At such tremendous speed, a car travels very close to 37 1-2 feet in one-fifth of a second, or fully 2 1-2 car lengths. Now, if two cars were coming down the beach together in a competition trial so great a difference as this would be apparent to the judges and timers, and the second car would be timed at 28 2-5, but if the same cars made separate trials against time they might be tied at 28 1-5 seconds.

But most watches are not accurate even to one-fifth of a second; the movement has not a continuous, progressive motion, but the escapement wheel revolves by a succession of starts and stops, making two stops for each beat of the balance, just as some large tower clocks count off the minutes by the abrupt passage of the minute-hand from one mark to the next. If the stem of the stop-watch were pressed immediately after the escapement wheel had moved the time would be caught correctly, but should the stop not be pressed until the balance had almost completed its swing to release the wheel for the next stop, nearly a fifth of a second would be lost, and a car that had actually covered the mile in, say, 28 19-100 seconds might be caught in 28 flat.

Inaccuracies in Human Timing and Signaling.

Besides this factor of inaccuracy, or mechanical inadequacy, in the stop-watch, there is the human element to be taken into account. This may introduce a serious error, according to conditions. Some men are more adept at operating the stop-watch than others, and some are alert and quick of movement, while others are sluggish, so that a measurable time may elapse between the instants that three timers will press the stops on their watches for a given car as it crosses the tape. Unless the men who hold the watches are very expert, there is probability of error in determining the instant that the front wheels actually cross the tape. The fact that the three watches rarely agree to the fifth of a second is evidence of the inaccuracy of the present method of timing. Optical illusion also enters into the problem sometimes, especially in very fast record trials. This usually occurs only in the amateur timer, and is eliminated after an hour's constant practice.

Further liability of error exists in the ordinary methods of signaling the start and finish of an event. This is usually done by the firing of a pistol or similar means. In the case of any manually-operated system, some time is consumed in the transmission to the brain of the impression received on the eye. This interval will vary with different persons, just as the period required by the timers to catch the impression of the signal and actuate the stop watches will differ. If the start and finish are both in sight, and the timers take the time by vision in each case, the error will be nearly constant and the time accurate.

*Extract from paper read before the Society of Automobile Engineers, Buffalo, N. Y., July, 1907.

It is particularly difficult to time hill-climbing contests by the old method when the start is not in sight from the finish line. When the dropping of handkerchiefs or flags by four or five men stationed at turns is depended upon to signal the instant of start from the base to the top, the element of human error is greatly magnified.

It should be evident from the foregoing that far greater accuracy is required in timing motor car events to obtain indisputable results than has prevailed heretofore. All claims for world's records made in this country are accepted with the greatest reluctance by the governing bodies in England and France, whose rules are much more exacting.

Next to the flight of a projectile, the speed of a racing automobile is the fastest terrestrial movement that we are called upon to measure with precision, yet in the one case instruments are used that determine the rate even to the 1-1000 part of a second, while in the other the only method that is officially recognized in America is the use of stop-watches that cannot measure time to less than the fifth part of a second.

Automatic Timing Machines and Their Development.

The inaccuracies and unsatisfactory nature of the timing of automobile events by stop-watches manually operated were recognized years ago in France and England. The Automobile Club of France offered a prize of 1,000 francs for the invention of a device that would satisfactorily time automobile events automatically. This prize was won by M. Mors, whose instrument was used in some of the earlier trials against time in this country. This consists in an adaptation of the recording chronometer as used in observatories, with means for automatically registering the passage of a car across the start and finish lines. The record is traced by a pen on a strip of paper that is unwound by clockwork. The record can be measured to the hundredth part of a second, and the personal equation is entirely eliminated.

It was in the same year that the automatic timing apparatus devised by the author was perfected, patent applications being filed in June, 1904. This complete apparatus has three distinct functions: First, to time the event by starting and stopping split-second watches and moving the pen of a registering chronometer; second, to signal the start and finish by firing a gun, and, third, to provide telephonic communication all along the course. The problems involved are many, as will be understood from the foregoing summary of various timing methods in use and from the following explanation of the McMurry system.

In order to present the matter more clearly, we will consider the telephone system and timing mechanism separately. The operator at the start is in communication with the operator at the finish and the man at each intermediate station during every instant of a race by means of the wires used also for operating the timing apparatus. Each operator is provided with a transmitter, attached to a metal breast-plate strapped around the neck, and a receiver, attached to spring-metal straps that fit over the head and hold the receiver to the ear. The transmitter is held in a movable bracket having a cam edge-contact plate, so that when the bell-shaped mouthpiece is pushed down away from the face the circuit is broken and cuts out the sound of the gong, so that the operator can hear anything said by the other men on the line. Spring plug sockets are screwed to the case of the timing apparatus, so that quick connection of the telephones with the wiring system can be made. Use of the wire for talking does not interfere with the operation of the timing mechanism on the same wires, as the telephones are provided with condensers which make this dual operation possible simultaneously. In addition to the operators' telephones, there is also a special

patrolman's telephone. This is a small, portable affair, hung from a shoulder strap. It consists of a case containing an induction coil, with a trembler and condenser and a combined receiver and transmitter. The trembler is used for calling by giving a loud buzz in the receivers all along the line. With this instrument and a coil of wire, the patrolman can make a quick dash

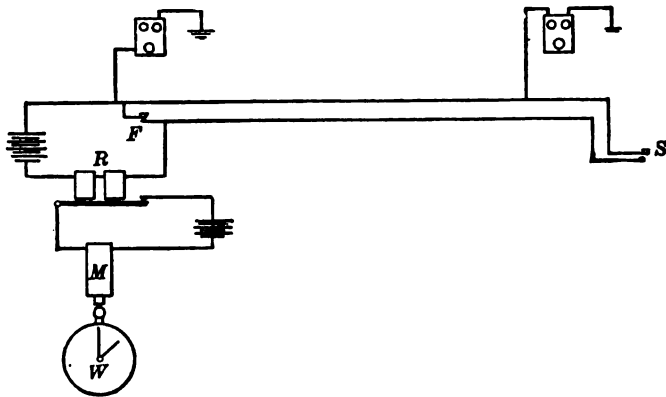


FIG. 3.—Wiring diagram of the open circuit.

on a motorcycle along the course to the scene of an accident or of trouble, throw one end of his wire over either line wire, stick the other end in the ground, and at once open communication with the operators at start and finish. There are believed to be only four of these instruments in the country, two of which are in use by the War Department.

How the Circuit Is Closed and the Time Indicated.

We may now proceed to a consideration of the means employed for closing the electric circuit when a car crosses the start and finish lines. Various methods have been tried. One of the earliest was employed at the record trials of the Automobile Club of America, on the Coney Island Boulevard, on November 16, 1901, when Henry Fournier established the world's mile record of 51 4-5 seconds. Here the closing of the electric circuit merely rang gongs, by the sound of which the timers started and stopped their watches. A rubber hose was laid across the course and connected with a diaphragm, so that when the air in the hose was compressed the pressure on the diaphragm would close the circuit. This proved unsuccessful, however, as it was found that the duration of compression as the wheels of a car passed over the hose was so short that the pressure communicated to the diaphragm was insufficient to close the circuit.

Finally, an automatic trap was devised that overcame all of these defects. The trap consists of a flat, rectangular box, to the top of which is secured a spring scales registering up to sixty pounds. To one end of the scales is attached a short chain that passes over a metal pulley, having a reduction of one-half, and is connected with a wire strung across the course. The scales are merely for the purpose of determining the tension of the wire, which is usually drawn to a tension of fifteen pounds, indicated as thirty on the scale. Mounted on the end of the shaft of the reducing pulley is a trigger arm that can be tightened on the shaft by a set screw after the trigger has been set. Engaging with the lower end of this trigger arm is a spring-actuated lever that, when released, makes contact with a stationary contact post, and so closes the circuit to start the watches of the timing instrument. At the same time another lever is released that opens the circuit, after a given interval, by means of clockwork, so that the watches can be operated again when the first car reaches the first intermediate post or the finish.

We now come to the consideration of the actual time-indicating apparatus. In its complete form, as first used at the Florida beach meet in 1905, this was arranged to operate six split-second watches. A later form, used the following year, is built for only three watches, as the officials did not care for the intermediate

times and the racing rules call for only three time-pieces. The original apparatus was also provided with an extra relay for operating a registering chronometer, but this was not used the following year, owing to the expense involved and the fact that, notwithstanding the chronometer would have given more accurate and permanent records of the events, the watches would have to be used any way, as there is no provision in the racing rules that allows timing by any other means than watches.

The six watches were set in a row on the panel and secured rigidly in position with clamp screws, so that the watches could be started and stopped by a set of plungers called "sweeps," acting on the stems, and the split hands operated by a set of smaller plungers, called "splits," acting on the escapement knobs. By means of an automatic current-distributor, all six watches were started simultaneously when a car crossed the starting line. Then when it passed an intermediate station three of the splits were stopped to indicate the time for that distance. At the next intermediate point the second three splits were stopped and the first three reset, and so on automatically to the end of the event, when all six watches were stopped. Forward of each watch, below the panel, were magnets which, when energized, actuated the sweeps and splits. Above the panel were two relays for closing the circuits through the battery and distributor.

Besides the apparatus and attachments already described, the mechanism was provided with a third relay for use in connection with a gun mounted on a standard in the timing stand for automatically signaling the start and finish of the race. The gun was a repeating shotgun, which had the stock and muzzle sawed off. After it had been fired it was merely necessary to move the grip to eject the discharged shell and load a fresh shell into the breech. Magnets were attached so that when energized from the batteries, through the relay on the panel by the closing of the circuit through the automatic trap, the trigger was depressed and the gun discharged at the same instant that the watches were started. A switch was provided for each relay and for the distributor. In addition, a milli-ampere meter was secured to the panel, with a key to throw it in circuit, for determining the strength of the current at any time.

Merits of the Open Circuit and Loop Systems.

The wiring system of the timing apparatus is so arranged that by the movement of a single lever, operating several switches, the

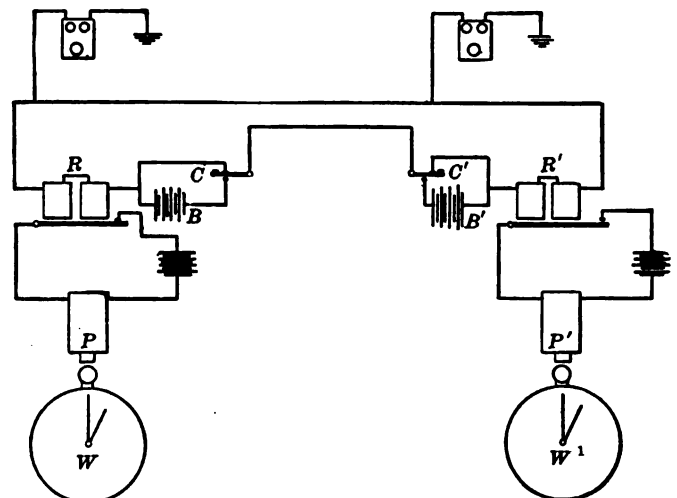


FIG. 4.—Loop system in the McMurtry apparatus.

system can be changed from the open circuit to the loop system. The open circuit is the simpler and cheaper, requiring batteries at only one point. A diagram of this system is shown in Fig. 3. The arrangement is the same as in an electric bell circuit having two push-buttons, a relay taking the place of the bell. When the circuit is closed at the start (S), the relay (R) is also closed and

the watch (*W*) is started through the action of a magnét (*M*) on the plunger. The same operation occurs when the circuit is closed at the finish (*F*), when the action of the relay stops the watch. So it is only necessary to close the circuit at any point to operate the watches. Against the simplicity of the open circuit are the manifest disadvantages that timing instruments can be used at only one end of the line, and that a crossing of the wires at any point will close the circuit and perhaps put the entire system out of operation.

In the loop system, shown in Fig. 4, the upper and lower contacts are used so that when both keys (*C* and *C'*) are up the two relays (*R R'*) are in the circuit. Upon pressing the key a line battery (*B* or *B'*) is inserted in the circuit, and this operates the plungers (*P* or *P'*) situated at start and finish, thereby operating the watches (*W W'*). With this system it is necessary to have a battery at each point where a telephone and timing key are to be placed. This is expensive and troublesome, but it has the advantage that as many instruments as desired can be used, and the line is protected against interference by outsiders or the accidental crossing of the wires, resulting in short-circuiting. By constructing the apparatus with the switch previously mentioned, it is possible to use either system as desired, without entailing any trouble in changing the wiring. There are condensers on the relays to prevent sparking, and external magnetism had to be guarded against to prevent magnetizing the watches.

An important feature of the apparatus is its portability. In Florida the instruments at times had to be taken up and transported twenty miles before the tide came up. The traps had to be changed frequently for races at varying distances, as from the kilometer to the mile, in the shortest time. One such change, including a run of 62-100 of a mile, was made in seven minutes. There is, of course, a lag in the mechanical operation of the

instruments, but this is a negligible quantity, since the lag at one end is balanced by that at the other. It has been determined by experimentation, for example, that there is a lag of 1-20 of a second in the series of operations, including the depressing of the wire attached to the trap, releasing the trigger, closing the circuit, the mechanical operation of the relay, closing the local watch circuit, operating the watch plungers and starting or stopping the watches. The firing of the gun is further delayed by the lag of closing the local circuit mechanical operation of the relays, closing the circuit to the gun, pulling the trigger and the consequent striking of the primer and explosion of the powder.

If the purpose of this paper has been fulfilled by showing that accurate timing of automobile events is necessary, and that it is possible to time them to the precision of the 1-100 part of a second by absolutely automatic electrical and mechanical means, whereby the personal equation and the shortcomings of the stop-watch are eliminated, the query will naturally arise: "If the apparatus can be operated successfully, why is such apparatus not generally used for timing important contests and record trials?" The sole reason why scientific timing does not prevail is because automobile racing is not on a sufficiently high plane of sportsmanship. The promoters of the meets are more interested in making them financially successful than in their scientific aspect, and will not pay the necessary cost of providing and operating the apparatus.

Credit for the successful operation of the automatic timing, as accomplished at various meets, is due mainly to Samuel M. Butler and J. C. Kerrison, who were officially appointed as timers, and to the efforts of A. L. Riker, Walter C. Baker and George L. Weiss, who replaced other timers, appointed because of their prominence in local affairs. Only the intelligent co-operation of these men has made accurate automatic timing possible.

THE DYNAMO FOR IGNITION WORK*

By R. U. SUTLIFFE.

THAT the dynamo will ultimately replace all other methods of electrical current generation for ignition purposes seems highly probable. The reasons which follow will, I trust, demonstrate that as a direct or indirect source of ignition current, its place in the ignition field is assured. Preëminently, the dynamo as a current generator is permanently self-contained and independent of outside assistance. Perhaps equally important is the fact that a dynamo may be readily designed to generate sufficient current for ignition work, while running at a speed of not over 1,100 r. p. m. It is therefore possible, in many cases, to start the engine direct from the dynamo, without the use of batteries, and thus upkeep expense is permanently eliminated. Furthermore, as is well understood, slow speed adds greatly to the life of bearings and moving parts and decreases the wear on the brushes and commutator.

For touch spark work, the dynamo may be used directly connected through the coil to the engine and will be found the most satisfactory method of ignition because of the higher voltage which it is possible to obtain before the circuit is closed. Owing to the requirements of a dynamo, it is advisable for jump spark work to supply the current to the coils from a storage battery. Without question, the current from an accumulator is best suited for a vibrating jump spark coil.

The dynamo is, for all practical purposes, the only method of keeping a storage battery in condition, and it will be found that one furnishing direct current at the proper voltage and amperage will be most satisfactory. Under any circumstances, a generator especially designed for the work it has to do is most recommended, and such a machine may be directly connected to the battery to be charged, without the intervention of a resistance of

any kind. A magneto will not charge a storage battery. The writer has found a surprisingly large percentage of cases where a small dynamo of the type referred to above is directly connected to a jump spark coil and used with absolutely satisfactory results, sometimes with the interposition of a lamp or two in parallel with the circuit. The reason why this is not always recommended is because of the fact that the condensers of some coils will not discharge against the inductance of the dynamo windings.

There has been some objection advanced against the dynamo for ignition work, as it is claimed they cannot, or have not, been satisfactorily driven. The output of a dynamo varies almost directly as its speed. It is therefore necessary on a variable speed engine to drive the dynamo with a speed governor, as a constant output is desirable. This can be and is accomplished in a number of successful ways, according to whether the dynamo is driven by belt, gear or friction. It takes but a trifle of power to actually drive the dynamo. Hence a very successful and reliable governor may be manufactured. The writer would state from personal observation that he has seen types of friction and belt-driven governors which would maintain the speed of the dynamo constant within a variation of 15 r. p. m. regardless of the speed of the engine. Inasmuch as there are about forty thousand mechanical generators driven by frictional governors on the market to-day, we hardly see how this method is other than practical. The dynamo for ignition work has been on the market over fourteen years. It has stood the test of time and of actual try-out in the field. Every indication points to the fact that the numerous advantages possessed by the dynamo over other forms of current generation for ignition work, both as regards efficiency, durability and economy, are such that it will eventually be universally used for work of this nature.

*Contributed by Dayton Electrical Manufacturing Company, Dayton, O.

INDIANAPOLIS TELLS OF COMMERCIAL VEHICLE PROGRESS

INDIANAPOLIS, IND., Oct. 4.—The large increase in the sale of pleasure cars in Indiana this year has been no greater in proportion than the sale of automobiles for commercial purposes. Dealers who have been watching for two years for a turn of the tide in interest in trucks and delivery wagons believe that it has come and that such vehicles will have a phenomenal sale next season. Until this year there were possibly twenty or twenty-three business automobiles in use in Indianapolis, with not more than fifteen or twenty throughout the State. In a single season the number has been more than doubled and sales are still being made in large numbers.

Heretofore inefficient drivers and cost of maintenance have been a drawback to the progress of business vehicles propelled by electricity or gasoline. But this season has been a campaign of education along these lines. Business men have been told that if they expected satisfactory service they must pick satisfactory drivers and pay them well. Where merchants have not cared to maintain private garages, public garages have sold them cars on a special maintenance contract, guaranteeing to keep their vehicles in service every day in the year at little more expense than the usual garage storage fee.

One of the most notable additions to the list of users has been the Adams Express Company, which has just spent almost \$40,000 in displacing horse-drawn service with electric delivery wagons of one and two-ton capacity. A private garage costing \$10,000 has been built and competent machinists and electricians placed in charge. The result has been satisfactory service at a cost small in proportion to the horse-drawn service.

Within a few days the Indianapolis Parcel Delivery Company, which makes a specialty of delivering small packages throughout the city, will place six delivery wagons in service, displacing practically all of their horse-drawn equipment. The N. A.

Moore Grocery Company and the Columbia Grocery Company, retail concerns, are the first of their kind in this city to use gasoline delivery wagons.

Another large concern to adopt modern delivery service is the Glossbrenner-Dodge Company. The Bartlett Trucking Company of Huntington have purchased three trucks, Goyert & Company of Greensburg two, and the Vincennes Automobile Company have bought one. The Fisher Automobile Company of this city has also purchased a large truck for its own use and the Atlas Engine Works has built a large gasoline two-ton truck for service around its plant.

The New York Store of this city has recently added a two-ton truck to its furniture department and is now negotiating for several delivery wagons for use in its general delivery work. For several years the company has used two electric delivery wagons that have given good service. Two automobiles were recently purchased by the local Police Department and they contemplate buying an automobile patrol wagon.

There has also been a noticeable increase in sales of automobiles intended to displace old stage lines. Frank Schwartz recently placed a twelve-passenger 20-horsepower 'bus in service between Seymour and Brownstown, and F. K. Beeson is running a twenty-two-passenger 'bus out of Connersville. Later on a 'bus line will be established between Greensburg and Clarksburg, displacing one of the oldest stage lines in Indiana.

It is probable that next season every dealer in the city will arrange for one or more commercial car agencies. Heretofore they have not handled them to any great extent, believing the time was not ripe. Practically all of the business this season has been handled by two or three concerns, who have been reaping a harvest and laying a foundation for the great expansion that is bound to come during the season of 1908.

OPPORTUNITIES IN AUTOMOBILE ENGINEERING

DURING the past year the writer has been in a position where his attention was called to the great number of young men, possessing more or less mechanical ability and engaging in various lines of work, who are desirous of getting into the mechanical branch of the automobile industry, says J. C. Austin in the *American Machinist*. Hardly a day passed that did not bring some applicant for a position as tracer, detailer or designer in the drafting department of a large automobile manufacturing concern. Of course, some of these were experienced in automobile work; but a great number were at the time, or recently had been, engaged in an entirely different field of mechanical work, but wanted, as many expressed it, "to get into the automobile line."

This is evident of the general inclination of young men to get into the rather attractive industry, where, as it appears to them, positions with "little work and much pay" may be had without very great effort. To be sure, many young men have worked from lowly beginnings to lucrative positions in the mechanical department of the automobile industry, but these "plums are picked" by men who began early in the race, before the existence of so much competition, and when the demand for men able to produce automobiles greatly exceeded the supply.

The automobile business sprang up as if by magic, and very few draftsmen and engineers had given this line of work much thought or attention. Those who had commanded good salaries, and in view of this fact many were drawn into the work. Automobile production presented an attractive field for capitalists, and numberless companies, offering as many positions, were formed. Up to the present time, or at least until very recently, this state

of affairs produced an abnormal demand for designers in this line of work. Now, however, the industry is settling itself upon a strictly commercial basis, where an employee to "make good" must be a producer; all who are not must fall by the wayside.

The writer does not wish to discourage any ambitious young man who is trying to get into, or is now doing, automobile work, for, for the fellow who is willing to work hard and long, there are many bright prospects ahead; but he does want to emphasize the fact that there is little encouragement to induce the average man, fairly well established in some other line of engineering work, to leave it and enter the automobile industry."

With their average speed of 23 knots, big liners burn 500 tons of coal every twenty-four hours; to achieve an increase of 10 per cent. or to get slightly in excess of 25 knots, it has been found necessary to consume 1,000 tons of coal in the same time. Of course, it is a matter of common knowledge that it does not pay, and the same thing is true of the automobile motor that is twice as large as it need be merely to gain an extra fraction of a mile an hour or simply to be big. It has been proven time and time again, and not a little to the chagrin of the owner of the large car on some occasions, that the light and low-powered car is not alone the equal of the high-powered and correspondingly high-priced cars in many respects, but actually their superior in some. In the A. A. A. tour of 1906 small machines got through where the most powerful cars failed. It is not alone a matter of power for weight; there is a limit beyond which the proportion no longer holds good.

LETTERS INTERESTING AND INSTRUCTIVE

FITTING LARGER CARBURETER TO A MOTOR.

Editor THE AUTOMOBILE:

[929.]—Inquiry No. 911 and your answer deal with a question that I have met. Please carry your answer to that inquiry enough farther to explain how one who has an engine that is intended for a one-inch carbureter can successfully attach to that engine a carbureter of larger size. For instance, if the pipes connecting the carbureter with the engine, and the inlet to the engine are constructed for a one-inch carbureter, can a larger one be successfully used without using correspondingly larger connections, and also correspondingly enlarging the inlet to the engine? My automobile was fitted by the manufacturer with a one-inch carbureter. Several manufacturers of carbureters with whom I have corresponded advise that engines having the bore and stroke which mine have require a 1 1/4 or 1 1/2 inch carbureter. At the same time, when I put to them the question above suggested to you, and ask if they will guarantee results if I replace the present one with one of their make and of the size which they recommend, they either do not answer the question or else sidestep it. TENDERFOOT.
Cambridge, O.

An extension of our reply to the letter referred to, as requested in your query, necessitates more data than was supplied by the inquirer in question. If the motor be a single-cylinder, with carbureter attached directly to the cylinder, procure a reducing joint to fit the new carbureter at one end and the inlet to the cylinder at the other. If a multi-cylinder engine, a new manifold may or may not be necessary. Even though a carbureter slightly too small for the motor may have been supplied in the first instance, the capacity of the manifold tubing may still be adequate for the larger size. Of course, the manifold should correspond with the output of the carbureter and be able to pass the volume of gas produced by the latter without difficulty, and without imparting too high a velocity to it as the result of a restricted passage, but it will doubtless often be found that the original manifold can be utilized in connection with a larger carbureter with satisfactory results merely by employing a reducing joint to bring the two together, as already described. If the capacity of the manifold be totally disproportionate to that of the new carbureter it should naturally be replaced, but this would not necessarily entail an enlargement of the inlet of the motor. It would doubtless be an advantage to make this change, but seldom advisable to do so merely for the sake of using a larger carbureter. The equipment of the latter with a new manifold, where really necessary, should give a maximum benefit with a minimum expense. When it comes to redesigning the motor itself, the game is hardly worth the candle, except to those with ample shop facilities and plenty of leisure in which to tinker.

HOW CAR MEASUREMENTS ARE TAKEN.

Editor THE AUTOMOBILE:

[930.]—Will you kindly inform me how the wheelbase of a car is measured? And also from what point is the tread measured? I have asked several here, and have had several different answers, but I should like to know the true measurements. I am really surprised at our own ignorance in this case.
Woodstock, Minn.

GEORGE MOLINE.

The wheelbase of a car is measured by taking the distance between the perpendiculars drawn through the hubs; in other words the point of contact between the wheel and the ground: literally the wheelbase. The tread is taken in exactly the same manner for the same reasons, for, the wheelbase being the distance longitudinally between the points at which the wheels rest on the ground, the tread is likewise the width of the car between these points when taken transversely. We find it difficult to conceive how such a query could elicit any other answer and are curious to learn the manner in which some of your informants would go about procuring these dimensions of a car.

SOME QUERIES ON NUMEROUS TOPICS.

Editor THE AUTOMOBILE:

[931.]—I find it necessary to call upon you again to set my mind at rest on some topics, on which I have been unable to obtain satisfactory information from other sources. I hope you will find it expedient to give your replies some space in "Letters Interesting and Instructive."

1. What is a high compression motor (expressed in pounds)?
2. Is it possible to increase compression (granted that valves are well ground) by any other method than by setting a plate in the clearance space in the cylinder head?
3. In a Packard "30," does the inlet close on dead center or before or after the suction stroke has been completed?
4. If the valve closes on dead center, would it help the speed of the motor to advance it a trifle to allow for the moment the piston is traveling over center?
5. In a Packard "30," where does the exhaust valve open? Is not most of the power already used after three-quarters of the stroke has been passed?
6. Will not speed be increased by giving a substantial exhaust lead?
7. Generally speaking, is a low compression or a high compression motor the faster?
8. Given a fast motor, is it not true that placing a plate in the cylinder head (without damaging the motor) will give more compression, giving more power to each impulse but less speed to the motor?
9. What are the gear ratios of the Pierce four-cylinder 28-32 and 40-45 on the high?
10. If a motor is synchronized with the magneto (as the Eiseemann on a Packard "30") does it actually advance the spark (in relation to the stroke) by causing the magneto rocker to move farther than it normally moves at full advance?
11. At which point of the armature revolution is the current used? In diagram 1 or diagram 2?
AL. EISEMANN.

New York.

1. Sixty pounds to the square inch is a pretty high average for the automobile motor, so that seventy pounds or over may be considered high, particularly as the practical limit is 90 to 100 pounds.
2. The plate may be attached to the piston, though this is not advisable owing to the disturbance of the balance resulting. The connecting rods may be made longer, or longer pistons may be used with the same connecting rods.
3. Usually a short time after the suction stroke has been completed is the general rule, and we believe will be found to apply to the Packard.
4. It would help the power more than the speed, as keeping the valve open so much longer insures the suction of a fuller charge.
5. Exhaust valves are usually set to open slightly in advance of the moment the piston reaches the lower limit of its stroke. This is termed its *lead*, and, as mentioned above, we think this answers your question regarding the Packard.
6. Within reasonable limits, and where not already allowed for, the speed should increase; but where the lead has already been properly calculated, increasing it further might prove detrimental rather than otherwise.
7. High compression always.
8. If properly done, it should produce more power and more speed, as the former cannot be had without the latter with the same engine dimensions. Power is always a function of the speed.
9. The 28-32-horsepower car is geared 3.3 to 1 with touring body and 3.53 to 1 with limousine body. The 40-45-horsepower car is geared 2.88 to 1, 3.06 to 1 and 3.26 to 1, the first being for touring bodies, the second for limousines and the third a special hill-climbing gear.
10. The spark is not advanced in relation to the stroke by mechanical means, but as the generator voltage and current increase with its speed, the spark is stronger and occurs somewhat earlier as the speed of the motor increases. In consequence, it is advanced more than is indicated by the

position of the regulating lever, or more than is possible with the latter.

11. At neither; these are both dead points. The current wave is utilized when the armature is half way between the points shown in your sketches—that is, when it has emerged half way from the space between the field poles into the polar gap. It would then be at an angle of about 45 degrees to the perpendicular.

Note.—The sketches are not reproduced here, as they simply show a magneto armature perfectly horizontal in one position, and vertical in the other.

FROM AN ENTHUSIASTIC TWO-CYCLE ADVOCATE.

Editor THE AUTOMOBILE:

[932.]—Thanks for your reply to my letter. One question more through your valued paper: In the two-cycle engine or any other kind of engine, if a portion of the incoming charge is not consumed, would it not make a smell at the exhaust? I have read this criticism very often, and I have been trying to find if my three-cylinder Elmore engine was consuming all the incoming gas, by smelling the exhaust. I find the exhaust absolutely odorless, and I have been led to believe, on this account, that the combustion was perfect. Am I correct?

Also, if the engine did not consume all the incoming charge, would it not affect the power of the engine? I know of no engine of the size of the Elmore that has as much power.

From my experience I have come to the conclusion that as soon as the buying public become familiar with the merits of the two-cycle engine, when properly made, as in the Elmore, that it will be just the reverse; and the dealers will have a hard job in trying to make them believe that a lot of useless parts to an engine, such as valves, cams, springs, etc., add to the efficiency, when same can be dispensed with, and at the same time all the trouble they give be avoided.

CHAS. J. CHABOT.

Dallas, Texas.

Any unconsumed fuel would be perceptible at the exhaust in the shape of an odor of half-burnt gasoline, provided it were present in more than minute quantities. While all right as far as it went, your test is not conclusive. The time to get down behind and smell the exhaust to see if the fuel is being properly burned is when the car is running—in other words, when the engine is loaded. With the throttle closed, so that but comparatively small charges are being drawn in, almost any engine will run without a perceptible odor at the exhaust, unless in extremely poor adjustment. You are quite correct in assuming that the combustion was perfect with the above modification.

It would affect the power of the engine, but if the latter has been calculated with a liberal factor of safety for the work to be done, as is doubtless the case with your car, this effect would never be noticeable. The designers of your car have taken this factor into consideration in making their calculations, so that the motor will develop all the power needed independently of this. It could only be shown definitely by putting the motor to brake test.

WHAT IS THE DEPRESSION OF PNEUMATIC TIRES?

Editor THE AUTOMOBILE:

[933.]—What would be the maximum give in pneumatic tires when a car is running at an average speed over country roads? Would it be about the same on runabouts, light, medium and the heaviest cars? If not, how much depression would there be upon the tires respectively under the various weights?

Am I correct in understanding that all pneumatic-tired automobiles do not give over half an inch? Some light on the above queries would be much appreciated, as parties I have broached the subject to have not been in a position to give any positive information concerning it.

CHARLES E. MALINGS.

Easthampton, Mass.

Even with the requisite data at hand it would be a difficult matter to answer your first question definitely, but as it stands it is not susceptible of an answer at all. These are a few of the facts that should be known: The size of the tire, the degree of inflation in pounds per square inch, the weight of the car, the speed at which it was traveling, and the average height of the depressions in the road surface. Then the question would require two answers, viz.: The constant give

or depression of the tire due to the weight of the car and its load, which would depend upon the degree of inflation and the speed of the car, and its temporary give on meeting obstacles, which would constitute such a variable quantity as only to be accurately ascertainable with the aid of a specially devised recording instrument attached to the wheel. The factor of weight would cover the different types of cars.

Your impression is entirely erroneous, but the opinion is more or less prevalent that a properly inflated pneumatic tire seldom yields more than half an inch, and it is one that would appear to simplify the problem of devising a practical spring wheel. But the facts are quite different. It must be borne in mind that in a pneumatic tire the wheel is held in equilibrium between the road and the tread of the tire. The total pressure, due to inflation, load and speed, is distributed *round the entire circumference*, and the great superiority of the pneumatic tire is due to the fact that this entire ring of compressed air is brought into action every time the tire meets an obstacle. Air is constantly being displaced, but the rapidity with which expansion follows compression makes the process imperceptible to the eye. This is where most spring-wheel inventors go astray, by merely providing for give at the point in contact with the road instead of all round the wheel. Despite its high degree of inflation, a four or five-inch pneumatic tire on a heavy car will give far more than half an inch when driven over an obstacle at speed; in fact, it will give to the extent of its diameter, so that the bump of the rim on the road is very perceptible to those in the car. Thus far, your first question may be answered definitely, in that the maximum give of a pneumatic tire under such conditions is only measured by the diameter of the tire. The rubber and air at the point of contact are compressed and re-expanded so rapidly that if it were not for the very tangible evidence of the rim striking the road the fact would not be known and, at all events, it could not be measured accurately by the unaided eye.

AMBIGUITIES OF GEARING TERMINOLOGY.

Editor THE AUTOMOBILE:

[934.]—Will you kindly explain in your columns just what is meant by "six pitch," with reference to gears? I always supposed the number referred to the teeth per inch, same as so many threads per inch in screws. All reference works which I have consulted speak of pitch as "the distance between centers of two teeth at the pitch line." I have frequently noticed in the description of sliding gear transmissions that the gears or pinions are spoken of as being "six pitch"; I have also noticed in catalogues of gears full size illustrations of "six pitch" gears, and these appear to be about the size of transmission gears, yet the distance between centers of two teeth at the pitch line is a trifle over 1-2 an inch, making less than two teeth per inch. If you can explain what the number "six" signifies you will greatly oblige me. Of course I have found other numbers used in this same connection, but they are just as meaningless to the best of my ability in learning the exact meaning.

Minneapolis, Minn.

O. A. WEISS.

Used in this connection, the word refers to diametral pitch, a term which serves to describe a pinion by giving the relation of its diameter to the number of teeth on its periphery. In other words, the number of teeth divided by the diameter equals diametral pitch, usually expressed by simply prefixing the numeral to the word pitch. For instance, a wheel of 12 inches diameter at the pitch circle, and having 72 teeth, would be a 6-pitch gear. But the word pitch is used in several ways in connection with gearing, and it is scarcely to be wondered at that its frequent recurrence with apparently totally different meanings should be confusing. Probably the best explanation of the various meanings is that given by Kent, as follows:

"If two cylinders with parallel axes are pressed together and one of them is rotated on its axis, it will drive the other by means of the friction between the surfaces. The cylinders may be considered as a pair of spur wheels with an infinite number of teeth. If actual teeth are formed upon the cylinders, making alternate elevations and depressions in the sur-

face, the distance between the axes remaining the same, we have a pair of gear wheels, which will drive one another by pressure upon the faces of the teeth, if the teeth be properly shaped. In making the teeth, the cylindrical surface may entirely disappear, but the position it occupied may still be considered as a cylindrical surface, which is called the 'pitch surface,' and its trace on the end of the wheel, or on a plane cutting the wheel at right angles to its axis, is called the 'pitch circle' or 'pitch line.' The diameter of the circle is called the 'pitch diameter,' and the distance from the face of one tooth to the face of the corresponding tooth on the same wheel, measured on an arc of the pitch circle, is called the 'pitch' of the tooth or the 'circular pitch.'"

DATA CONCERNING TIRE-FILLING COMPOUNDS.

Editor THE AUTOMOBILE:

[935.]—A year or more ago I had two tires filled with Newmastic tire filling, which was done in Chicago. A couple of weeks ago I ran a puncture in one of them and the filling crumbled and about two-thirds of it came out through the hole before I noticed it. I sent it back but they would not refill it, and I am left with a good tire on my hands which I cannot use. Now if I knew the composition of the filling, I could fill the tire and use it until it was used up, and also fill my remaining two tires. I do not want to use it commercially, but only for my own use. I have experimented with glue, glucose and glycerine, and can get a splendid article all but one thing, and that is, it will melt if left in the hot sun any length of time, while their filling will not melt even on a hot stove. They say in their little booklet that "the compound consists chiefly of glue, glucose, and glycerine," but I know there must be something else used that will not melt by heating it. I do not know if I am asking more than I ought, but as I am a laboring man, with no excess of money, I thought if I could learn the ingredients, together with the proper proportions, of something that would do the business properly, it would help me considerably, and at the same time be of no injury to any one else, inasmuch as they refuse to help me out in any way. I am a subscriber of yours, and get so many good things out of "The Automobile" that I could not refrain from writing you on the subject. ALVIN WALRATH.

Kalamazoo, Mich.

Just what this particular make of tire-filling compound consists of we cannot say, as every manufacturer of such substances has his own formula, which is a trade secret; but a composition which is said to be stable and serve the purpose excellently consists of glycerine and gelatinous silica or aluminum hydrate. This is more commonly known as water-glass, and is used in a liquid state in the proportion of three volumes of glycerine to one of water-glass. After mixing, the compound is further diluted with glycerine so as to be readily used. Granting that this is a good formula for the purpose, it is doubtful whether you can benefit by it, as such compounds are usually forced into the tires under considerable pressure and by special machinery. Then, again, it is necessary to extract all the old filling without damaging the tire, and probably the difficulty of doing this was the reason for the proprietors of the compound you mention refusing to treat your tire a second time. In fact, this is the great disadvantage of any tire-filling compound. Your tire may apparently be good, but doubtless it would not stand filling a second time and, though seemingly sound, has outlived its usefulness. Probably a new tire is your best remedy.

TAKING UP PLAY IN A LOOSE STEERING GEAR.

Editor THE AUTOMOBILE:

[936.]—My car is comparatively new, and has been taken care of properly, driven moderately and the like, so I think I may say it is in good condition. All adjustments were O. K. when taking it out of the garage a few days ago, but while travelling over a country road I suddenly felt the steering gear give in some way or other and was considerably alarmed, in view of the endless number of fatalities that are attributed to defects in this part of the car. On returning to the garage and examining the gear, I found that the steering wheel could be moved fully an inch in either direction before it had any effect on the front wheels.

I am aware that this is a condition that the majority of cars get into sooner or later, as can be proved readily to one's own satisfac-

tion by testing the wheels of a number of cars in any public garage. And I also know that if I take my car to such a place I will either be laughed at and told that such a thing needs no attention, or will incur a substantial bill of expense for something that I can doubtless do as well myself. At any rate, the job will be done more conscientiously, and certainly nothing on the car should be more carefully adjusted than the steering gear. The latter is what is known as the worm and sector type, and I would like to know how to go about adjusting it so as to take up this excessive backlash.

Greenport, Del.

STEERING GEAR.

As a car is running straight ahead for practically nine-tenths of the time it is under way, wear on the part of the steering gear is localized, so that after considerable service the parts of the worm and segment corresponding to a few degrees either side of the straight ahead position will be found to show wear, while the latter recedes very perceptibly toward each end, and at these points there is scarcely any apparent wear. Care must accordingly be exercised in adjusting such gear to take up lost motion by moving the worm and segment into closer contact; to see that they are not brought so close together at a worn point that they will bind when turned to a position at which there is still the original amount of metal. Herein lies the difficulty of properly adjusting an old steering gear, which has probably given rise to the indifference of the average repairman to such a defect. The driver of a car also becomes familiar with exactly how much further the steering wheel needs to be turned on this account to obtain the desired effect, and in consequence is scarcely aware of its presence.

Such conditions should not obtain on a comparatively new car, however, and it would appear that the adjustment of the segment-shaft bearings must be at fault. It is difficult to conceive how the gear could have given way to such an extent all at once otherwise, as wear at one point would only make itself perceptible gradually and after long service. We think a close examination of the gear will show that some adjustment has given or let up, and retightening it will remedy the difficulty.

CAN ALCOHOL BE USED IN STEAM CAR BURNERS?

Editor THE AUTOMOBILE:

[937.]—Can you inform me whether the burning of alcohol in any of its forms in steam vehicle burners is practicable? Also if there have been any experiments along such lines, and with what results?

EMMETT G. MURRAY.

Los Angeles, Cal.

There is no reason why alcohol could not be utilized for this purpose, as it is employed in various ways for heating. So far as we know, there have been no experiments of this kind undertaken, for the simple reason that up to the present the price of alcohol has not been such as to permit of its use as a fuel in competition with any of the substances now generally employed.

PASSENGER TON MILE DATA WANTED.

Editor THE AUTOMOBILE:

[938.]—Have you in your files any information regarding ton mile costs or passenger mile costs of motor cars using gasoline as fuel? Some time ago test runs were made under the jurisdiction of one of the automobile associations, to determine maximum mileage per gallon of fuel, and I thought you might direct me to the records made.

Any information you can give me, either as regards your own files, or other reliable source of information, on this subject will be greatly appreciated.

E. BROWER.

New York City.

The results of the two-gallon economy test, held under the auspices of the Automobile Club of America, were fully described in the issue of THE AUTOMOBILE of May 10, 1906.

To our knowledge there is no such data extant in this country, but a great deal of it has been compiled on the other side, and could doubtless be had on application to the secretary of the Royal Automobile Club, London, or the Automobile Club of France, Paris.

ONE WHO WORKED WITH MR. SELDEN.

THE AUTOMOBILE:

[939.]—In your September 26th issue a letter appears signed by Paul Lacroix, in which he endeavors to belittle the original Selden gasoline buggy.

Will you permit me, through your columns, to ask Paul Lacroix if he knew George B. Selden in 1877-78, and heard him at that time sit in his office and prophesy what has lately proven to be facts—that the automobile has almost displaced the horse in cities? He says: "Between such a car and even a mule, give me the mule." It is not a very gallant effusion, but it shows the tendency toward mulishness which Mr. Lacroix has shown with great fervor in his communication.

If we will but stop to consider that in 1877-78, when I saw George B. Selden's engine and knew the construction he was endeavoring to bring forth, which was before any such thing as a gasoline-driven automobile had ever been tried, we will wonder that Mr. Selden could possibly invent a car which would move at all. The writer superintended the mounting of this engine, which was partly built in 1877-78, and, even now, I will acknowledge that I am not only pleased but gratified to know that a car invented at that time shows as good results as it does.

That Mr. Selden is a bright genius has been proven many times, and many men have accorded him the compliment of being a very uncommonly bright man. Mr. Selden is a personal friend of mine, and I cannot resist taking up the cudgels in his behalf. Between the mule (P. L.) and the car, give me the car.

Perhaps Mr. Lacroix expected to prove a racing car was a touring car with immense power, but I dare presume to say that Paul Lacroix did not even notice that there is no carbureter in same, instead of which the gasoline is pumped into the combustion chamber. We all, both great and small automobile manufacturers, should take our hats off to George B. Selden.

Miamisburg, Ohio.

O. B. HATFIELD, SR.

WHO WILL EMPLOY THIS AUTO SALESWOMAN?

Editor THE AUTOMOBILE:

[940.]—As a subscriber of your valuable magazine, I take the liberty of writing you a few lines. I am a young woman of education, good talker, fine saleswoman, who, having taken up the automobile trade, wish a place with some factory or firm, as chauffeur, or demonstrator, or will take a place in a public garage. I can do repair work; in fact, I worked side by side in the shop with the boys, and can get under a machine same as a man. I am willing to go any place on the globe to work, as soon as I can obtain a position in automobile work. I have tried to obtain work here in Chicago, but, so far, have been unsuccessful. Why is it that I should be discriminated against, simply because I am a woman? I am energetic, ambitious and more than willing to work, only wanting a chance to prove my ability and make good. I was in hopes I could get a chance to drive a car from here to Los Angeles, Cal. I know the trip would be full of hardships and an expensive one, but thought I could make it more than pay by stopping at principal places en route and selling cars, which I am sure I could do. I have a number of advertising schemes which I am sure would be of benefit to my employers if given a chance. They might as well take me into the game, first as last, because I have come to stay! I never give up anything I once undertake, and am not afraid of hard work; so hope to succeed in time. Now that I have explained myself, do you know of any firm or factory who would employ a real live one? I can furnish excellent references. I am going to try the West if I cannot get a position here in the East. Hoping you will pardon this lengthy letter, and may know of something favorable for me, I remain,

541 Wabash avenue, Chicago.

KATHRYN LOCKWOOD.

WANTED—SPECIAL CAR FOR THE SOUTH.

Editor THE AUTOMOBILE:

[941.]—If the Ford Motor Company could be induced to make a runabout with a 60-inch tread (the standard gauge in the South), I personally know of at least twenty-five people that would purchase a car. I have been unable to prevail on them to make a car of this gauge, and if you can furnish me with the name of some other dealers who are turning out a cheap, high-powered runabout that will make a car with 60-inch tread, something to successfully compete with the Ford, I will greatly appreciate the information, as I desire to secure the agency so as to handle the car.

The manufacturer who will put a first-class cheap car with "Southern standard gauge" on the market that can be used on other than hard roads will certainly greatly increase his sales. The roads are very good for a 60-inch car, as the sand is only a couple of inches deep, and the car can be placed in the wagon ruts and they run nicely with very much less gas than when driver is straddling the ruts with his 56-inch car.

Tallahassee, Fla.

T. A. AUSLEY.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
- Oct. 26.....—New Haven, Conn., Second Regiment Armory, Third Annual Automobile Show, New Haven Business Men's Association.
- Nov. 2-9.....—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
- Nov. 9-16.....—Philadelphia, First Regt. Armory, Automobile Show, Philadelphia Automobile Trade Association.
- Nov. 16-23.....—Baltimore, Third Annual Automobile Exhibition, Automobile Dealers' Association. B. R. Johnson, manager, Piper Building.
- Nov. 29-Dec. 6..—Chicago, Casino Garden, Second Annual Auto Parts Show. A. M. Andrews, secretary, 184 La Salle street.
- Nov. 30-Dec. 7..—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. ----.....—Detroit, Riverview Park Auditorium, Detroit Automobile Dealers' Association. (Exact date to be announced.)
- Dec. 14-21.....—St. Louis, Mo., New Coliseum, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
- Dec. 28-Jan. 4..—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.
- Feb. 3-8, '08....—Buffalo, Convention Hall, First Annual Power Boat and Sportsmen's Show, auspices of Buffalo Launch Club. Dai H. Lewis, manager, 760 Main street, Buffalo, N. Y.
- Feb. 20-Mar. 7..—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsmen's Show.
- Mar. ----.....—Boston, Mechanics' Building and Horticultural Hall, Boston Automobile Dealers' Association. (Exact date to be announced.)
- Mar. 9-14.....—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dai H Lewis, manager.
- Mar. 21-28.....—Toronto, Canada, St. Lawrence Arena, Automobile Show. R. M. Jaffray, manager.
- Apr. 5-12.....—Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Races, Hill-Climbs, Etc.

- Oct. 18.....—Harrisburg, Pa., Middletown Track, Race Meet, Motor Club of Harrisburg.
- Oct. 19.....—Hartford, Conn., Charter Oak Park, Gymkhana Sports, Automobile Club of Hartford.
- Oct. 19.....—Kansas City, Mo., Kansas City Jockey Club Track, Race Meet, Automobile Club of Kansas City.
- Oct. 21.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

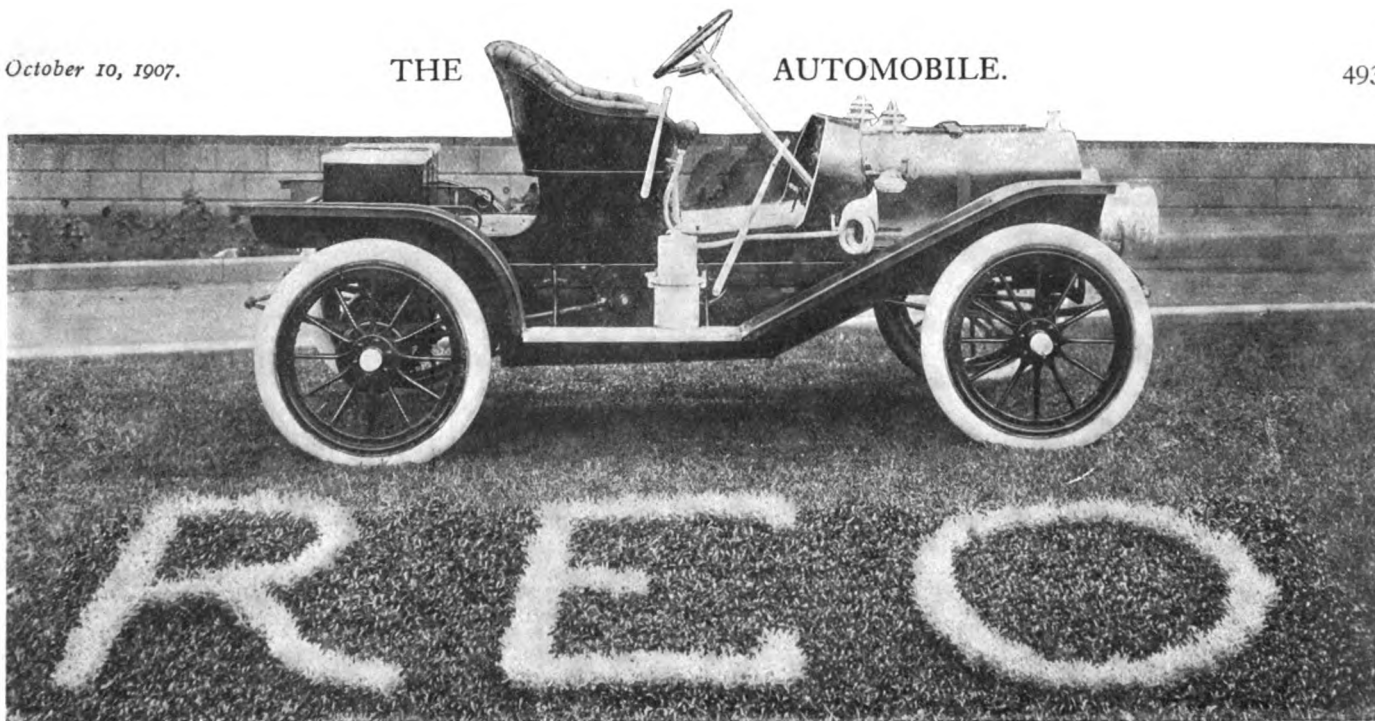
FOREIGN.

Shows.

- Nov. 11-23.....—London, Olympia Motor Show.
- Nov. 12-Dec. 1..—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
- Nov. 22-30.....—London, Agricultural Hall, Stanley Show.
- Dec. 5-22.....—Berlin, Germany, Automobile Show.
- Jan. 18-Feb. 2, '08.—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.

Races, Hill-Climbs, Etc.

- Oct. 1-15.....—Paris Electric Vehicle Competition, A. C. F.
- Oct. 20.....—France, Gaillon Hill Climb.
- Nov. 1-15.....—France, Volturette Contest near Paris.
- May 16, 1908....—Sicily, Targo Florio, Automobile Club of Italy.
- June 20-July 5..—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
- July 14, 1908...—Paris to London, Aerial Race.
- August, 1908...—France, Coupe de la Presse, Automobile Club of France. (Exact date to be announced.)



1908 REO ROADSTER, 18-20-HORSEPOWER, THE NEW LEADER OF THE REO LINE.

IN holding back the details of its new models for 1908 until just preliminary to the opening of the New York show season, it is quite evident from a perusal of the specifications of the new cars, as well as from their greatly improved appearance, that the builders of the Reo have been actuated by motives other than secrecy. In other words, they have had a great deal to uncover, for the new Reos represent a fitting advance over their predecessors in many ways. The line will consist chiefly of three models—the Model A, two-cylinder 18-20 horsepower, five-passenger touring car; Model B, 10-horsepower, single-cylinder run-about, and the Model C, 18-20-horsepower roadster, this last forming a most attractive addition to the line of two-cylinder cars now on the market, as will be quite evident from the accompanying photograph of it. It is not to be inferred from the fact that changes have been made that these are in any way of a radical nature, as such is not the case, the cars being the same in practically all their essentials as they have been since originally brought out.

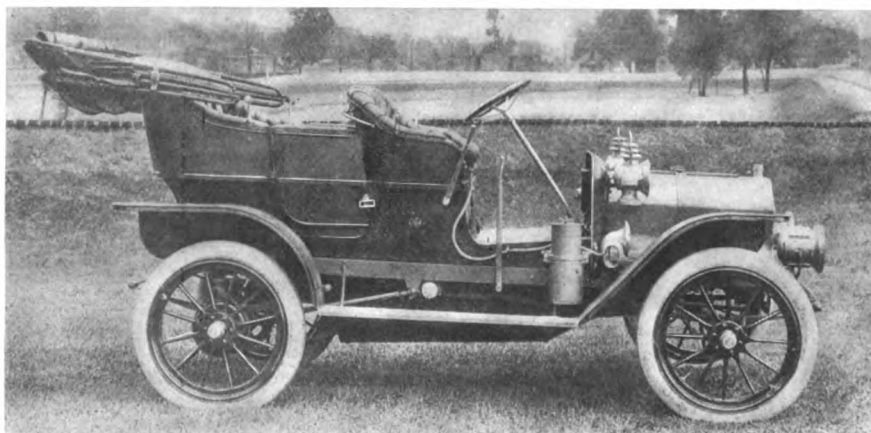
More room, more power and quieter running have been the aims of the designers throughout, and as a result the body of the touring car has been enlarged, the motor has been made more powerful, though still retaining all its distinctive features, and the gear-set has been made quieter running than ever, which is also true of the motor itself. The diameter of the wheels has been increased from 30 to 32 inches, and they will be equipped with 3 1-2-inch Michelin tires on Goodyear detachable rims, instead of the 30 by 3-inch standard equipment hitherto employed. This gives the car one inch more clearance and insures much easier riding and longer life to the tires, besides greatly improving the appearance of the car. In addition to the foot accelerator for the throttle, which has always been a feature of the Reo, an effective spark and throttle control is now placed over the steer-

ing wheel, affording all the convenience only to be found in very much higher-priced cars. The muffler, which is fitted with a cut-out, is no longer visible, having been located transversely at the rear of the car and over the axle. An improved style of fenders has been adopted, having liberal-sized flanges and aprons which afford complete protection for both the car and the hood. On the motor itself, a new and improved timer having roller contacts has been adopted, thus insuring better service from this essential, with greater durability.

Safe as the brakes fitted on the 1907 Reo proved themselves on the long and steep hills encountered in the A. A. A. tour, the braking system has been improved by the addition of an emergency rear wheel brake with improved brake lever, fitted in an outside quadrant ratchet with hand release. The driving mechanism has also been improved by the adoption of a noiseless chain, while the rear axle driving-shafts are now made with tapered ends for the reception of the wheels, which are locked on by keys and nuts, thus insuring positive reliability in this highly-important essential.

As the Model C roadster is being listed at \$1,000, it is evident that this will be considered as the leader of the Reo line and a review of its specifications will be of interest. The frame is of usual channel-section, pressed steel, supported on semi-elliptic springs forward and full-elliptics in the rear, the running gear consisting of 32 by 3 1-2-inch artillery wheels. As already mentioned, the latter will be fitted with 3 1-2-inch Michelin tires on

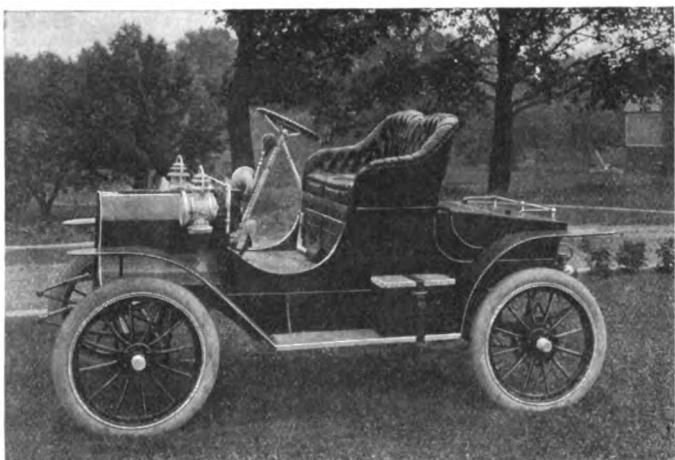
Goodyear detachable rims, this equipment being standard for both the touring and roadster types. The motor is of the twin-cylinder, horizontal-opposed type, the cylinder dimensions being 4 3-4 by 6 inches, bore and stroke, respectively, with a conservative rating of 18-20 horsepower at a moderate normal speed, which is made possible by the long stroke, the latter in turn only being made



REO FIVE-PASSENGER TOURING CAR, 18-20-HORSEPOWER.

possible on account of the location of the engine on the chassis. The cooling system consists of a tubular radiator supplied by a gear-driven pump. The valves are all mechanically operated and the moving parts fully protected. The carbureter is a special Reo design, while the ignition is of the high-tension type, using dry cells as the source of current. Lubrication is automatic.

As the first step in the transmission of the power, a multiple disc type of clutch is employed between the motor and the planetary gear. The latter provides the usual two speeds forward and reverse, final drive being by single chain, the differential being mounted on the rear axle. Three brakes are provided, all of them double-acting, the running brake being located in the driving sprocket, while the other two are in special drums on the rear wheels. The steering gear is of the worm and segment type and reversible. The car has a large running radius, as the fuel tank has a capacity of twelve gallons of gasoline; but four gallons of water are needed for cooling. The passenger capacity is two under ordinary circumstances, with a special folding seat in the rear, accommodating two more, and making it practically a four-passenger car. The equipment consists of three oil lamps, two Gray & Davis gas lamps, with B. & L. mirror lenses, generator, horn and complete tool and tire outfit. In complete running order its speed range is up to 45 miles an



FOUR-PASSENGER, 10-HORSEPOWER REO RUNABOUT.

hour. With a special top it lists at \$1,040, or the top separately may be had at \$50.

The remaining member of the Reo line is the popular single-cylinder runabout with its 10-horsepower motor, which has shown itself capable of performances entirely out of proportion to its size.

With some exceptions, its specifications are identical with those of the larger cars, in spite of its low price, \$650. For instance, the foundation of the chassis consists of an angle steel frame, while the suspension is three-quarter elliptic in front and full elliptic in the rear. Tubular roller bearing axles are fitted, the running gear consisting of 28 by 3-inch wheels, which will also be fitted with Michelin tires. Except that it consists of but a single-cylinder instead of two, the power plant is an exact replica of those employed on the larger cars and calls for no further description. This also applies to the transmission throughout, from the multiple disc clutch back to the driving axle. The gasoline capacity is six gallons and the car is capable of doing 15 to 25 miles on a gallon of fuel. Complete with folding seat, giving it a capacity of four passengers and with the usual equipments of lamps and tools, it lists at \$650 complete, and the continued popularity this small car has enjoyed during the past two or three years is ample evidence that the one-lunger of popular parlance has a place all its own and will be as much in evidence during the season of 1908 as it has been at any time since it was first superseded by the multi-cylinder models, with their high-powered engines and heavy bodies, which tend to make tire maintenance excessive.

SOUTHWEST ENTERS MANUFACTURING FIELD.

For the season of 1908, Texas will be a factor in the American manufacturing field. The newcomer hails from Houston, Tex., and will be known as the "Dixie Flyer." It is the product of the Southern Motor Car Company of that city, and the concern plans to assemble about 30 cars during the remainder of the present year, in order to fill orders already in hand, and expects to have an output of about 150 cars during the coming year. The company will devote its attention to a 25-30-horsepower, four-cylinder water-cooled chassis, and will supply it either as a touring car or runabout. The wheelbase will be 102 inches, the running gear of the roadster being 32 by 3 1-2 inches, and 30 by 3 1-2 inches on the touring car. The power plant will consist of the Reeves Model H, water-cooled motor, coupled to a Hassler transmission, as built by the Marion Motor Car Company, Indianapolis, Ind. Contracts have been entered into with other well-known makers of standard parts, and during the first part of its career this pioneer manufacturing concern of the Southwest will confine its attention to assembling, merely building the hoods, bodies and fenders in the home factory. Plans are also made to include a six-cylinder model in the line, and its details will be announced later. The model cars shown by the concern have met with a very favorable reception, and the outlook for an excellent business during the coming year is very bright.

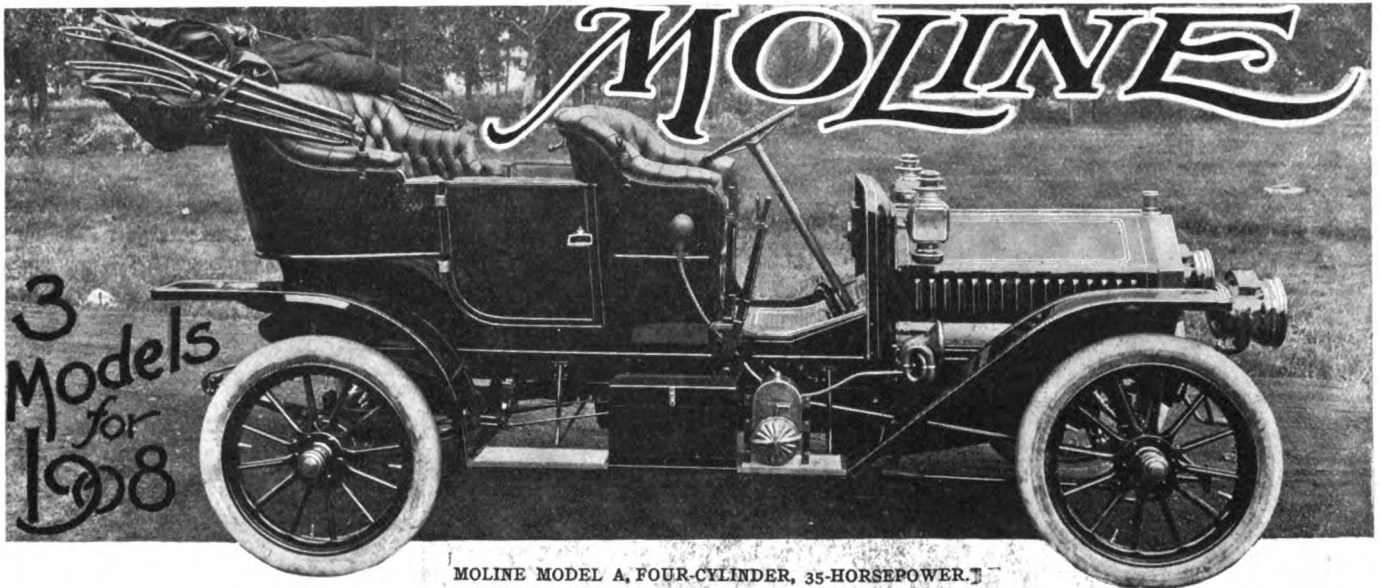
INDICATING THE FARMERS' AUTO INTEREST.

Next to the State Fair held at Columbus, the Wood County Fair held at Bowling Green is said to be the most widely known fair in the State of Ohio, although it is held in a rural district. T. F. McManus is a regular visitor to the fair and drove there this year in a Wayne "Thirty." On entering the carriage gate he was surprised at the number of cars, for there were almost as many autos as there were carriages, notwithstanding the fact that the crowded attendance consisted mainly of farmers. It was found on investigation that the same state of affairs existed at the other gate. The display of automobiles so excited the curiosity of the party from Toledo that the secretary of the fair was appealed to for figures, and it was found that up to that time 616 machines had been registered, which represented about half the total number that actually attended, as about that proportion failed to register. Turning back, the secretary showed that three years ago exactly three automobiles were registered. Pursuing the subject further, Mr. McManus was curious to learn if the majority of auto parties were not from the cities, such as Toledo, Cleveland and Columbus, but was informed that the proportion of urban machines was very small and that the majority belonged to dwellers in the rural districts.

A DETROITER'S PREDICTION FOR NEXT SEASON.

Charles L. Palms, chairman of the board of directors of the Wayne Automobile Company, Detroit, Mich., says:

"My belief in the statement that next season will be the brightest in the history of the automobile industry is based upon the fact that from a mere trailer and pupil of the foreign nations, the United States has at last come to be the greatest manufacturer and producer of automobiles in the world. From an output of 314 machines in 1902, this country has increased its operations till in the year 1906 over 60,000 machines were produced; 1907 is going to exceed that number, and 1908, according to my opinion, is going to exceed both. When the United States were turning out 314 machines, France manufactured 24,000 in the same length of time. In 1906, France manufactured 55,000 machines, or 5,000 less than did the United States. Not only has this country jumped into the leadership in output, but foreigners are coming here in a steady stream to get ideas and suggestions to improve the cars of foreign make."



MOLINE MODEL A, FOUR-CYLINDER, 35-HORSEPOWER.]

A PART from those minor detailed changes which are the result of changed conditions, or have been suggested by experience in the handling of a number of cars, the Moline line for 1908 will be practically a replica of the cars of the same make during the present year. The latter has proven so eminently satisfactory in every way that the designers have come to the sensible conclusion to let well enough alone. On the four-cylinder models there are a few changes in the appearance of the car, the most noticeable being those in the new form of radiator and hood adopted. For several years the Moline cars have carried a distinguishing feature in this essential, made after a design original with the builders. It was so arranged as to slide forward to uncover the motor, the construction being such that the radiator was entirely covered by the hood instead of standing out in front of it. For 1908 this feature has been discontinued and a standard type of folding hood adopted in its place, this also necessitating the employment of a different shape of radiator in order to conform to the lines of the former.

Another change in the cars comprising this part of the line consists of the adoption of a new style of mudguards or fenders, which are flat instead of flaring, and are so attached that there are no brackets or bolts of any sort on the under side that might come in contact with the tires. They are also provided with a drop on the inside to protect the body and the hood. They are finished the same as the remainder of the car and serve to make a decided improvement in its appearance as a whole. The mechanical side of the car has come in for as much attention as its appearance, and as a result there have been made a number of minor changes in the motor itself, which in themselves, however, are of such small consequence as to be scarcely perceptible to the Moline owner, but which in the aggregate serve to make the motor more powerful, durable and quiet running.

During the past year the two-cylinder model of the Moline met with unprecedented success and has been continued in exactly the same form and the same price for 1908 as has prevailed during the present year. The

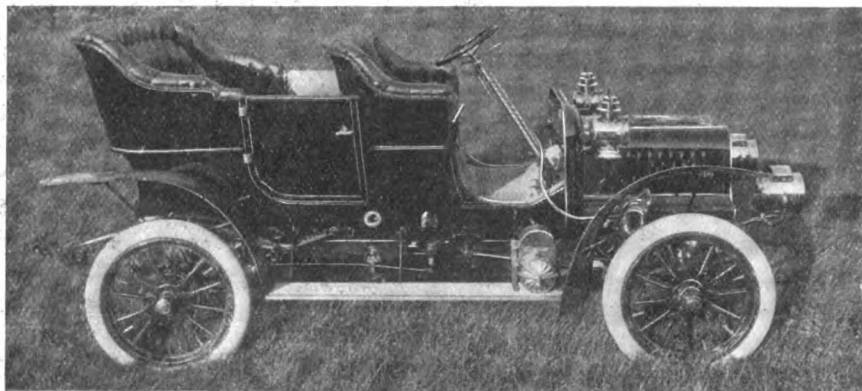
motor with which this car is equipped embodies numerous distinctive features, and it is exceedingly well built throughout after a design that experience extending over several years and with a large number of cars has proven to be correct. It has ample power for its weight, easy riding springs and a well-proportioned body, which doubtless accounts for the excellent service it renders as well as its great popularity.

The four-cylinder cars are known as Model A and Model S. The latter is the smaller of the two and is equipped with a 24-horsepower, four-cylinder vertical motor, the cylinders being cast in pairs and measuring 3 7-8 by 4 1-2 inches. A three-speed sliding gear set is employed, and final drive is by shaft, the counter-shaft of the transmission being idle on the direct drive. It has a 100-inch wheelbase and 32 by 3 1-2-inch tires, front and rear. The suspension consists of a 31-inch semi-elliptic spring placed transversely forward, and two 42-inch full elliptics in the rear, using scroll heads. With the usual equipment, this car lists at \$2,000.

Model A is equipped with a four-cylinder vertical motor having a 4 1-2-inch bore by 5-inch stroke and conservatively rated at 35 horsepower, with a gear-set similar to that employed on the smaller car. The wheelbase of this larger model is 110 inches and 34 by 4 inch tires are used all round. Its remaining features are similar in the main to those of the 24-horsepower chassis. In complete running order it lists at \$2,500.

The Moline Model H completes the line. This is the double-cylinder horizontal opposed type, the motor measuring 5 by 5 inches and being rated at 18 horsepower. The gear-set is of the planetary type, providing two speeds forward and reverse, and is equipped with nickel-steel pinions running in oil. The

car has a 92-inch wheelbase and 30 by 3 1-2-inch tires are fitted on all four wheels. The suspension and other features are similar to the other cars, and the same high-grade materials and workmanship employed on the more expensive cars are also used in the building and fitting of the two-cylinder model listing at \$1,250.



TWO-CYLINDER 18-HORSEPOWER MOLINE MODEL H.



DESIGNER MOOERS PILOTING THE 1908 MOON ROADSTER.

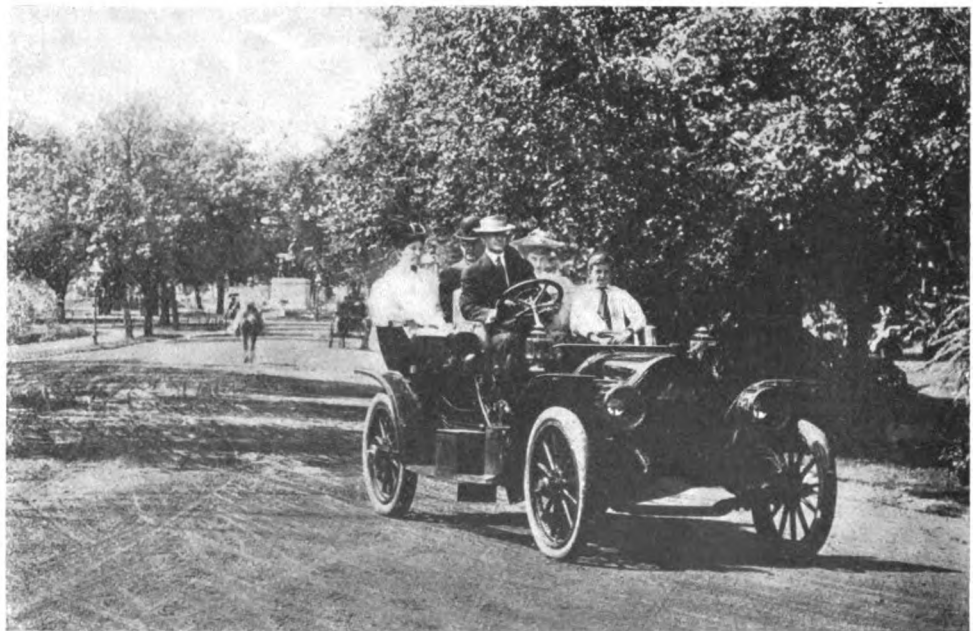
FOR the season of 1908 the Moon cars, made by the Moon Motor Car Company, St. Louis, Mo., will consist of three models. The main feature of the line will naturally be the standard five-passenger touring car; then there will be a special roadster and a seven-passenger touring car. Both the roadster and the smaller touring car have a 110-inch wheelbase. The former is hung very low and provided with full-elliptic springs in the rear, making it an exceptionally easy-riding car. The seven-passenger car will have a wheelbase of 121 inches, and the running gear will consist of 36-inch wheels, shod with 3 1-2-inch tires on the front and 4 1-2-inch tires on the rear, while the five-passenger car and the roadster will have 34 by 3 1-2 quick-detachable tires on the front and 34 by 4 1-2 on the rear.

In other respects the design of the Moon cars as originally evolved has been continued. Thus, the motor with its distinctive overhead camshaft and oppositely-disposed valves in the head, operated by short rocker arms, has been left unaltered, with the exception of small detailed refinement that has been found possible here and there as the result of experience, the design itself having proven eminently satisfactory and efficient. It will be recalled that in this motor the camshaft with its integral cams is located on top of the cylinders, where it is supported on three liberal-sized bearings. It is driven through bevel gearing and a vertical shaft at the forward end of the motor, directly from the crankshaft, this superimposed position eliminating many of the small parts otherwise necessary, and making for great simplicity of operation and quiet running, as but four rocker arms and four cams are necessary to actuate the eight valves. The ignition timer is located on the rear end of the camshaft, which brings it in a most accessible position. An important addition to this essential of the motor consists of the adoption of the Eisemann high-tension

magneto as a standard part of the equipment, the spark plugs being fitted with independent switches to facilitate testing.

The multiple disc clutch, which has previously been a feature of the Moon, has been retained intact. It consists of 53 discs, 26 of which are of bronze and the remainder of steel, each of the latter being made with three small spring projections, these insuring the ready separation of the discs in disengaging and preventing the clutch taking hold with a jerk. The clutch, as a whole, is encased in a bronze housing filled with oil, thus protecting it from dirt. Its diameter is very small, thus permitting the use of a large flywheel with fan-shaped spokes, while the self-contained construction of the clutch permits of its removal without disturbing other portions of the mechanism merely by the removal of three cap screws.

The gear set is of the sliding type with selective operation, and gives four speeds forward and the usual reverse through the customary single lever. The gear-set housing is of aluminum and is supported on a special subframe by projecting arms, permitting its removal intact without disturbing its connections. The pinions and shafts are all of hardened steel and the former are made with a central web, insuring uniform expansion in hardening. A universal coupling is interposed between the clutch and gear-set, while the cardan shaft is fitted at each end with similar joints to compensate for relative movement. These joints involve no screws or nuts and are enclosed in dust-proof, grease-filled cases. The bevel-driving unit is supported on ball bearings and is housed in the differential case, which is a steel casting with an easily removable aluminum jacket. Universal joints are also employed at each side of the driving gears and absolutely prevent binding, besides giving the great advantage obtainable by setting the rear wheels in at the tread 2 1-2 degrees, the same as the front wheels.



MOON MODEL MODEL C, ON A FOREST PARK ROADWAY, ST. LOUIS.

A STORY OF AN AUTO'S THOUSAND-MILE RUN

By E. RALPH ESTEP.

THE wise ones of New York's motor colony smiled and knowingly nodded towards the indefinite sunset place as, about 10 o'clock of an early Summer morning, a dirty blue automobile swung northward out of Long Acre Square. The loose Abe Lincoln shape of the man at the wheel supported a face that was mostly petrified smile, until you looked closer and read a determination in the eyes. It was a sure-enough Western outfit, come to learn the tricks of the wide, smooth Eastern highways. Car and driver had bumped, jumped, dashed and rattled over the uneven, sinister highways of Michigan and surrounding States.

The vehicle, prototype of the season's output of a great automobile factory, and its three fellow experimental cars, had proven their stability in abusive work where the roads are such only by the grace of name, and where speed is only a relative quality in ability to overcome obstacles. Now the car would show its full pace on interminable miles of smoothness, long gradients, and wide turns, which taunt the driver to take them at railroad speed and test to finality the theoretical quality of differential end thrust.

Out through the suburban seats of the almost-New Yorkers, the new Packard "Thirty," herald of 1908, fretfully picked a way through the restrictions of habited territory and dashed into the freer country. Then the spirit of the chase was on them all. The versatile pilot from New York forgot his past. Sailor, cook, teacher of his native Greek, automobile man, were all wiped out by his reincarnation into a detached being with senses only for the road ahead. Waldon forgot Detroit and letters on the sales manager's desk. The "Thirty" answered 'he wild phantasmal call of the road.

Through the orchard-like Connecticut countryside, past hedge-bound, peacefully slumbering rural homes, around macadam corners that tempted danger as they rose over rock-built hills or dipped into the fresh, green verdure of quiet valleys, the car attained the fullness of its speed.

A train came along, and with tooting whistle dared them to try their metal in merry joust. Mile after mile was swept into the trail of dust obscuring the past. Between the Connecticut villages, where the car was slowed to a staid and orderly gait and where the train hesitated to trade passengers, the race was repeated in unlimited miles at the rate of fifty an hour. Occasionally the ocean broke into the kinetoscopic picture. It was a new and glorious experience to Waldon. A peculiar education is needed to drive a car successfully over the smooth New England highroad.

It was three-thirty when the party burst into the civilizing influence of Hartford. Here they lunched, and at 5 started northward for the "Hub." The New York guide gave way to Fuller, the Packard exponent among the bean-eaters, with a doleful: "Gee, I wish I was going on to Boston." "Come along,"

said Waldon, and he clambered into the tonneau, heedless of the rough roads he knew to be ahead. Later, he tried, in rapid succession, all five seats in that tonneau and a few above it, as the car pitched and tossed over each rocky hiatus in the continuity of Massachusetts highway improvement.

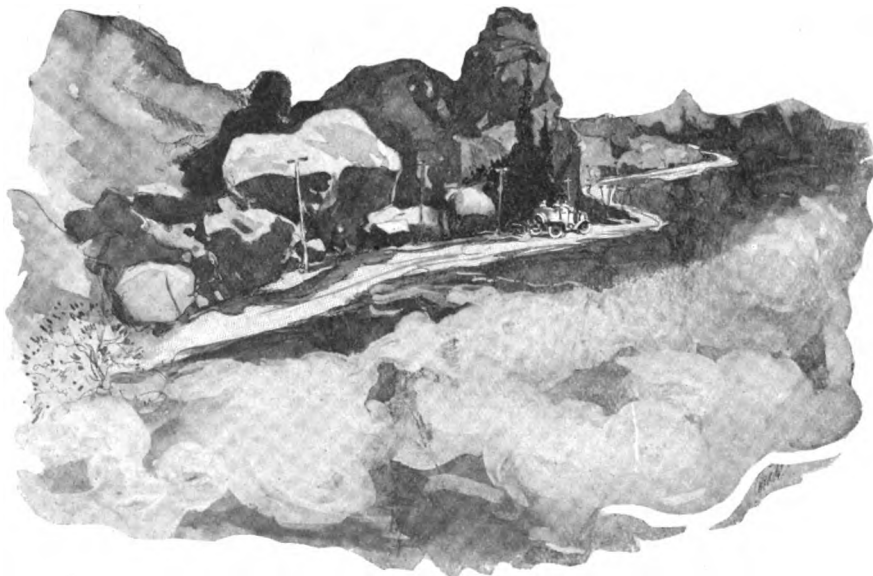
Dodging the traffic which cluttered the streets of Springfield, the tourists followed another car whose dust-dimmed tag, by its alphabetical prefix, denoted the property of a Springfield automobile dealer. They ran close to it and asked to be shown the way to Boston. The driver answered "Sure," buttoned up his coat, pulled down his goggles and started out to do it. A somnolent cop at a cross street was taken unaware and left to think it over. The native car rushed a hill, and then the Detroiter realized that the man ahead intended to show him the road to Boston by a trail of dust. He ran alongside to make sure, again asking the way to Boston. The stranger nodded—but was behind at the top of the hill.

Once in the country the race began in earnest. The New Englander's valor had not reckoned on his competitor's prowess. Time after time the mad chase became a play, as the Western car passed the volunteer guide and then dropped back to give it another run. The beaten one stopped and mentioned a poor carbureter mixture. An offer to wait for it to be adjusted he waved aside with a gracious "You've got us licked, but ours is only a 30-horsepower car." "Same as ours," laughed Waldon. As though the formality had been overlooked before the duel, the principals exchanged cards, waved adieu, and the man who would have shown the way to Boston laconically pointed to the right fork in the road.

Fast, and without hesitation, the flight continued from Springfield to Worcester. Other motor traffic seemed as stationary as the houses, trees and little hamlets. A speck appearing on the horizon grew quickly to a motor car, flashed by, and was baptised in dust. The country took on the manner of ultra-civilization; villages became more frequent; church spires silhouetted against the gray-grown sky of early dusk; the road ahead sank into puzzling obscurity, and night put an end to the riot of color on the western rim of the world. But, also, in the deepening shadows of the east twinkled the lights of Boston. It was only half-past 8 when the car drew up at the Motor Mart, but the pilot was not hungry in spite of the rough trip.

Boston was inquisitive about the new "Thirty" and the car was given over to it the next day. In the evening, with eight aboard, fast as the car could go it repeated history in an unthrottled dash to Ferncroft Inn. It was over the Newburyport turnpike, built in 1578, at the order of the king, that the governor, on horseback, might ride straight as an arrow's flight to Newburyport. History must have winked at this latter-day interpretation of her original purpose.

Saturday was a dismal day. The gods had



"THE ROAD RAN ALONG RIDGES AS A NARROW SHELF, WHOSE END STRAYED OFF AND DOWNWARD INTO WATER-LIKE OCEANS OF CLOUDS."



"WITH RAILS, FULLER AND WALDON PRIED THE CAR UPWARD."

shut off the sunshine and Jupiter raved. There was none to go back with Waldon to New York, especially when he hinted at a mountain trip to Pittsburg. Finally Fuller and Graves dared each other to the sticking point, and just as the car was ready to leave the garage began telephoning their homes and hunting suitable apparel. Fuller was wrapped like a mummy in layers of store clothes, with a coon-skin sarcophagus. Graves wore the regulation rubber motor coat, adding a fanciful touch with a woman's rubber cap, ruffled à la bedtime.

Being full of knowledge *re* the highways and by-ways of Massachusetts, Graves took the wheel and started out in the pouring rain. He had no goggles. The water beat back the rubber ruffles that fringed his face, and rivulets of rain flowed down his neck. The car skidded some and slipped more. Into puddles where the water shot above their heads and increased their drenching, banging over bridges, skidding around sharp corners and following rain-filled ruts, Graves took them to Providence. Here they changed clothing and ate dinner. Then Fuller drove.

Straight and highly crowned, the road was not wide enough for two to pass—evidently the work of some narrow-minded supervisor. Coming suddenly upon a wagon widely loaded with the furniture of a farmer who had been careless in the choice of moving day, Fuller drove far out into the boggy ground at the side. She sank. "Keep her going," shouted Waldon. "Keep her going," echoed Graves, but, with a mighty splash and a great upheaval of mud, the car sank in the morass up to its all four hubs.

Luckily this was a region of stone and rail fences. With rails Fuller and Waldon pried the car upward, while Graves industriously lugged stones from the fence and built a solid foundation underneath. It was hot work. Finally the rock road was built and the car was driven onto the slender ribbon of macadam.

Waldon drove down toward the Atlantic and here the good road was lost in the sand and rocks along the coast. The road dodged among large boulders tattooed with advertisements—alternating with the protruding corners of orange-gray rocks on which the country is laid. Towards evening it was a dreary way, made still more depressing by the raucous complaint of the winds from off the now turbulent Long Island Sound. When New Haven was reached Graves evinced great desire to see the Yale University buildings and the domestic life of regular rah-rah boys. It was seven-thirty and so a stop was made for the night. Graves took the midnight train home.

Sunday morning, after a 10 o'clock start, Fuller and Waldon enjoyed a pleasant, sunshiny trip along the coast to New York. They spent only time enough in the Metropolis to eat a hurried lunch while a tire was changed, and, with a New Yorker on board

for pilot, headed for Staten Island to enjoy the good, pretty run to Quakerville. Out on the level highways of New Jersey, the testing of the car took a high speed turn. Perth Amboy to the Camden ferry was done in two hours.

From the garage at Philadelphia the Godshalks were telephoned—they who make motor boats and sell Packard cars. At the mention of Pittsburg the elder Godshalk wanted to go, but was finally induced to compromise on Clarence, young enough to stand the bumping which the mountain road prophesied. Another passenger was desired, and Clarence produced Bill, an ingenious friend, unused to wild, overland motoring. "Poor Bill," said Fuller and Waldon as they thought of what would happen to the innocent.

* * * * *

Godshalk pere advised a 5-o'clock start. Said he: "It is just as easy to bounce out of bed at four as at nine. All you have to do is to bounce." The start actually was made at five-fifteen, Fuller drawing by lot the first seventy-five miles in the front seat, with the two Quakers luxuriously reposing in the tonneau as the car rolled easily over the fine roads past Fairmount Park and Ardmore toward Lancaster.

It was a wet and cheerless beginning. The pervasive moisture robbed the matutinal venture of its rightful charms. The roads were good and ahead lay the mountains, taunting them to come and test the stuff that cars are made of. Somehow or other the call of the cook-stove was stronger, and with eager eyes they searched each paltry puddle of huts for a restaurant sign. At Coatesville they found it, and Waldon and Fuller were garrulous in their talk of breakfast. Uninitiated Bill only smiled. He had had his. The restaurant was just opening for the day, and Waldon fried eggs while Fuller concocted a sepia-toned liquid yclept, in kindness, coffee.

Near Lancaster a turn was made away from the Harrisburg road, southward towards Gettysburg. The Susquehanna at Columbia looked muddy and sullen in the rain-drenched atmosphere of full daylight. Here the road crossed on the Pennsylvania Railway bridge, a mile and a quarter long, with its tracks in the center and the ties boarded over to provide roadway wide enough for one, but not two, of anything to pass.

The tortuous line of oozing mud between the highway fences led southwest to a country of tender memory. At Gettysburg, the National Park and on to Chambersburg the leaden inertness of the chill rain seemed to become vibrant with echoes of the war. Thoughts motoring became much mixed with thoughts now resurrected from school books for verification in the very place of their beginning. At Chambersburg a new supply of gasoline was obtained. The mud-caked radiator was douched with water from a pail and scrubbed out with a broom.

Now began the real battle against the elements and the fortresses reared by nature in a harsh land—a land of many mountains and a few people. These people, too, seemed strange to visitors and to motor cars. They talked in nods or monosyllables and were surely stunned by this mud-smearing creation of an outside world which splashed through the almost impassable country with amazing speed.

The first climb into the Blue and succeeding mountain ranges was a long, steady pull of four and a half miles to the top of Cove mountain. As yet no anti-skid chains had been put on the tires, and the car veritably slipped up the mountain. The roadstead was an endless chain of "thank-ye-marms," fifty feet apart. Clattering over the uneven bed of rocks, skidding and sliding and bumping along the wind-racked, rain-soaked mountain side, the car passed several teams working hard their discouraging way, and whose every driver would declare future progress of the motor car soon would be impossible.

Once a buggy was passed and the driver tried to hold the speed of the car as it set the jarring pace upward. Of course he tired out the horse and quit, but at the mountain top, where the motor car had been stopped that tire chains might be put on, he came up and waited so that the automobile would not have to

pass him on the dangerous downgrade which seemed to be merely a rough and slippery path cut around the edge of the precipitous mountain wall.

As the car started down the 18 to 20 per cent. grade, some fiendish instinct in the native, or, perhaps, a booze-built desire to show his mountain skill and general dare-devilishness, prompted him to whack the unfortunate horse into a wild run. Dancing over "thank-ye-marms," hitting, dodging and scraping the huge boulders which littered the road, striking the jagged corners of rocks turned edgewise at the surface, the car careened madly down the slope. Close behind it came the buggy, flung high at each "thank-ye-marm," swinging from one side of the road to the other with each rapidly succeeding lurch, crowding the horse in his vain endeavor to hold the difficult pace over the heart-breaking path, the wheels vibrating until it seemed they could no longer stand the abuse. At the bottom of the long flight appeared a toll gate, but so close behind was the runaway buggy that a stop spelled disaster. Waldon pulled the car to the side of the road, ran back of the gate-keeper's house and the buggy whizzed by, to disappear into another mountain trail.

Mountain ridge followed mountain ridge, and between them were fifteen-mile stretches of hills. Only ten miles on all the way from Chambersburg to Pittsburg were level. Ever climbed the car through the continual rain, over roads built only of rock. It was like the bed of a river. As far as the eye could reach, flat stones, gathered between the fences and laid side by side to form ridges, were interspersed with the bald, slippery knobs of huge boulders. "Thank-ye-marms" became an obsession. Reckoned carefully, there must be nineteen thousand between Philadelphia and Pittsburg. Waldon drove the car obliquely over them, zig-zagging along the road to lessen the impact.

Bill was the surprise of the party. Innocent though he might be and unbroken to the hardships of testing tours, there was no yellow streak in him. When he opened the rain-soaked lunch and found it filled with gravel thrown into the car during its plunges into watery holes, he laughed—and pointed out a small mountain village wherein lived a school teacher of youthful and tender recollections. When the tire chains broke he was the first out to fix them, the while chattering of his once best girl that lived in the particular neighborhood. In fact, nearly every mountain peak or every bunch of scrubby trees which still reared their rickety limbs against the elements reminded Bill of some bit of fluff who had held hands with him in his youth.

Teams were scarce now, but occasionally there would be an encounter to lend a touch of humor. Once a farmer, coming up the steep grade, raised his hand and the car was stopped. The motor was shut down, and, on the farmer's signal, the car coasted noiselessly past, while the farmer held his horse by the bridle. Suddenly the horse, with deliberate maliciousness, pasted both back feet into the dashboard of the buggy, although the car was fifty feet down the road. The farmer's wife jumped out and, as the car slid down around the curve and out of sight, yelled: "I'll bet somebody'll pay for this!"

A tire burst at the foot of the last mountain ridge. An hour and a half was spent in making the repair, and it was dark when the last climb was started. The night gathered quickly, and was full of a thick solemnity. The headlights cut an uncertain, discouraging, rock-floored aisle through the everlasting gloom. The climb continued through clouds that made a fog against which the lamps were as impotent as though their light was thrown upon an opaque sheet. Coming out above, the road ran along ridges as narrow as a shelf, whose end strayed off and downward into the water-like ocean of clouds which floated unceasingly about the immemorial peaks.

Progress was slow and dangerous, yet there was a certain enchantment following the whimsical way which led now below, now above, now down through the clouds where that officious beldame, Fate, held the safety of the car and its occupants in her hand. The rays from the headlights were absorbed in twenty feet. Waldon steered through the fog by watching the telephone

poles alongside the road, which were the only visible objects. Once, following the poles along the inside of the narrow ridge that was the road, unable to see the edge—beyond which was death—the guiding line switched to the precipice side of the road, and the driver, not knowing this, followed their course almost to disaster.

Many times in making the uncertain descents with no knowledge of what was ahead, there would suddenly jump out of the enveloping fog the abutments of a bridge just far enough apart to let the car pass through. Sometimes a mountain waterfall would give warning of a bridge, but among the crooked walls of rock the sound gave no certain knowledge of location.

As the road finally dropped for the last time below the cloud fog and debouched into the wide valley where was a leveler, though not a level land by any means, the car struck what certainly must be three miles of the worst road in all the United States. It is just east of Ligonier and the business of the people is log-hauling. Wagons go down hill in the soft mud, which helps the brakes to retard them against the influence of the grade. Continual driving of this kind has made the road a river of mire, full of rocks—some buried, some protruding. They scraped the running boards, hit the hubs and stopped the car until they were laboriously lifted from their tomb of mud and thrown to the side. Here travel was at the rate of three or four miles an hour. Through the fearful uncertainty of the last descent two hours had been consumed in making thirteen miles.

It was nearly 11 o'clock when the lights of Greensburg were sighted. Waldon turned to commiserate with Bill, who had been given such an heroic introduction to motor touring, but there was Bill, still eager and happy, still unstunned—humming to himself the words of "In the Good Old Summer Time," set to a new and wonderful tune, syncopated, against his will, by the bouncing of the car. "Billy Bounce!" That would be it—the nickname of this as yet unchristened car. And Billy Bounce it became, officially and with a cup of coffee ceremoniously spilled over its bonnet before a Greensburg restaurant.

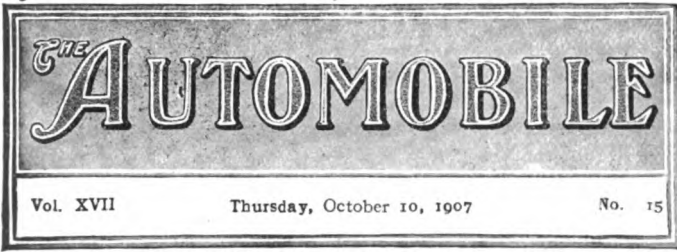
Two Greensburg hotels turned down the mud-calculated quartet on sight. Consequently at the third place Bill left his outer garments in the car, while, more or less clean, he went in alone to negotiate for beds. Even there mine host required that they wash in the public lavatory before ascending to their rooms.

* * * * *

The next morning there was an easy run of thirty-two miles into Pittsburg. The 343 miles over the Alleghenies had been accomplished. Waldon was satisfied. Fuller was satisfied. Bill was satisfied. The car was turned over to a factory man to be driven home. Waldon and Fuller climbed onto a train for Detroit and the last they saw of Bill on the depot platform his smile had broadened into a cheerful grin as he jumped up and down in imitation of his "thank-ye-marm" experience of the day before. "Good old Bill—Billy Bounce!"



ENTERING PITTSBURG AFTER CROSSING THE ALLEGHENIES



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT

A. B. SWETLAND, Business Manager
LOUIS R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00
To subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hiffe & Sons, Limited, 20 Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.
The Automobile is a consolidation of The Automobile (monthly) and the Motor
Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903,
and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905, - - - - -	730,000
" " in 1906, - - - - -	791,000
" " This Issue - - - - -	17,250
" " Since January 1, - - - - -	673,150

In the Consideration of High-speed racing on circular tracks, originally constructed for horse racing, is now attended with the element of danger to such degree that men who value human life cannot be censured for hesitating at further encouragement of what must stand convicted, because of the growing list of fatalities, of being a reckless form of sport. When the limits of skill must be exceeded to bring victory, or the opportunity for so doing irresistibly tempts the contestant, then sane sportsmen must admit that the place for calling a halt has been reached.

Furthermore, the officers of the American Automobile Association are proceeding properly in consulting the manufacturers, who are directly or indirectly responsible for the greater part of the entries, and the clubs of the association, which in the past have conducted most of the meets.

Racing being a spectacular proposition, it is bound to receive a vast amount of publicity and attract the attention of the public. The attention which it has been commanding of late is more harmful than beneficial. But the question should receive—and it undoubtedly will—judicial consideration, not alone for the good that has been accomplished in the past along with the bad, but also for what may be retained for the future.

Granted that it may be politic and logical for the A. A. A. to refuse in future its sanction and jurisdiction over this kind

of track racing, it is a certainty that there will continue to be more or less use of the horse tracks for automobile events until other provision is made in the way of special courses. Local clubs would appear to be the proper ones to look after a less strenuous form of competition, and it appears to be a foregone conclusion that track racing is destined to be less strenuous and more local in character than ever before.



Trend of Motor Design for the Coming Year.

Now that the show season is practically upon us, it seems opportune to ask: What, if any, will be the changes it brings forth? It is safe to say that never in previous years, not even excepting last year's shows, was there a time in which the stock and stereotyped phrase "only detailed refinement" was so overworked as it will be at show stands during the next few months. However, there has been a break in the sameness brought about by the settling of designs in well-defined grooves that will give the makers and their salesmen something to talk about, and that is their six-cylinder models. That the six-cylinder car will hold a big place on the floor, so far as popular interest is concerned, there is little or no doubt. It is going to be a notable year for the six-cylinder, all arguments to the contrary notwithstanding.

But whether there will be more sixes sold at the shows than fours is quite another matter. While taking up the new type, very few makers indeed have relinquished old attachments, and their lines will merely be that much more comprehensive. They are all out after some of the six-cylinder business. Whether they stick at it depends upon whether the six-cylinder holds its popularity. Though pretty thoroughly tried out already, it has still to work out its own salvation where the great majority of auto-ists are concerned.

Speaking of motor design proper, there is not a great deal to record. The superimposed camshaft has gained a recruit or two and the advocates of head placing for the valves have strengthened their position to some extent. Where powers are concerned, motors are larger than ever and smaller than ever, an anomalous statement that is readily explained by the fact that while some have still continued to reach for the upper extreme others have begun to realize that the day of the sane and safe automobile is drawing near and that there will be far more 20-24's sold than 60's, and have planned their lines accordingly.



Has the Highest Point of Advantage Been Passed?

It was long ago realized in marine engineering practice that beyond a certain speed every extra knot had to be paid for so dearly as to scarcely make the game worth the candle. Where a 15-knot speed could be obtained at the expenditure of 100 tons of coal a day, it was found that 400 tons of fuel were consumed in the same time to make 20 knots. The same thing is just coming to pass in automobile design, and that fact could hardly be better illustrated than by a comparison which the *Autocar* makes of the sizes and speeds of some of the cars in the more important Continental road races during the past season.

Practically every one of these events was very closely contested, many of the competitors who finished but a short time apart and averaged almost the same speed throughout the race having cars, in some cases, which were equipped with very much larger motors than their competitors. For instance, the winner of the Coupe de Velocité had an engine 1.8 times as large as that of the winning car in the Florio cup, yet the speeds were nothing like that far apart. In another instance, the larger car had an engine that compared with the motor of its competitor in the ratio of 2.2 to 1, yet with such an overwhelming superiority in engine power the average speed of the larger car was but 3-4 mile better than that of its far smaller rival. It only goes to show that racing car motors have been carried far beyond the point where the greatest advantage is to be gained, and greater refinement rather than greater size is what is needed.

WALTER WINS TRENTON EIGHT-HOUR RACE.

TRENTON, N. J., Oct. 5.—Instead of a 24-hour race, the big automobile event at the Inter-State fair was reduced to 12 hours and finally cut down to 8 hours. A Walter, driven by Joe W. Parkin, Jr., with his father acting as his mechanic, evolved as the winner, covering 357 miles. Another Walter, driven by Edwin Walter, was second, with 347 3-4 miles; third was a Franklin, 290 1-4 miles; fourth, a Stearns, 163 miles. A Thomas car, driven by Paul Schill, and a Rolls-Royce, driven by Burns, were other starters.

The race began in the afternoon and concluded at midnight. The wide half-mile track gave plenty of room to the contestants and was fully as safe as the average mile course.

The first few miles of the race were well contested. Immediately the Stearns, Thomas, Bolls-Royce and the Walter, driven by Joe Parkin, shot to the front and trailed one another closely. On the fourth mile an accident happened to the Stearns, which put it out of commission for almost an hour. A bolt in the clutch snapped and the car was sent to the inclosure for repairs.

The most excitement of the early miles of the race was furnished by the Walter car, driven by Joe Parkin, and the Rolls-Royce, and it almost ended in a serious accident. On the twenty-fifth mile the Rolls-Royce made an effort to pass the Walter. For five miles they raced side by side and took the turns dangerously close to one another. On the thirtieth mile the English car assumed the lead, but it was only for a few minutes, as at that point a tire on the front wheel of the Rolls-Royce burst and the car swerved to the side into the fence. The fence was torn down for a short distance, but aside from a torn tire and a few dents there was no damage done. Neither Driver Burns nor his mechanic were injured, and after a delay of twenty-five minutes the car resumed the race.

AERONAUTS PREPARE FOR ST. LOUIS RACE.

Last Monday evening many of the foremost aeronauts of the world assembled at the headquarters of the Aero Club of America, 12 East Forty-second street, New York City, to discuss preliminary arrangements for the International Aeronautic Cup race, which is to start from St. Louis, October 21. Major Hersey, U. S. A., who accompanied Lieut. Frank Lahm on his victory of last year, has obtained permission from the War Department to compete, and will use the balloon *United States*, last year's winner. The balloons *Pommern* and *St. Louis* have arrived at St. Louis from Brussels and Paris, the former being the balloon in which Oscar Erbsloeh won the International Aerial Congress race, September 15.

Among the prominent American aeronauts present were Frank S. Lahm, whose son won the international race last year; Alan R. Hawley and J. C. McCoy, two of the cup defenders this year; Homer W. Hedge, former president of the club; Leo Stevens, J. deMont Thompson, William J. Hammer, Augustus Post, W. R. Kimball, E. B. Bronson, J. C. Lake, Dr. Calvin T. Adams and Charles Jerome Edwards.

PELLETIER TO MANAGE FIRST DETROIT SHOW.

DETROIT, MICH., Oct. 7.—With twenty-five dealers, representing some half hundred standard cars, pledging their support to the undertaking, the Detroit Automobile Dealers' show, scheduled for the week of December 9, is already an assured success. It was decided some time ago by the dealers that they would have an exhibition of their own, independent of what the Tri-State Auto and Sportsmen's Association, under whose auspices previous events of this nature have been held, might decide to do. The expense will be borne proportionately, and the fact that it is up to them to make good furnishes added incentive. The management of the affair has been placed in the hands of E. Leroy Pelletier, one of the best known of Detroit's publicity men, who is already busily engaged in the work.

OLDS AND ATLAS WERE BRESLIN DRAWERS.

At the usual ante-show luncheon, given by the Hotel Breslin to the representatives of exhibitors in the Grand Central Palace and Madison Square Garden shows, held Tuesday at 1 P. M., the lucky winners in the drawing for the privilege of exhibiting cars during show week were Oldsmobile and Atlas.

The A. M. C. M. A. cars figuring in the drawing were the Ford, Berliet, American Mors, Maxwell, Welch, Acme, and Crawford.

The licensed candidates for a week of hotel corridor publicity were the Lozier, Locomobile, Stearns, Haynes, Peerless, Apperson, Hewitt, Pierce, Columbia, and the lucky Oldsmobile, represented by C. H. Larsen. C. H. Martin drew for the Atlas.

Gen. John T. Cutting, Col. K. C. Pardee, H. T. Clinton, Alfred Reeves, E. S. Partridge, C. G. Wridgway, and Harry Caldwell, purveyor of "gasoline gossip" in the *Evening Telegram*, were the speakers, with T. F. Moore as the versatile toastmaster, and G. T. Stockham bidding the guests welcome to the Broadway hostelry, which is always during show weeks one of the headquarters of the trade.

AEROCAR PLANT MAY BE REOPENED.

DETROIT, MICH., Oct. 7.—That A. Y. Malcomson, principal owner and guiding spirit of the Aerocar Company, is still far from down and out is evident from developments in connection with the financial entanglements of that concern. Mr. Malcomson got the plant at the foreclosure sale, and now it is announced that he will shortly reopen it, putting a water-cooled car on the market for the coming season. The plant is admirably adapted for the building of automobiles, having been constructed solely for that purpose, and the concern should once more become an active figure in the trade. It is understood that C. Arthur Benjamin, for some time general manager, will be retained in that capacity.

CHICAGO'S PRACTICAL RELIABILITY RUN.

CHICAGO, Oct. 7.—The Chicago Motor Club has decided to promote a three-day reliability run of 600 miles during the week preceding the opening of the Chicago show. The dates selected are November 26, 27 and 28, respectively, and the contest has been divided into three parts, first day being to South Bend and return, 200 miles; to Milwaukee and back on Wednesday, and to Rockford, Ill., and return, Thursday. There will be three classes: one for cars selling at \$1,500 and under, the second class for cars under \$3,000, and the third for cars over \$3,000. In the matter of sealing the committee proposes to be most strict, but it is not going to do as the New Yorkers did—disqualify a car if a seal is broken. Instead there is a penalty attached.

SHOEMAKER AUTO COMPANY GOES TO ELKHART.

On October 10 the Shoemaker Automobile Company, which since its organization has been located at Freeport, Ill., removed to Elkhart, Ind., where a new factory has been erected. It will be recalled that the first try-out of a Shoemaker car was in the gruelling mud rout of the A. A. A. last summer, in which it acquitted itself remarkably well, while its driver, who is also its designer, was exceedingly game in the face of a string of misfortunes that would have made the average driver turn back long before the tour was half over.

TWO MORE A. M. C. M. A. MEMBERS.

During the past week, the American Motor Car Manufacturers' Association, popularly known as the "independents," added two additional firms to its constantly increasing membership roll. The new members are the Continental Auto Manufacturing Company, New Haven, Conn., and the Brush Runabout Company, Detroit, Mich., the admission of which brings the total membership of the association up to 51 manufacturers of complete cars.

OCTOBER WEATHER STIMULATES CLUB LIFE

CONDITIONS IN CENTRAL MASSACHUSETTS.

WORCESTER, MASS., Oct. 7.—Worcester Automobile Club members, looking over the season which is closing for driving, take satisfaction in the conditions which have prevailed this year, regarding the lack of bother which has been meted out to autoists in Central Massachusetts by the constables and the courts of the section. Club members, who have been members for the past three years, note the diminution of the trap troubles, and feel the action of the club has been one of the means to that end. The vigorous action of the club on this and other lines has had its effect. Leicester, the most prominent of the towns from its location on the main line between New York and Boston, saw no profit in employing men to give the town a bad name among automobilists, with no corresponding remuneration to its treasury, and this year has been off the map as a trouble-maker. The other towns which in a lesser degree had been on the motor blacklist followed suit and there has been little trouble in Worcester county all this season, which is a matter for general congratulation.

The local club has taken action on the line of the Automobile Club of America, and will have a club plate. In fact, the movement began before the members learned of the action of the A. C. A. The club seal is as nearly a replica of the seal of the city of Worcester as is practicable and the "Heart of the Commonwealth" appears in its center or chief, heraldically speaking.

Preparations for the annual banquet of the Worcester club late in November or early in December are being made.

NEW JERSEY CLUB'S ENDURANCE RUN, NOV. 15-16.

NEWARK, N. J., Oct. 8.—The twenty-four-hour endurance contest of the New Jersey Automobile and Motor Club has been set for November 15 and 16, the date having been decided upon at a meeting of the racing committee held last Thursday night, at which time the rules to govern the contest were reviewed. Secretary Bonnell has drawn up the complete regulations and they will be substantially the same as those governing the three-days' contest held last spring. The arrangements have not been perfected as yet, however, and it will be several days before definite announcement is made. The route as outlined in a former issue of *THE AUTOMOBILE* will probably be followed with few changes, except that the Eagle Rock road may be selected either going or returning. The start will be made at an early hour Friday in order to finish in good season on Saturday. As the fee is only \$10 a large number of entries is expected.

It is understood that the club will seek new quarters further uptown when the year's lease on the building at Broad and Chestnut streets expires. Some of the members are desirous of having the club in the suburbs, but the majority favor a central location and advocate the erection of a special building somewhere in the vicinity of Military Park.

MARYLAND CLUBS COMPLETE A. A. A. BODY.

BALTIMORE, MD., Oct. 7.—The Maryland State Automobile Association of the American Automobile Association was formally organized last week at the first fall executive meeting of the Automobile Club of Maryland. The organization will comprise the following clubs: Automobile Club of Maryland, Baltimore Automobile Club, Baltimore County Motor Club, Hagerstown Auto Club, Allegany Auto Club, and the Motor Car Racing Association.

The following officers were elected for the new association: President, Osborne I. Nellott; vice-president, H. M. Rowe; secretary, F. M. Darling; treasurer, W. S. Belding. The board of directors includes these officers and W. W. Baldwin. At the first semi-monthly meeting State work will be outlined.

KANSAS CITY (MO.) CLUB HAS A PARADE.

KANSAS CITY, Mo., Oct. 7.—The Automobile Club of Kansas City held its first annual parade last Tuesday. Every car in line was gayly decorated and, it being festival week, everybody was smiling and happy. There being no assignments of places in advance, everybody who came went to the end of the line, excepting, of course, the women drivers, who were given the preference and placed near the head of the parade. After going through the downtown business section, the caravan proceeded to Elm Ridge, watched a horse race and an exhibition by a horse, and then the autos became the feature of the fair and circled around the track time and again. The drivers fully enjoyed the idea of going as fast as possible, and several impromptu races took place. One man in a "Lemon," as he calls it, went around so fast that several people in the grandstand saw him both coming and going at the same time. As no watches were held, no records were broken, except verbally. When the time came for



PARADE OF THE AUTOMOBILE CLUB OF KANSAS CITY.

the next horse race, the autos were still speeding over the track at a rapid gait. The judges yelled at the motorists to leave the track, but they took their time and enjoyed a few minutes more at high speed. The crowd gradually dispersed and went home well satisfied with the day's pleasure, voting the parade a success, all promising to be in line again next year.

BOSTONIANS TO HOLD GYMKHANA THIS WEEK.

BOSTON, Oct. 7.—The Bay State Automobile Association will hold its second annual gymkhana games at the Newton Athletic Grounds, in Newton, Mass., next Saturday, October 12. Secretary James Fortescue has been actively engaged in making preparations for the affair for some time past. The list of events will include many of the familiar "stunts" that go to make up an occasion of this kind, together with a number of original ones which should prove amusing as well as interesting, as they are designed to test the skill of the drivers, besides displaying the stability and flexibility of the cars themselves.

MINNESOTA AUTOISTS TO STOP THEFTS.

MINNEAPOLIS, MINN., Oct. 5.—Owing to the large number of automobile thefts that have been committed in the Twin Cities of late, the Minneapolis Automobile Club has decided to prosecute every one caught taking an automobile, whether in fun or for the purpose of realizing on the theft. In order to catch these thieves the club has engaged permanently the services of a detective, who will be on hand at the clubrooms all the time.

and will go out on a chase after lost automobiles at a moment's notice. The chief of police has promised to co-operate.

Arrangements have been perfected by the Twin City automobile clubs for trip to Duluth about the 20th of October. Twenty-five entries have already been made. Duluth is a popular Mecca for automobile tourists, although the roads leading there are not all that could be desired. The State Automobile Association has taken the matter up and is raising funds to perfect the highway, the opposition, curiously enough, coming from farmers along the proposed route. They are, however, being shown the advantages, and the tide of illfavor is being turned.

The State Automobile Association of Minnesota has just issued a touring book, compiled by George H. Daggett, chairman of the tours committee. The book gives elaborate details as to the various routes radiating from the Twin Cities. Twenty maps locate the main highways and cross roads.

BUFFALO CLUB CELEBRATES THIRD SUCCESS.

BUFFALO, N. Y., Oct. 7.—The Automobile Club of Buffalo last Thursday night celebrated its third consecutive success in the annual A. A. A. tour, its 1907 Glidden trophy team being the guests of honor. Drivers Salzmann and Richards, of the Thomas; Dey and Kumpf, of the Pierce, and Gus G. Buse, Jr., the Packard pilot, were the heroes of the occasion. President William H. Hotchkiss, of the A. A. A., was one of the speakers, and he reiterated his ideas on track racing, commended the Connecticut law, and condemned the statute in New Jersey. E. R. Thomas,

chairman of the Western New York Roads Improvement Association, said that a good road from Buffalo to Niagara Falls is to be a realization of the near future. Incidentally, Mr. Thomas said that he intended to issue instructions to all the Thomas agents asking them not to enter cars in track competitions under present conditions.

RHODE ISLAND CLUB ACTIVE IN SIGN POSTING.

PROVIDENCE, R. I., Oct. 7.—As the start of its projected road posting campaign, the Rhode Island Automobile Club of Providence will shortly commence the work of marking the road between this city and Narragansett Pier, posting all turns and dangerous places. The signs will be a departure from ordinary usage in that they will be only three feet high and will be placed near the edge of the road so as to be illuminated by the car's headlights. Later the club will erect sign posts on all the suitable touring roads of the State.

ROCHESTER CLUB'S HILL-CLIMB OCTOBER 12.

ROCHESTER, N. Y., Oct. 7.—The Rochester Automobile Club will hold its annual hill climb, Saturday, October 12, at the Penfield Dugway. The early date was decided upon because of the automobile show to be held in New York later in the month. There will be twelve events, open only to members of the club, with the exception of two free-for-alls, which will be open to members of any club or of the A. A. A. Entry blanks are now ready. The entrance fee will be \$2.

BOSTON'S ANNUAL FALL AUTO TRADE CHANGES

BOSTON, Oct. 7.—Boston's automobile trade is just now undergoing the usual fall reorganization. The movement from the older automobile section in the vicinity of Columbus avenue toward the newer section on Boylston street and Massachusetts avenue is very pronounced this season, and already several firms are opening new Quarters on Boylston street. The completion of the Copley Square garage has also brought about some changes, two or three firms having taken quarters there for sales or garage purposes. Among these are the Dodge Motor Vehicle Company, distributors of the Pope cars, and the Butler Motor Car Company, which sells the Cleveland, Pierce-Racine and the Rapid. The Stranahan-Eldridge Company, agents for the Buick, has also taken space in the Copley Square garage and is about opening a salesroom on Boylston street near the Massachusetts Automobile Club.

Another newcomer on Boylston street and also in Boston is the J. W. Bowman Company, agent for the Stevens-Duryea cars, which also has garage space in the Copley Square garage. Mr. Bowman was formerly of New York. For many years the Stevens-Duryea has been handled in Boston by F. E. Randall, and after his death last spring the agency was conducted by his widow. It has now been transferred to the Bowman company and the Randall estate will have the Pennsylvania, with a salesroom on Columbus avenue and a large garage on Stanhope street. Another shift in agencies in the Boylston street section is the transfer of the Premier from George C. Squier to H. L. Johnson, who comes here from the factory. He has a salesroom at 1008 Boylston street.

It is understood that a change in the A. E. Morrison Company, agents for the Oldsmobile and the Stearns, will shortly be announced. Arthur Adams, who had charge of the Oldsmobile sales, has the agency for the Oldsmobile the coming season, and it is said that he will organize a new company for the handling of the Oldsmobile exclusively. Whether the Morrison company will continue with the Stearns is not settled. Mr. Morrison has been under the weather all summer on account of an injury at Lowell on July 4, while engaging in a road race, and has not yet announced his plans. No changes have yet been announced at the Henshaw Company, agents for the Haynes; the Matheson Company of Boston, the Locomobile branch, of which K. M. Blake is manager; the Dragon branch, the Lozier agency held by H. C. & C. D. Castle, the Shawmut branch; the Columbia branch, of which J. H. MacAlman is manager; the Winton, Peerless, Ford, and Franklin branches.

The White Company has just opened a new garage on Newbury street, which will be conducted in connection with the White branch nearby under the management of J. S. Hathaway. The J. W. Maguire Company, agents for the Pierce, has also expanded, tak-

ing in the adjoining store on Boylston street formerly occupied by the Napier Company. Alvan T. Fuller, agent for the Packard and the Cadillac, has increased his salesrooms by leasing the apartment on the Columbus avenue side of the Motor Mart formerly occupied by the Apperson agency. The Apperson agency has been transferred to F. S. Smith, of Columbus avenue, who has handled the Autocar and Walter. The Maxwell-Briscoe Boston company is expected to remain in the same location on Massachusetts avenue, and the Bay State Company will continue to manufacture the Bay State Forty on Norway street. A. R. Bangs, who manufactures the Viking, has removed from Boylston street to his factory on Stanhope street. The Curtis-Hawkins Company, of the Motor Mart, which formerly was the agent for the Grout, has taken on the Chadwick for 1908.

There is some uncertainty about the Thomas agency in Boston. It is said that the Harry Fosdick Company, which has handled it recently, will have something else for the coming season, and it has been reported that C. E. Whitten, of Lynn, is to be the Thomas representative. Since Mr. Whitten made his announcement, however, there have been reports to the effect that the matter was not definitely settled. W. M. Jenkins & Co., of Columbus avenue, are to handle the Mitchell, and the Metropolitan Automobile Company, of Stanhope street, will have the Moon another year. H. C. Stratton Company, which last spring located on Huntington avenue, has added the Queen to its list of agencies, now representing the American Mercedes, Car de Luxe, Kissel Kar, and the Queen.

V. A. Charles assumed the management of the Rambler branch this summer, succeeding Clarence Gilmore, who went first to the Knox and then to the White Company, and beyond a few changes in personnel the Rambler branch remains the same as in former years, being located on Columbus avenue. The Corbin agency remains in the Motor Mart under the name of the Corbin Motor Car Company, formerly the E. T. Kimball Company, and the Northern Automobile Agency, of the Motor Mart, formerly representing the Pullman and Pennsylvania, now has the Pullman only. The Frayer-Miller agency, formerly held by D. P. Nichols & Co., has given up its Motor Mart salesroom. The George H. Lowe Co., agent for the Aerocar and American Mors, has not made known its plans for 1908, and the same may be said of the St. Louis agency on Boylston street. Bond Bros., agents for the Deere, the Dolson agency, Darracq, and some other cars.

It is too early yet for the announcement of agencies for new cars, but there is every reason to believe that after the New York shows nearly every car manufactured in the United States and most of the prominent foreign machines will have representatives in Boston.

NEW COMBINED THRUST AND RADIAL BEARING.

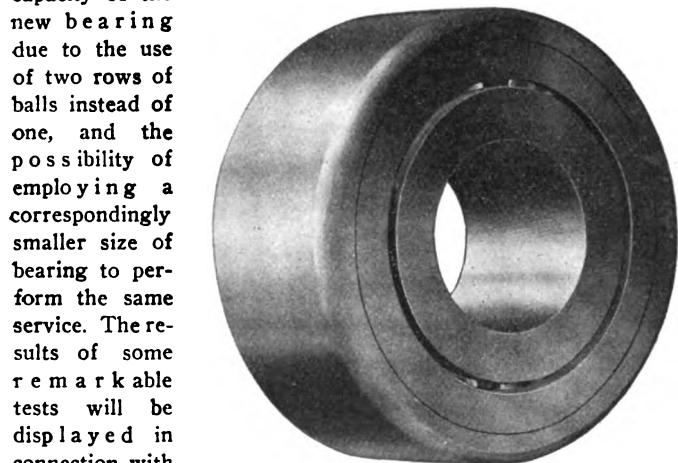
Albert F. Rockwell, president of the New Departure Manufacturing Company, Bristol, Conn., is the inventor of a new type of ball-bearing which will be publicly shown for the first time at the coming show in Madison Square Garden next month. It differs radically from current types in that two rows of balls and two sets of ball races are utilized, thus making the bearing capable of taking a thrust as well as a radial load. It is designed to take the

place of the combined end thrust and radial load bearings at present in current use on automobiles, the load being equally distributed on the two rows of balls by means of a special form of separator, which is shown by the illustration picturing a bearing of this new type with the races partly broken away to reveal the interior. By this means the load is taken on a diagonal

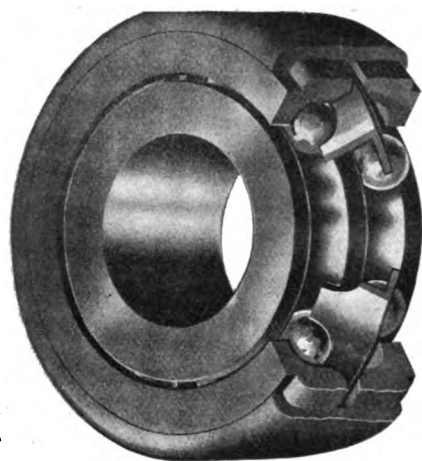
line from the vertical instead of radially and in such places as a bevel-gear driving unit, where the line of pressure is at right angles to the base of the teeth of the pinion, the load is intermediate between the radial and end pressure and is taken care of to the best possible advantage. The separator is designed to permit the use of the greatest number of balls possible, and is supported by the two rows of balls. The latter are of the company's own manufacture and have been used successfully for years in New Departure bicycle and motorcycle coaster hubs. The chief advantages claimed are the greater load carrying capacity of the new bearing due to the use of two rows of balls instead of one, and the possibility of employing a correspondingly smaller size of bearing to perform the same service. The results of some remarkable tests will be displayed in connection with the exhibit at the show.

A large addition to the company's plant at Bristol, Conn., is now nearing completion and will be devoted entirely to the manufacture of the new bearings, which will be exploited not alone for automobile construction, but for many other uses as well. Several makers of automobiles have already tested out the New Departure bearings on their cars during the past season and will make them a feature of the construction of the 1908 models. In addition, exhaustive tests of the new bearings have been made in the home factory and they have shown up so well under them that the company will operate the new addition to the plant to its full capacity from the start.

line from the vertical instead of radially and in such places as a bevel-gear driving unit, where the line of pressure is at right angles to the base of the teeth of the pinion, the load is intermediate between the radial and end pressure and is taken care of to the best possible advantage. The separator is designed to permit the use of the greatest number of balls possible, and is supported by the two rows of balls. The latter are of the company's own manufacture and have been used successfully for years in New Departure bicycle and motorcycle coaster hubs. The chief advantages claimed are the greater load carrying capacity of the new bearing due to the use of two rows of balls instead of one, and the possibility of employing a correspondingly smaller size of bearing to perform the same service. The results of some remarkable tests will be displayed in connection with the exhibit at the show.



NEW RADIAL AND THRUST BEARING COMPLETE.

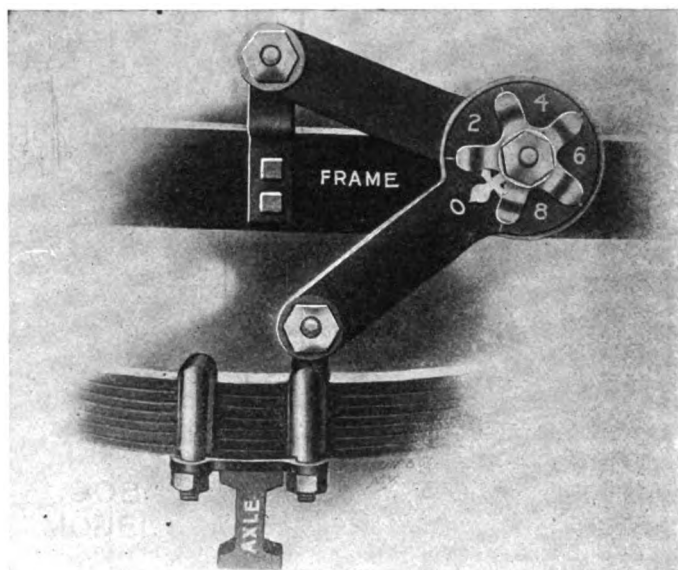


PART SECTIONAL VIEW.

TRUFFAULT-HARTFORD SHOCK ABSORBERS.

Though highly efficient in other respects, it has been found difficult when using shock absorbers to set each one of the four, or each pair, front and rear, to work together; that is, so that each one would oppose the same amount of frictional resistance as the others, and this is a fault that the makers of the Truffault-Hartford shock absorbers have eliminated in the 1908 model of that device, by unique means. An indicating arrow and dial have been provided, the latter with a scale calibrated so as to show just how the absorber should be set for different weights, ranging from 1,600 to 5,500 pounds. The ends of the arms have also been simplified, thus making the application of the shock absorbers much easier.

With the exception of the friction disks, the device is constructed of crucible steel and brass throughout, and consists of three arms of equal dimensions, two paired, and the third acting as a middle arm, all three being joined by a center stud, making the shock absorber interchangeable and reversible. The center, or middle arm, works on a hardened steel bushing giving a



1908 MODEL OF THE TRUFFAULT-HARTFORD SHOCK ABSORBER.

straight up and down movement which prevents shearing and side swaying. The inner surfaces of the lower or outside arms come in direct contact with cup-shaped brass disks, firmly secured, instead of friction washers as heretofore, while on each side of the center arm the friction disks themselves are attached. Over them is fitted a brass cup into which the friction and brass disks telescope, making the new construction dirt and waterproof. The same special frictional material which was found to give such excellent service in the 1907 model has been retained. Its construction is such that it lubricates itself automatically in proportion to the pressure, the surfaces containing sufficient lubricant to last the life of a car. The fact that no less than seventeen different American manufacturers now use the Truffault-Hartford as part of the regular equipment of their cars speaks for itself.

CHARLEY SEVERS RELATIONS WITH MERCEDES.

C. L. Charley, who has been associated with the selling end of the Mercedes company ever since the latter began to market its cars outside of Germany, has just severed his contract relations with that firm, although he has let it be known that he will continue to assist those of his sub-agents who still have chassis to dispose of under existing contracts. M. Charley was the sole distributor of Mercedes cars in France, England and the United States, and, as such, came to be known almost as well on this side of the Atlantic as abroad.

PERFECTED DRY CELL IGNITION ON ELMORE.

As an inkling of one of the things they will uncover at the coming Garden Show, the makers of the Elmore two-cycle cars state they have been making an exhaustive line of experiments with dry cells as a source of ignition current, and what is far more to the point, that their experiments have been remarkably successful. For instance, they are willing to guarantee that with their improved system of ignition using dry cells, an Elmore will run 1,500 miles without replacing them, and they have on record an instance of 2,000 miles having been covered. This means that an average season's driving can be accomplished on two sets, or a dozen six-inch dry cells, with which every Elmore is equipped. More than that, the system is said to be so sensitive that it has worked successfully for several hours on dry cells that had been discarded as worthless by other users; in fact, it has continued to operate until the cells would not give a reading in excess of one ampere.

REGARDING THE PARKWAY GARAGE COMPANY.

According to newspaper reports that appeared last week, the Central Park Automobile Storage Company filed a list of its assets and liabilities in conformity with the bankruptcy laws, its petition having been filed and a receiver appointed in November, 1906. The receiver decided not to carry on the business and the premises at Central Park West and 110th street were accordingly leased to the Parkway Garage Company, which was involved. The only connection between the latter company and the bankrupt concern, however, is that the Parkway Garage Company is the present occupant of the former company's location. C. Herbert Covell, who is also president of the Covell & Crosby Motor Company; Richard K. Fenker, formerly general manager of the same concern, and Leslie B. Sanders, manager of the automobile department of the Fiss, Doerr & Carroll Horse Company, comprise the Parkway Garage Company.

TRADE NEWS FROM THE QUAKER CITY.

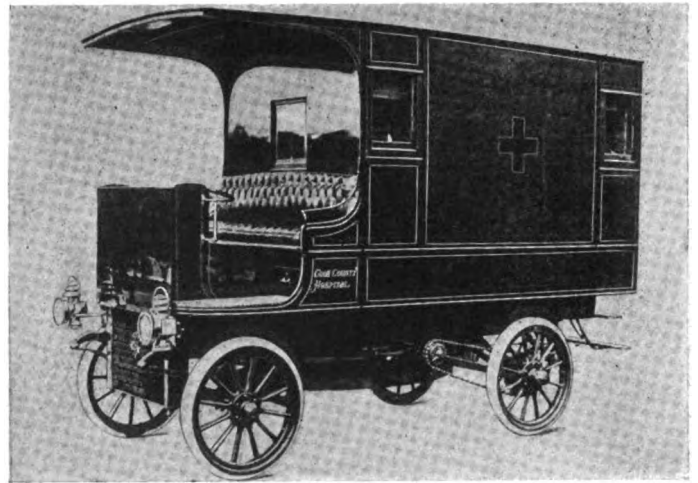
PHILADELPHIA, Oct. 7.—Manager W. F. Smith, of the local branch of Thos. B. Jeffery & Co., makes the announcement that the Rambler concern has again been compelled to seek additional room to carry on the business. With no less than three local establishments, a lease was signed last week whereby the large factory building at Broad and Washington avenue was turned over to Manager Smith. It is the intention of Mr. Jeffery, who came on to engineer the deal, to establish the largest and best equipped garage and repair shop in the country.

The Charles F. Johnson Automobile Company, which recently took over the local agency for the Pope-Toledo car, has engaged J. B. Dickson to manage the Broad street establishment it is about to close negotiations for.

An agency is to be established here shortly by the Imperial Motor Car Company, of Williamsport, Pa., makers of the Imperial cars.

AN ADDITION TO LIST OF WESTERN MAKERS.

ROCKFORD, ILL., Oct. 7.—With the incorporation of the Rockford Automobile and Engine Company in this city, Illinois is to have another automobile manufacturing concern within its borders. The new company is backed by Adam Ziska, Jr., John F. Waters and A. G. Parmele, who figure as its incorporators, the capital stock being placed at \$50,000. John F. Waters was formerly at the head of the Federal Automobile Company in Chicago, and came here a few weeks ago seeking capital to build a car which he has perfected. The type is that of the familiar buggyabout, with solid tires, the engine being placed beneath the body horizontally, and it is said to have proved very successful. It will be known as the "Rockford," will have an 8-10-horsepower motor and friction transmission.



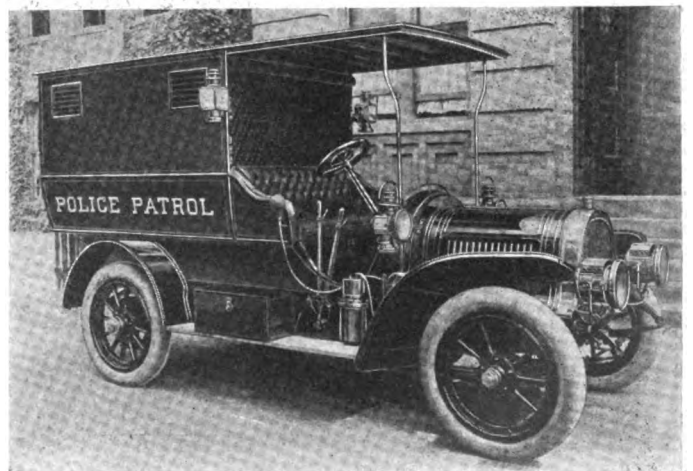
AMBULANCE MADE BY THE RAPID MOTOR VEHICLE COMPANY.

LATEST GASOLINE-DRIVEN AMBULANCE.

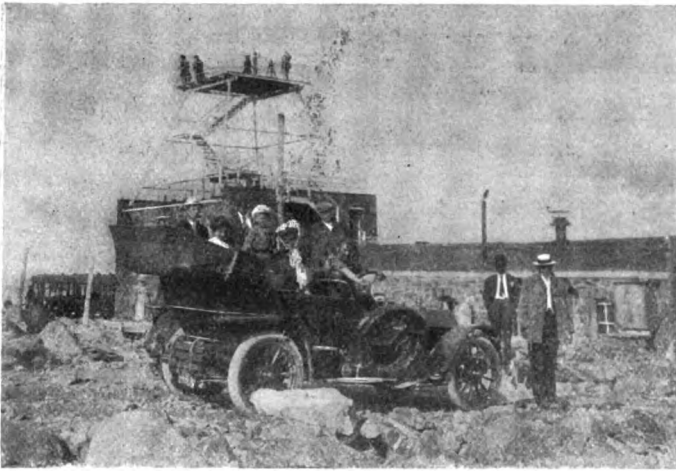
While its line of commercial gasoline-driven vehicles has heretofore included almost every known type for business purposes, the Rapid Motor Vehicle Company, Pontiac, Mich., has recently branched out still further and are now marketing a gasoline-driven ambulance. The motor-driven ambulance has long been a familiar sight, but up to the present electric cars have been used almost exclusively. The chief feature of this new ambulance, a view of which is shown by the photograph, is its greatly increased accommodation over previous types. Entrance is by two broad steps in the rear, leading to two full-size emergency cots with an aisle between. Seats are provided for three attendants, one in the center of the aisle and one at the foot of each cot, while the driver's seat, upholstered in tufted leather, is 4 feet 6 inches wide and easily accommodates three persons.

HARTFORD TO HAVE A HIGH-SPEED PATROL.

What is probably one of the most advanced types of patrol wagons ever built for American municipal service has recently been turned over to the city of Hartford by the Pope Manufacturing Company. It is built on a Pope-Hartford chassis, the mechanism of which does not differ from the standard car of that type, and is equipped with a specially designed body which will comfortably seat eight persons, or ten at a pinch, in addition to the driver. One of the most valuable features of the body design is the fact that it has been made so as to be readily convertible for ambulance purposes by the removal of the benches. The tire equipment consists of five-inch Hartfords on Midgley rims, and the car is capable of making forty miles an hour.



HARTFORD'S NEW POPE-HARTFORD POLICE PATROL.



MR. HOLLINGSHEAD'S STEARNS ON PIKE'S PEAK SUMMIT.

TO THE SUMMIT OF ZEBULON PIKE'S PEAK.

J. D. Hollingshead of Chicago, touring through the western part of the country, recently decided to attempt the ascent of the famous peak bearing Zebulon Pike's name. Start from Manitou was made with F. W. Leland at the wheel of the Stearns. It was feared at first that because of the rapid change in altitude much carbureter trouble would develop, as the top of the peak is 14,147 feet high. The occupants of the car were agreeably surprised, however, for not once was the slightest trouble encountered. The details of the climb are best told in the words of Leland: "I never met such awful roads in my life, or, to be more exact, I never before traveled on such ground without any road. At first it was all right. In fact, we were able to find the road all right as far as the Half-Way House, but from there on we were forced to run along the trail used by horses and burros in climbing the peak.

"But the worst of all was making the turns. Owing to the character of the road (?), it was necessary to back up a trifle and then go ahead, and it was very ticklish business. Meanwhile the grade was becoming something frightful, but we plugged right along. Then we came to one place that almost made the women of the party faint. It was necessary to back up a little, and as we rounded the corner, going backwards, we almost dropped over a precipice. I slammed the emergency on quick, reversed her, and opened the throttle. She picked up quickly and pulled us off the edge. After that we were mighty careful how we backed up.

"When we were about seven hundred feet of the summit the

little 'T' rail ceased entirely, and after that we simply had to force our way up over the rough rocks. The car rocked from side to side continually, but she never faltered, and in a short while we had reached the summit, the first touring car ever to make the ascent and the only machine which ever turned the trick unaided."

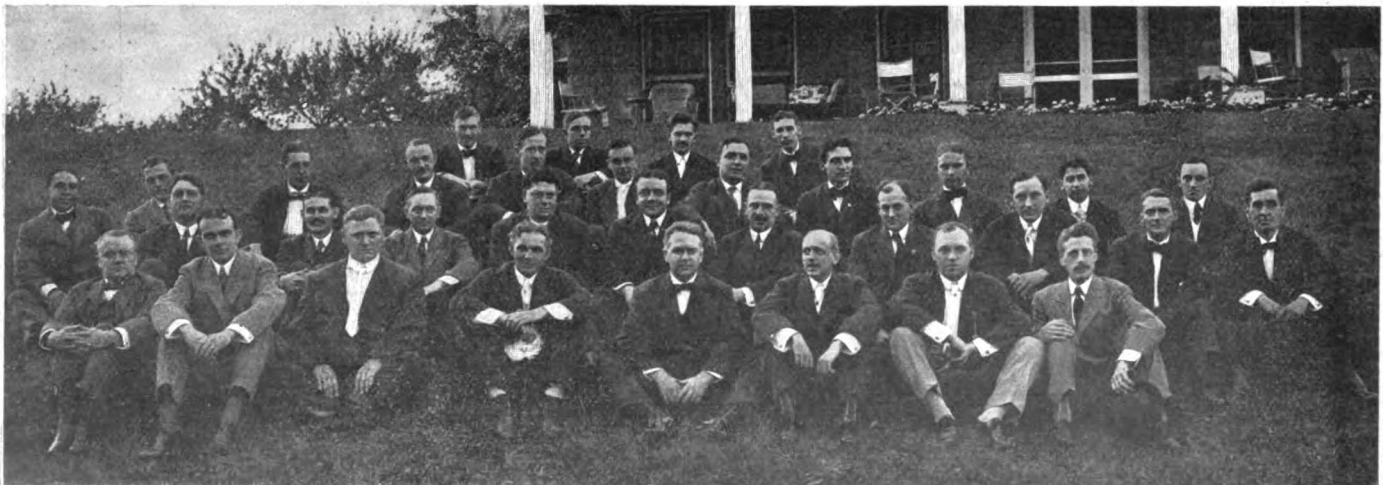
BANQUET TO THE RED CLOUD "OLDSMOBILERS."

AKRON, O., Oct. 7.—Fred W. Work and C. J. Maxon, who arrived home Friday from their double transcontinental trip in an Oldsmobile, were given a banquet and reception at the Country Club Friday night, when over 50 local autoists were present. The banqueters included Tom Ralph Owen, whom Work accompanied on the New York-Florida tour of January last. Work and Maxon told of their exciting experiences on the trip, including some amusing episodes. R. E. Owen also spoke briefly of his record trip last spring from San Francisco to Los Angeles.

"Red Cloud," the Oldsmobile with which the trip from Akron to San Francisco and back through the Southwest and South to New York and return to Akron was made, has been placed on exhibition at the garage of the Akron Automobile Garage Company, and will probably be shown at the New York Automobile show. It is just as it appeared when it arrived, with the entire equipment, including revolvers, block and tackle, tools, maps, etc., and their condition shows that their presence on the car was not purely ornamental during a large part of the trip through the far West.

THE ANNUAL FORD FAMILY REUNION.

Four pleasant days were passed by branch managers and heads of departments of the Ford Motor Company in the annual "Ford Family Reunion" at Detroit last week. There were some intervals for serious business talks, but the greater part of the time was spent in sampling the good things provided. An interesting trip was made to Pine Lake, thirty miles from Detroit, where a sumptuous banquet was served at the Automobile Club house. Wise and witty speeches were delivered by Messrs. Couzens, Hedges, Hawkins, Plantiff, Wills, Flanders, Walburn, Pelletier, Fay and other members of the organization. Congratulations went the round for the large cash volume of business done during the past twelve months—over \$7,500,000—and the record output of Ford cars. As guests of the Dodge Brothers the party enjoyed a hair-raising ride on the *Hornet*, the fastest launch on the Great Lakes, and on Saturday, at the State Fair grounds, watched Henry Ford do some fast miles on his latest speed creation. Mr. Ford drove the car himself for three miles, the last in 59 seconds, and Kudlik did three, each in 55 flat, which roused the enthusiasm of the crowd to a high pitch.



FORD BRANCH MANAGERS ENJOYING AN OUTING AT PINE LAKE, NEAR DETROIT, DURING THE ANNUAL REUNION AT THE FACTORY.



THE RECENTLY COMPLETED BARCLAY GARAGE AT MINNEAPOLIS.

Minnesota's Metropolis Has a New \$60,000 Garage.

MINNEAPOLIS, MINN., Oct. 4.—In the completion of the J. J. Barclay garage, Hennepin avenue and Harmon place, Minneapolis finds herself in possession of the most modern and completely equipped automobile shop west of Chicago. The building has two stories and a basement. It is constructed of white sand lime brick, concrete and iron, being not only substantial but handsome in appearance. The basement is used for the heating plant, for the charging of electric vehicles and for dead storage. It also contains a work bench for the free use of private chauffeurs. The first floor is for the offices and garage and the second for the workshop, the stock and tool room, the chauffeurs' room, the paint room, the dust-proof varnish room and salesroom.

One of the features of the new building is the workshop. This has seventeen windows and a large skylight. The work benches are of the latest design. The three pits are well lighted and ventilated from below. The dust-proof varnish room is another triumph in up-to-date garage construction, and also the chauffeurs' rest room. A 10-horsepower electric elevator runs from the basement to the top floor.

Previous to 1902 Mr. Barclay was in the land business. Seeing a good future for the automobile business, he established himself in a small shop with a floor space of less than 2,000 feet. His new garage has a floor space of 28,089 square feet. The cost of the new structure completed is \$60,000.

Another Link in the New York-Buffalo Chain.

AMSTERDAM, N. Y., Oct. 7.—It is evident that in the course of a few years the entire length of the route from New York City to Buffalo will be lined with modern garages at all the more important stopping points. The latest to be completed is that of William Daye, whose business outgrew the old quarters on Division street, and who has since had constructed for him a modern building on the east side of Walnut street, adjoining the Hotel Warner. The new structure has a frontage of 54 feet on Walnut street and is 108 feet deep. It is of brick and steel construction with a main floor of concrete, and is accordingly fireproof. On the second floor will be located a completely equipped machine and paint shop, which will be in charge of R. G. Daye, an expert machinist, lately with the General Electric Company. A large electric elevator is provided to carry the cars to the upper floor.

Springfield Boasts New England's Most Modern Garage.

SPRINGFIELD, MASS., Oct. 7.—In the establishment of the Geisel Automobile Company in this city is to be found one of the most representative and up-to-date automobile stations that New England can boast. The building itself measures 56 by 126 feet and is constructed with a trussed roof so that the floor is entirely free from obstructions. On the east side, windows are

placed between each pair of trusses and run up to the roof, giving an unusually liberal provision for lighting. Ease of entrance and exit have also been provided for by making the front door 14 feet wide, while a second door in the southeast corner is 16 feet wide. The washstand occupies a space 18 by 24 feet and is fitted with a special overhead washer capable of swinging round the longest cars. On each side of the garage floor there have been placed seven drop lights on 25-foot cords to facilitate the inspection of cars on any part of the floor. Plans are under way for the addition of an L-shaped wing to measure 50 by 90 feet, which will be used to accommodate a repair shop, and the latter will also be fitted in the most up-to-date manner. The garage is very favorably situated in the center of Springfield's business district and within a block of the railroad station.

Chicago Has Model Garage at Garfield Park.

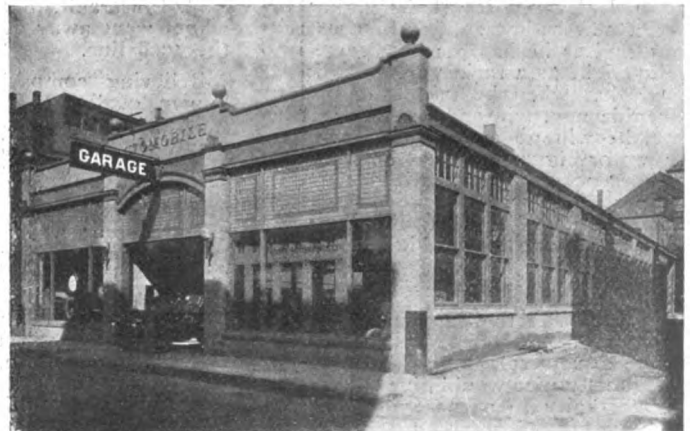
CHICAGO, Oct. 7.—Though out in the suburban districts, the new Garfield Park garage at 435-437 Douglas boulevard can hold its own with anything Chicago has to offer in the way of automobile accommodation. The building measures 40 by 135 feet, facing the park part of Douglas boulevard from the west, and was planned throughout by Herman E. Halbert, its present manager, who is a graduate of bicycling days. It is a fire-proof structure and has storage capacity for forty cars; it is equipped throughout with every modern convenience, including a ladies' waiting room, steel lockers for chauffeurs and owners, overhead washers and a completely fitted machine shop for repair work. Prior to erecting the new building, Mr. Halbert was in business at 1891 Harrison street and is agent for the Cleveland cars, besides maintaining a Prest-O-Lite exchange station.

An Addition to the Metropolitan Garage List.

NEW YORK, Oct. 8.—Another chapter in the usurpation of the place long held by the horse took place in the recent transformation of the well-known Harriman stable building that sheltered some of the Speedway's most famous trotters into the Speedway Garage. It is located just at the head of the Speedway on 155th street, near St. Nicholas avenue. Every modern facility for storage and repair work has been installed, in addition to which a full line of supplies is carried and a renting business will be established. The place is under the management of experienced automobile men and should become deservedly popular.

Capitol Hill Garage in Larger Quarters.

WASHINGTON, D. C., Oct. 7.—James J. Flynn, proprietor of the Capitol Hill Garage, has leased the building formerly occupied by John R. Thomas, at 1028 Connecticut avenue, and has equipped it as the "Mitchell Garage," naming it after the Mitchell cars, for which he is agent in Washington. An electric charging plant has been installed and a line of accessories added.



GEISEL AUTOMOBILE COMPANY'S GARAGE AT SPRINGFIELD, MASS.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

Using the assessment rolls as the source of information, it is learned that the number of automobiles in Minnesota has increased from 1,575 to 2,215 in the past year, while their value has jumped from \$697,708 to \$1,009,735.

R. M. Owen & Company, general sales agents of the Reo and Premier lines, are now established in their new headquarters at 1759 Broadway, having lately given up the old place at 40 West Sixtieth street, which had been outgrown some time ago.

It is of interest to note that in the recent twenty-four-hour race held at Morris Park no less than six of the competitors in the race itself used Vacuum oils for lubrication as well as the winner of the cross-country run. These were the Dietrich, the Allan-Kingston, Packard, Itala, Motobloc and Matheson, the other being the American Mors, driven by Owen.

John Wilkinson, chief engineer of the H. H. Franklin Manufacturing Company, Syracuse, N. Y., has just completed a motor that will run on water, though the feat may not be as wonderful as it appears at first sight, as he has merely taken a 1908 Franklin six-cylinder air-cooled engine and put it into a boat that is now the terror of all Skaneateles Lake, as it has greatly surpassed his expectations in speed.

Getting tired of being constantly passed on the road by automobiles, the Fire Department of Long Beach, Cal., decided to do likewise, and accordingly undertook exhaustive tests of different cars. A Rambler, Model 21, was purchased and fitted with chemical fire extinguishing apparatus. After some months' use of this car the town has now placed an order for two Model 25 Rammers, which will be specially equipped for this service.

The Pittsburg Chronicle-Telegraph has just concluded a unique contest by awarding to David E. Martin, an employee of Banker Brothers Company, of Pittsburg, a valuable prize for the best list of answers to sixty-eight questions regarding automobiles and the handling of them. The queries have appeared in that paper during the past few weeks, and out of the total number Mr. Martin answered sixty-two of them correctly, in the judgment of the committee of award.

John J. Ryan, of turf fame, has ordered a new 90-horsepower Stearns runabout, and as he has recently come into the limelight as a racing driver, it is expected that when he takes the Stearns to Florida next winter, which he intends doing, he will go against everything in his class or bigger. He has been driving a 60-horsepower Stearns with great success, particularly at the recent races in Cincinnati, and has accordingly placed his order for one of the higher-powered 1908 models.

In the opinion of Charles Clifton, of the George N. Pierce Company, the postponement of the stripped stock touring car race to next spring was a wise move, as the short notice would give the makers no opportunity to prepare for the contest. Although the Pierce Company confines its attention to touring and similar contests, it is not improbable that it may

be induced to enter the field with other stock cars in the near future, provided the events be run under the auspices of the American Automobile Association.

John D. Rockefeller displays the same painstaking care and unerring business judgment in the purchase of such a small thing—to him—as an automobile as he does in his vast commercial dealings. He became the owner of a White Steamer limousine in the fall of 1905 and has used the car more or less continuously ever since, but when it came to buying another car of the same make he asked the salesman all kinds of questions, examined the car inside and out, and had a 30-mile demonstration before ordering.

At the forthcoming automobile show the N. Y. & N. J. Lubricant Company will have a practical demonstration at its booth of a transmission gear lubricated with its KOO-Special Grade non-fluid oil. Another interesting feature of the exhibit will be the presence of Miss Hebe White. Miss White, who has just completed an endurance run against Miss Phoebe Snow to see who could keep clean the longer, will distribute an attractively printed booklet, describing a most interesting cross-country automobile steeplechase.

At the start of their 5,000-mile trip in the six-cylinder Berliet, Arthur N. Jervis and F. M. Hoblitt earned for themselves the title of the "Vanadium Brothers, the Anti-Fatigue Team," due to their acquisition of twin outfits of leather and khaki as a preliminary. Their fame spread abroad, and when they reached Chicago a vaudeville manager endeavored to make a contract with them to do a "turn" in his house. He was informed that their act was "a mile-a-minute knockabout specialty, and a stage a thousand miles square was necessary to play it," which made him conclude he did not want it.

Rambler dealers from all over the continent have been flocking to Kenosha, Wis., the birthplace of all the Rammers, during the past few weeks. It has long been the policy of the company to encourage an annual visit to the factory on the part of its representatives in order that they may become familiar with 1908 models early in the season. Among recent visitors were W. K. Cowan, of Los Angeles, and F. B. Naylor, of San Diego, Cal.; F. D. Homan, of New York; Prince Wells, of Louisville, Ky., and E. J. Filiatrault, of Duluth, Minn., all of whom went away deeply impressed with the 1908 line.

Believing comparison with a car of known quality to be the only way of judging a new one, the testing department of Thos. B. Jeffery & Son have undertaken a unique form of trying-out for their new models. A 1907 40-horsepower Rambler and a 1908 model rated at 32 horsepower have been assigned to two of the Rambler factory's most expert testers. They are now touring the sand roads and hills of Illinois and Wisconsin and will include some of the better known hills in their itinerary, such as that at Algonquin. In order to stimulate effort, a substantial prize has been offered for the winning man in the greatest number of tests, and in order to equalize matters the operators change cars every morning.

S. B. Green, proprietor of the Central Automobile Garage, Daytona, Fla., is now occupying the new building directly north of his present establishment on Magnolia avenue, on which construction was started about the middle of August. The building measures 33x50 feet, has a concrete floor and metal roof, and will be used exclusively as a machine and repair shop for automobile and boat work. It has been equipped with a complete set of machine tools for this work, and the electric lighting plant in the old building will also be moved.

The directors of the Peerless Motor Car Company met at Cleveland on September 30 and declared the usual annual cash dividend of 10 per cent. The company has been making extensive improvements and additions to its plant during the past year and regards the outlook for the coming season as extremely satisfactory. Among the buildings now in course of construction are a foundry to make aluminum and brass castings for the entire output, as well as to afford facilities for engine and chassis testing, while a second is to form an extension of the present machine shop. New factory offices and draughting rooms are also in course of construction, while considerable special machinery is already being installed.

NEW AGENCIES ESTABLISHED.

Thomas J. Fay, chief engineer for J. M. Ellsworth, 518-520 West Twenty-second street, New York, recently closed a contract with Messrs. Derihon, of Liege, Belgium, through which Mr. Ellsworth becomes sole American distributor of the alloy steel die forgings made by the Liege plant, American receipts of which will exceed \$500,000 in value annually. This factory uses the special automobile steel made by Felix Bishoff, Duisberg, Rhine, Germany. This is one of the largest projects of its kind the year has brought forth, but further developments are expected.

"Western dealers are looking forward to a record-breaking business next year," said Horace De Lissier, president of the Ajax-Grieb Rubber Company, on his return from the West. While away Mr. De Lissier made a coast to coast trip and as a result there are now four branches handling Ajax tires on the Pacific Coast. In San Francisco Hughson & Merten will have charge as managers, and through them special branches will be run in Los Angeles, Portland, Ore., and Oakland, Cal. Charles Davis, former manager for the G & J Tire Company, will travel the Western States in the interests of this concern. A branch was also opened in Seattle, Wash., and placed in charge of Harold W. Stimpson.

The Pennsylvania Auto-Motor Company, Bryn Mawr, Pa., have arranged for agencies as follows for the season of 1908: City Hall Automobile Company, 66 Fulton street, San Francisco; Greer-Robbins Company, 1501-1505 South Main street, Los Angeles, Cal.; Denver Omnibus & Cab Company, Denver, Col.; Hamilton Automobile Company, 1257 Michigan avenue, Chicago; Frederick E. Randall Company, 245 Columbus avenue, Boston; Pennsylvania Motor Car Com-

pany, Providence; Bellefield Motor Company, 4514-16-18 Henry street, Pittsburgh; Robert D. Jones, 409 New England building, Kansas City, Mo.; Rice's Garage, Madison street and North avenue, Baltimore; West-Stillman Motor Car Company, 153 N. Broad street, Philadelphia; Chas. F. Batt, 1378 Bedford avenue, Brooklyn, N. Y.

W. S. M. Mead, manager of the eastern sales agencies of the Lozier Motor Company, has been making a round of the eastern territory, making arrangements for the Lozier representation during 1908. As a result of his trip, H. C. & D. C. Castle, Inc., Boston, will continue to represent the Lozier interests during the coming year throughout the State of Massachusetts, with headquarters at Boston, and a branch at Springfield. In Pittsburg, where the Lozier has not been regularly represented heretofore, D. P. Collins & Company have taken on the line and will handle it in connection with the Columbia, for which they are agents. The Eastern Automobile Company, Philadelphia, formerly agents for the Lozier and the Stevens-Duryea, discontinued business on October 1, and the Lozier will henceforth be represented in the Quaker City by the General Motor Car Company, who also handle the Autocar.

PERSONAL TRADE MENTION.

David H. Keaghey has just assumed charge of the Allegheny Automobile Company's establishment, Pittsburg, as manager. The concern will handle the Austin, Glide and Rapid trucks.

F. H. Fowler, well known throughout the New England trade, has accepted a position as special traveling representative of the R. H. Smith Mfg Co., Springfield, Mass., makers of the Springfield Motometer.

James F. Fairman has recently joined the selling forces of the N. Y. & N. J. Lubricant Company, 14 Church street, New York City, and will travel in the latter's interests, making his headquarters at the New York office.

Gaston R. Rheims, head of the C. G. V. Import Company, has returned to New York after a two months' stay in France. Before sailing on the return trip Mr. Rheims tried out the first of the new 100-horsepower C. G. V. semi-racers.

Berne Nadall, who until recently was engaged in launching the Comet Motor Car Company, Ltd., of Montreal, Can., is shortly to leave the Dominion and return to the States. He has acquired the American rights of the Gillett-Lehman controller and economizer, and will manufacture and market it in this country. Mr. Nadall will make Chicago his headquarters.

O. H. Henderson, who has been connected with the Waverley department of the Pope Motor Car Company, Indianapolis, Ind., for the past six years, until recently as superintendent of agencies, has resigned, and, while no announcement has been made, it is understood he has already become identified with one of the country's large makers of electric vehicles in a similar capacity.

James Couzens, secretary-treasurer of the Ford Motor Company, Detroit, left for the Pacific Coast on Monday of last week. Mr. Couzens goes to make his annual inspection trip of Coast condi-

tions and to plan his sales campaign in that part of the country for 1908. He is accompanied by Mrs. Couzens and will remain away from the factory about a month, during which time he will visit every city of importance in the West.

F. A. Brodhead, formerly manager and secretary of the American Automobile Company, of Atlantic City, has left the latter concern to assume the management of the Philadelphia store of the Dragon Automobile Company, of that city, becoming resident manager of the Broad street branch. Mr. Brodhead has fifteen years' experience in the selling of gas engines and automobiles behind him and is considered a valuable acquisition to the Dragon forces.

NEW TRADE PUBLICATIONS.

Tobin bronze, manufactured by the Ansonia Brass and Copper Company, with offices at 99 John street, New York, is very fully dealt with in a booklet issued by that firm.

The product of the Empire Tire Company, of Trenton, N. J., comprising automobile tires, repair outfits, protectors, rubber matting, etc., is listed in a booklet just sent forth.

Automobile tops, wind shields, aprons, rugs, hampers, etc., and a full line of clothing for automobilists of both sexes forms the subject matter of the Detroit Motor Car Company's latest catalogue. The address of the firm is 1256 Jefferson avenue, Detroit, Mich.

A general catalogue of machinists' tools, etc., has been issued by the Billings & Spencer Company, Hartford, Conn. It is a duplicate of the firm's general catalogue of machinists' tools, but reduced to envelope size, with wood cuts introduced in place of half-tones.

Catalogue E, 1907, from the Boston Gear Works, Norfolk Downs, Mass., is a general gear catalogue, including chains, sprockets, bearings, steering devices, etc. It is of convenient pocket size and contains, in addition to the trade matter of the firm, a series of mechanical tables.

Mechanical features and material benefits of the Kilgore pneumatic shock eliminator, made by the Kilgore Manufacturing Company, Old Town, Me., are put forth in a booklet entitled "Ride on Air." It contains illustrations of the eliminator and diagrams of vibrations with and without this apparatus.

The Piper's percentage forms the theme of a booklet from the Diamond Rubber Company relative to tire cost during the Glidden Tour. The text shows the low figure paid to the piper by Diamond users during this strenuous competition, and illustrations depict a number of contestants equipped with the Akron firm's product.

The McNutt system of safety devices for handling gasoline, naphtha and other volatile liquids is dealt with in an illustrated booklet from the Non-Explosive Safety Naphtha Container Company, with offices at 1133 Broadway, New York City. The claims are that with these devices gasoline can be handled with absolute freedom in all circumstances.

Bulletin No. 7, received from the Dayton Electric Manufacturing Company, Dayton, O., describes the firm's 8-S switch-board gas-engine ignition outfit. It is for use with stationary gas engines

used to drive direct-current power dynamos. The switch provides for charging two stor: alternately from the lighting dynamo.

How Rome spiral tubing radiators and condensers are manufactured, and how the different types look when finished can be learned by the booklet published by the Long-Turney Manufacturing Company, of Rome, N. Y. Numerous illustrations are given of these vertical tube radiators, as manufactured for well-known cars and for use on commercial vehicles.

Instead of issuing a general catalogue, the George Q. Hill Company, of Boston, Mass., has produced a booklet illustrating a few of their many examples of special metal parts made to order. The firm has made the commercial production of small metal parts in quantity a particular study, their processes including turning, swaging, rolling, drawing, blanking, forming and finishing of sheet metal, wire, tubing and castings.

As a possible aid to the designer, the Briscoe Manufacturing Company, of Newark, N. J., has produced a large hanger illustrating most of the distinctive radiator designs that have been used in this country and abroad during the last six years. Those made by the Briscoe Company are produced in half-tone, the others—mostly French, German and English—are shown in outline. The same matter is also printed in pamphlet form. Copies will be sent on request.

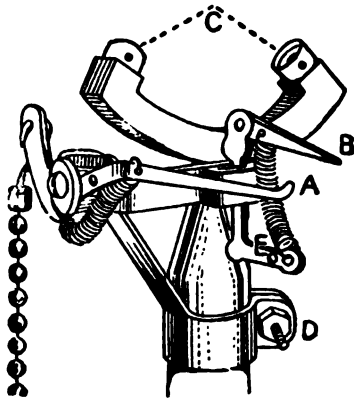
The Diamond Chain and Manufacturing Company has issued an instructive treatise on power chains and sprockets. In addition to listing the firm's complete line of automobile, bicycle and motorcycle chains, it gives information on the manufacture and use of machined chains. A chapter on power transmission explains the advantage of chain gearing. There is a table of sprocket dimensions and practical hints on how to get the best service from chains. A copy of the booklet can be obtained from the Diamond Chain and Manufacturing Company, at Indianapolis, Ind.

The instruction book for the guidance of operators of 1907 Peerless cars deals with its subject in a most commendable manner. Each part of the machine is described briefly, but clearly, and valuable information given on the manner of caring for and operating the car. By means of half-tone illustrations and carefully prepared line drawings it is possible to follow clearly the instruction given and arrive at a thorough understanding of the machine. Operators of Peerless machines will find it a useful book to consult. It can be obtained from the Peerless Motor Car Company, Cleveland, O., or from their selling agents.

There is interesting reading in the publication issued under the title "The Truth About the Automobile." The Cadillac Motor Car Company, of Detroit, Mich., has endeavored to obtain accurate data on three important points: The life of an automobile, the number of miles it will run on a gallon of gasoline, and the length of time the tires will wear. One hundred and fifty-eight records on these points, sworn before notaries and witnesses, have been obtained and are now produced. In addition, a tabular record is given of cost of repairs, mileage, gasoline consumption and number of passengers carried of 164 single-cylinder Cadillacs.

INFORMATION FOR AUTO USERS.

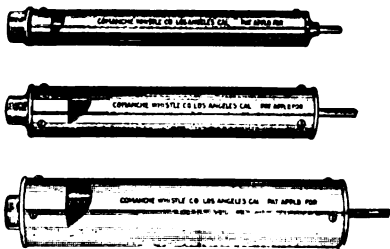
Electric Gas Lighters.—For lighting automobile headlights or other acetylene or coal gas lights, the Adjustable Burner Company, 18 Pearl street, Newton, Mass., is placing on the market a simple



ADJUSTABLE ELECTRIC GAS LIGHTER.

electric gas lighter which can be readily applied to any burner. It is operated by dry cells or other battery current and a plain spark coil, which can be installed by any autoist, as no particular knowledge of wiring is required. The lighter is practically indestructible, as all springs and working parts are out of the way of the flame when the burner is lighted. The lighters alone list at 50 cents each and their construction may be seen from the accompanying illustration.

Comanche Automobile Whistles.—The Comanche Whistle Company, 335 South Spring street, Los Angeles, Cal., is putting on the market a line of automobile, mo-

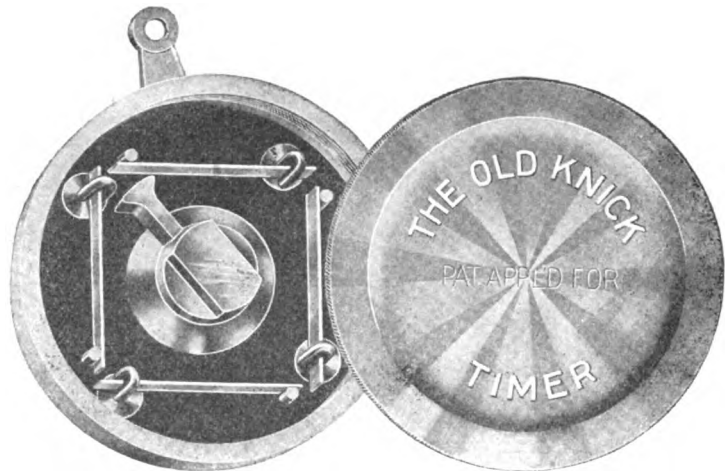


THREE SIZES OF COMANCHE WHISTLES.

torcycle and motorboat whistles of attractive appearance and simple mechanism that have met with considerable favor on the Coast right from their first appearance, and are now being introduced in other parts of the country. The Comanche whistle is blown by the exhaust from the motor and is operated by a neat bronze pedal, the note being produced by changing the position of the plunger in the barrel of the whistle.

When fully open a very low note is produced, rising on the scale until the blast is shut off entirely and having a range of about an octave and a half. No cut-out is required, a spring shutting off the exhaust when the pedal is released. The whistles are constructed throughout of polished brass and are made in three sizes, the small and medium types for cars having a free exhaust, and the large one for cars on which the exhaust is under more or less pressure. For motor boats they are correspondingly simple, no storage tank or pump being necessary, while the blast produced is audible for two or three miles. In addition to forming a very necessary part of either a boat or car as a signal, simple airs may be played with a little practice.

The Old Knick Timers.—These timers, made by the Pioneer Brass Works, Indianapolis, Ind., are constructed with an aluminum case, 3 1-2 inches in diameter, insulated with a 3-16-inch sheet of fiber back of the contact spring and by means of a sheet of mica between the fiber and case. The timing head is of phosphor bronze, while the spring is of the best oil-tempered steel, held in place by phosphor-bronze binding posts. It is further insulated through the case by means of a large fiber washer held in place with both lock and terminal nuts on the binding posts. These timers are made for any type of engine and for any number of cylinders, and are the result of a number of years' experience in the building of gas engine accessories. It is a matter of common knowledge that half the petty troubles arising from the ignition system may be traced to poor contact at the timer, so that it is always worth while to buy the best that is to be had where such an important essential is in question.



OLD KNICK TIMER WITH COVER REMOVED, SHOWING MECHANISM.

Extra Tonneau Seats.—The Graves & Congdon Body and Seat Company, Oak street, Amesbury, Mass., who manufacture a line of automobile bodies, are now placing on the market a detachable tonneau seat which is an improvement over many of the types hitherto in use, in that it cannot only be easily folded up or removed from place when not in use, but it leaves no unsightly attachments after removal. It is a revolving seat, and the bracket by which it is at-



G. & C. REVOLVING CHAIR SEAT.

tached to the side of the tonneau is of dove-tailed construction. Two sizes are furnished, either in the white or finished. The accompanying illustration pictures the seat both ready for use and in the folded position. They are not only attractive in appearance, but are well upholstered and very comfortable.

Skiddoo Soap.—Most any soap takes off the surface dirt and that is all, say the makers of Skiddoo soap, the Brown Soap Company, Columbus, O., but Skiddoo soap takes off all the dirt and the stain as well. It is put up in tins in a convenient paste form and may be easily used as desired without any danger of harming the skin. Aside from toilet uses, for which it is absolutely guaranteed by the makers to remove "all the dirt," it is also useful for cleaning and polishing the lamps or other brass parts of the machine.

INDEX TO ADVERTISERS

A. C. A. Show..... 98
 A. L. A. M. Show..... 99
 Acetylene Gas Illuminating Co. 48
 Acme Motor Car Co..... 93

Adams Co..... 54
 Add-Wear Tire Sleeve Co..... 55
 Adjustable Lighter Co..... 47
 Ajax-Grieb Rubber Co..... 80
 American Ball Bearing Co..... 60
 Am. Brass & Alum. Works... 52
 American Die Castings Co... 56
 Am. Locomotive Motor Car Co.102
 American Motor Car Co..... 95
 American Motor Truck Co.... 87
 Anderson Forge & Machine Co. 52
 Apperson Bros. Automobile Co.104
 Ashtabula Carriage Bow Co... 51
 Ashton Valve Co..... 50
 Atlas Motor Car Co.....100
 Auburn Automobile Co..... 54
 Audel & Co., Theo..... 51
 Austin Automobile Co..... 40
 Auto and Power Appliance Co. 47
 Auto Pump Co..... 47
 Autocar Co..... 88
 Autocar Equip. Co..... 90
 Automobile Blue Book..... 76
 Automobile Shows 83
 Automobile Supply Co..... 48
 Automobile Trade Directory... 84
 Automobile Utilities Co.....Cover
 Autoshine Co..... 48
 Avery Portable Lighting Co... 67
 Badger Brass Mfg. Co..... 66
 Baird-Banks Mfg. Co..... 65
 Baldwin Chain Mfg. Co..... 52

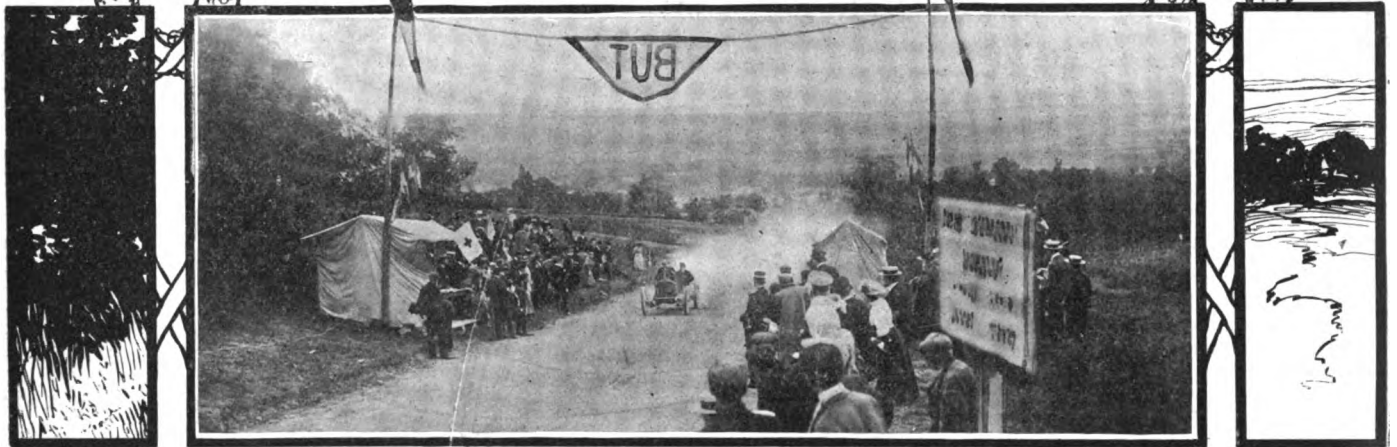
THE AUTOMOBILE

VOL. XVII.

NEW YORK—THURSDAY, OCTOBER 17, 1907—CHICAGO

No. 16

Chateau-Thierry's Climb



Has many entries and a Pipe winner

PARIS, Oct. 7.—Every year somebody prophesies that Chateau-Thierry hill climb will not be held again, and every year more automobilists than ever before cover the forty miles separating the quiet town on the hillside from the capital. This year there were seventy-three actual starters in a multiplicity of classes from small motorcycles to Grand Prix racers.

An Albatross motorcycle, fitted with an Anzini motor and mounted by Olieslaegers, the "Red Devil" of Antwerp, furnished the fastest speed of the day by climbing the mile hill at the rate of 53 miles an hour—splendid going on a 10 per cent. damp grade with two bad turns. Jespers, on the Pipe, built for the German Emperor race, made the fastest time of the cars, climbing the hill at an average of fifty miles an hour. In this class reserved for German Emperor racers, Hemery, on a Benz, came second, with Rochet-Schneider third and fourth, and Minerva fifth.

Darracq captured first and second places in the Targa Florio class, with H. I. S. A. second and La Buire third. When the machines were examined after the run it was discovered that the second Darracq, the machine which won the Sporting Commission Cup at Dieppe, had not a gasoline tank in accordance with the regulations and disqualification was imposed.

In the unlimited racer class Rigal's Grand Prix Darracq made the third fastest time of the day, easily beating an Aries, its only competitor. Rigal's "mechanic" was Mlle. Polaire, a the-

atrical artiste. Barriaux and his Vulpes had the votturette racer class to themselves and made the moderate time of 1:21 3-5.

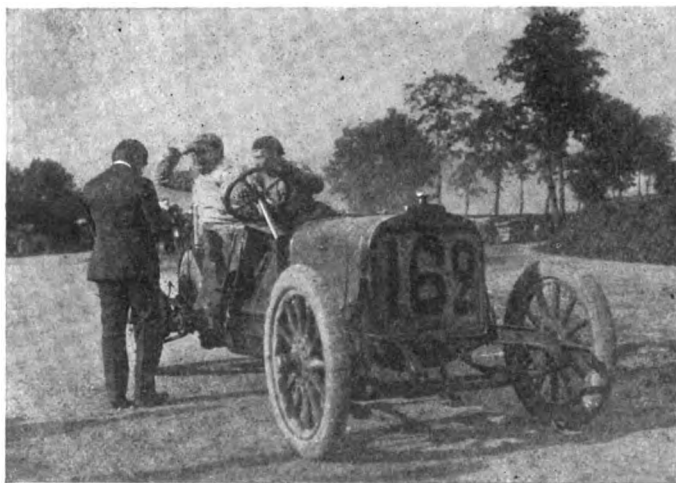
An unfortunate accident marked the trials of the racers, as the result of the overzealousness of a member of the fire brigade on duty on the road. During the motorcycle races the military fireman stepped on the course to watch the arrival of the machines. He was surprised by the rapid approach of a motorcycle mounting the hill at sixty miles an hour, and to save himself rushed to the inside of the turn. To avoid a collision the motorcyclist ran wide, missed his turn, and struck a soldier standing on the edge of the course. The unfortunate man was hurried to the hospital and given every attention, but died a few hours later, his death being the first of any spectator at an automobile meet in France since the ill-starred Paris-Madrid affair.

The owner of the Fiat, with which Nazzaro won the German Emperor's Cup and which was engaged to be driven by Bordino, Lancia's mechanic, withdrew at a late hour owing to the machine not being assured against accident.

Paul Faure's 1906 Grand Prix Mercedes racer, which, being equipped with a full side entrance body, was allowed to compete as a touring machine, made the fastest time of the fifty-three touring cars, mounting the hill in 1:14 3-5. Berliet, Aries, Mors and Motobloc followed in this order. In the 140 millimeter class a Gladiator, which took part in Paris-Berlin in 1901, was



READY FOR START ON UNEVEN COBBLESTONES.



BELGIAN PIPE WHICH MADE THE RECORD ROMP.

third fastest of all classes, and first in its own series. Generally the going was good in all the tourist sections, last year's times being slightly exceeded.

The most interesting feature of the tourists was the work done by single-cylinder voiturettes, a class of vehicle which has come to the front in a remarkable manner during the last two years. The fastest time was made by a 4.8-inch bore Lion-Peugeot; Sizaire & Naudin got two first places in the less than 4.8-inch bore class, and a couple of Demeesters made fast time in the 3.9 bore class. All these little machines were fitted with magnetos, Nilmelior predominating. Nothing extraordinary was done by the smallest four-cylinder runabouts, but the class with bore limited to 3.9 inches did some interesting work, Regini-Dixi coming first in 2:13-5, followed closely by a La Buire, a Darracq and a Werner, this latter well handled by a lady. Judging from this meet, French manufacturers have fully understood the importance of small low-priced automobiles and have provided a class of vehicles which should more than meet all local requirements. With a few exceptions large makers have not entered the field, the voiturettes being constructed by newly formed firms, organized by men who have broken away from the large factories.

CHICAGO A. C. DECLARES COEY WINNER.

CHICAGO, Oct. 14.—The special committee appointed by the Chicago Automobile Club to investigate the protest of Paul Picard in reference to the 24-hour race of July last, in which C. A. Coey, driving a Thomas, was the winner, has compiled and issued its voluminous report of the investigation. The report is signed by Sidney S. Gorham and Norton H. Van Sicklen, and this paragraph practically tells the story:

"After a careful study of the evidence as reduced to writing by the shorthand reporter, the members of your committee are unanimously of the opinion that no sufficient showing has been made to justify the belief that the award to the Thomas car was not properly made, but that on the contrary it affirmatively appears from the evidence that the scoring was honestly performed, and that, allowing for possible unintentional errors and omissions, the official score shows the correct mileage."

QUAKER CITY'S 1908 ENDURANCE RUN.

PHILADELPHIA, Oct. 14.—After its arduous campaign of the present year, the contest committee of the Quaker City Motor Club is already at work on the details of its annual New Year endurance run, which is scheduled for January 1-2 next. The route selected for the run is via Willow Grove, Doylestown, Easton, Nazareth and Bethlehem to Allentown, where the overnight stop will be made, returning home next day via Kutztown, Reading, Pottstown and Norristown, a distance of about 200 miles.

THOMAS AND RENAULT WANT A 24-HOUR.

The announcement has just been made by the E. R. Thomas Company of its intention to permanently withdraw from circular track racing. Before doing so, however, E. R. Thomas declares that he is anxious to see settled the twenty-four-hour supremacy by a special match between the Thomas, the Renault, and the Fiat, victorious in the three contests held this year in the metropolitan district, at Brighton Beach and Morris Park.

At the last Morris Park contest Paul Lacroix challenged the winner of that event and the Brighton Beach race to a special test. E. R. Thomas responds by declaring on what conditions he will meet the foreign champions. The cars for the final twenty-four-hour race—so far as the Thomas company is concerned—shall be the Thomas, winner of the Brighton Beach contest; the Renault, holding the Morris Park record, and the Fiat, winner of the last race held on that track. The race shall be held on the track best suited for the contest, its selection to be left in the hands of the representatives of the three cars. Montagu Roberts would doubtless be one of the drivers of the Thomas car; Paul Lacroix and Maurice Bernin would handle the Renault again.

To THE AUTOMOBILE representative Paul Lacroix said: "I am prepared to meet the Thomas and Fiat in a special match, using the machine which Bernin and I handled in the Morris Park race of September 6-7. I have no restrictions to make regarding the nature of the contest or the cars which shall take part, and am willing to agree to date and place suitable to the others. Bernin and I will drive again, and we shall use the same car as before."

Manager Fosdick, of the Hol-Tan Company, whose machine won the last twenty-four-hour race, declares that he does not see how the match is possible with Mr. Thomas's restriction that the same cars be used. "Although still selling Fiat cars and possessing the one victorious in the last race, we have nothing to gain by entering in such a race in view of certain changes which are pending in the Fiat representation. Mr. Thomas, who must be aware of these changes, knows that his challenge is useless, for even the new Fiat company is unable to accept it unless it buys the winning machine from us. We are willing to sell."

CHICAGO CLUB HOLDS NINE-EVENT MEET.

CHICAGO, Oct. 14.—Nine events were run in the fall meeting of the Chicago Automobile Club, at the Harlem track, Saturday. The half-hour race, reduced from one hour, was won by a 20-horsepower Cadillac, with 23 3-4 miles. Apperson Jack Rabbit was second, Mitchell third, Tichner fourth, Ford fifth, Pope-Toledo sixth. The Stearns, when traveling fast, went through the fence, with considerable material damage, but without injury to the driver or mechanic. Previously, the same Stearns won the ten miles free-for-all and the pursuit race for stock cars. The five-mile members' race was captured by a 20-horsepower Stoddard-Dayton, a Cadillac got the five-mile race for runabouts listing at \$3,000, and a Ford won in the three-mile for cars listing at \$1,500 or less. C. W. Van Sicklen won the ten-mile open and the ten-mile handicap with his Indian motorcycle, as well as the three-mile open motorcycle event.

IMPORTERS' AUTOMOBILE SALON ACTIVITIES.

The Importers' Automobile Salon believes in the worth of automobile racing, and it has addressed a letter to the Racing Board of the American Automobile Association asking for cooperation in the adoption of a standard formula for the determination of horsepower. The communication, furthermore, says "that it is the reasonable expectation that the committee of the Salon have at least one member on the A. A. A. Racing Board."

Commenting upon racing on circular tracks originally intended for horse racing, the importers consider that nothing less than a mile course should be used and even this should be banked at the turns, sufficiently oiled, entries to be limited to a safe number and other precautions taken.

NINE FOR AMERICA'S FIRST BALLOON RACE

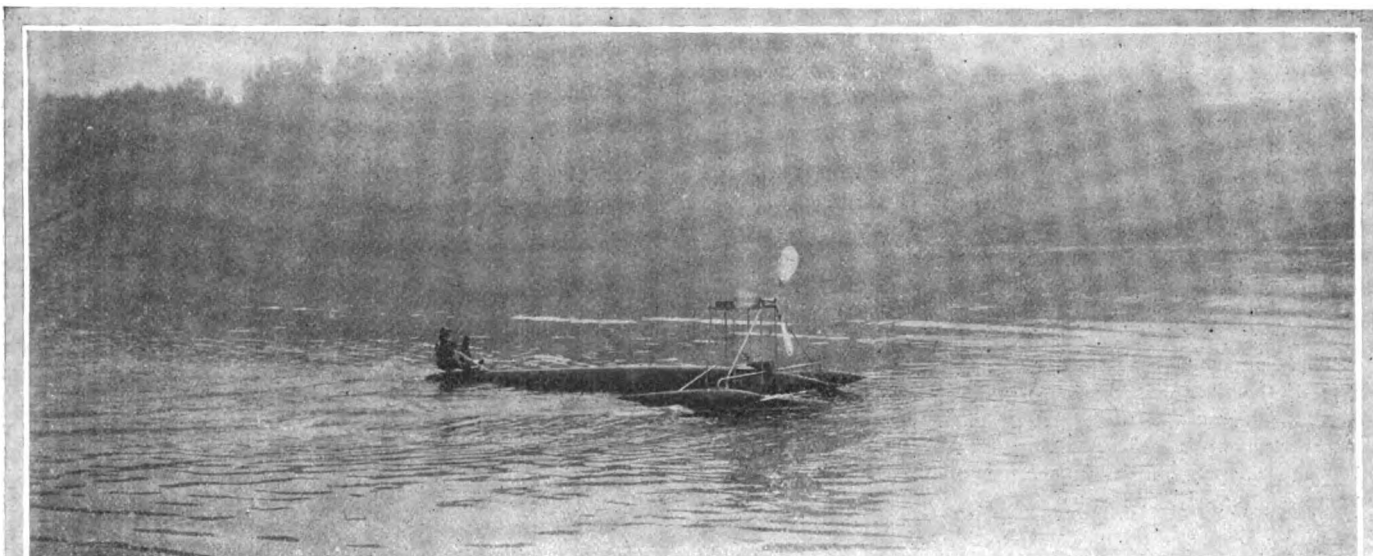
ON the afternoon of October 21 the second race for the James Gordon Bennett Aeronautical Cup will be started at St. Louis, with representatives from America, France, Germany and England as contestants. Twelve months ago the first race for this trophy, and really the first international balloon race ever held, was started from the Tuileries Gardens, Paris, Lieutenant Frank P. Lahm and Santos-Dumont representing America against complete teams from France, Germany, England, Belgium, Spain and Italy. Lieutenant Lahm won by a journey to the north of Yorkshire, England, and, in accordance with the deed of gift, the second race had to be competed for in this country.

This year only four nations will compete for the trophy, America having three balloons, Germany three, France two, and England one. Owing to an attack of typhoid fever while on military service in France, Lieut. Lahm, last year's winner, has been unable to take part in the second contest. His place has been taken by Major B. Hersey, who acted as his companion in the first race, using the balloon *United States*, of 2,100 cubic

team consists of Oscar Erbsloh in the *Pommern*, of 2,200 cubic meters; Captain Hugo von Abercron and Hans Hiedemann in the *Dusseldorf*, of 2,250 cubic meters, and Paul Meckel in the *Tschudi*, of 1,300 cubic meters, the smallest of the fleet.

Despite the smaller number of contestants it is expected that the second race will equal the first in popular and sporting interests, St. Louis having special advantages as starting point on account of the opportunities it offers for long voyages in any direction. Ordinarily the wind at this time of the year blows from the southwest, so that the balloons would be carried in a northeasterly to easterly direction, probably passing over the Great Lakes and descending in distant parts of Canada. It is confidently expected that the world's long distance record of 1,203 miles from Paris to Korostychew, Russia, established by Comte de La Vaulx in 1900, will be eclipsed.

Extensive preparations have been made by the Aero Club of America for the starting of the competitors at St. Louis. The gas supply is declared to be excellent, arrangements have been



"No. 18," SANTOS-DUMONT'S MILE-A-MINUTE HYDROPLANE, UNDERGOING TESTS ON SEINE PRIOR TO FITTING ENGINES.

meters capacity. Augustus Pope will accompany Mr. Hersey. J. C. McCoy and Captain Charles De F. Chandler will complete the American team with the *America*, of 2,200 cubic meters.

The Aero Club of Great Britain has selected Griffith Brewer and Claud Brabazon, with the balloon *Lotus II.*, of 2,150 cubic meters, as their team. The balloon used is the one piloted by Santos-Dumont in last year's race, and has since been revarnished and repaired. At that time it was fitted with a small engine driving a propeller to assist it in rising and so economize ballast.

France has Alfred Leblanc and M. Mix, and René Gasnier and Charles Levée, using the balloons *Isle de France* and *Anjou*. The Frenchmen have all had long experience in the aeronautical world and are looked upon as formidable competitors. Germany's

made by which the balloons can be started at intervals of five minutes and the use of troops has been granted to protect the enclosure. Each contestant will carry with him a delicate and accurately-made barometer, capable of recording every movement of the balloon. These will be sealed in such a way that it will be impossible to tamper with them, the reason for this being to prevent any competitor coming to earth and continuing his journey later. Conditions of the race are that the winner shall be the one making the longest flight without coming to ground.

In addition to the Gordon Bennett trophy to be held by the winner for one year, a prize of \$2,500 in cash is offered to the most successful pilot; the second man will draw \$1,000; third place, \$750; fourth place, \$500; and fifth place, \$250.

SANTOS-DUMONT'S MILE-A-MINUTE CRAFT

PARIS, Oct. 7.—Santos-Dumont's mile-a-minute craft has been baptized. News of its first dip in the Seine having been well announced in automobile and aeronautic circles, a big crowd invaded Neuilly in expectation of interesting developments. They were somewhat disappointed, for the first test was merely

a stability trial, the hydroplane being in the tow of Vedrine's fast motor boat *Lorraine*, and without its motor or its pilot. As the workmen were placing the light shell in the water one of the small cigar-shaped floats struck the sharp pointed end of a stake and collapsed like a pneumatic tire. Half an hour later

a patch had been placed on the rubber cover, Santos-Dumont had inflated the cover with his mouth, no pump being handy, and the hydroplane was floating lightly on the placid Seine. A rope from the framework of the hydroplane was passed up to the *Lorraine*, a turn of the cranking handle given and the 100-horsepower craft moved down stream with the light hull in tow. Its stability seemed to be perfect, and as soon as a speed of 20 miles an hour was attained the three cigars rose completely out of the water, allowing the apparatus to glide.

Santos-Dumont took his place on the bicycle saddle at the

stern of the long cigar on the second day, grasped the automobile steering wheel and gave orders to the crew of the *Lorraine* to go ahead. Despite the extra weight the hydroplane behaved well, rising out of the water as soon as a little speed was attained and glided over the surface with but a slight ripple in its wake. The three-bladed propeller at the forward end of the craft was in position, but the 120-horsepower Antoinette motor had not been fitted. These initial experiments having been satisfactory, the engine will be placed at once and tests of *No. 18* under its own power made in a very short time.

WINNING THE FRENCH BALLOON TROPHY

PARIS, Oct. 7.—At noon a warm autumn sun illuminated the gilded gates of the Tuileries Gardens, cast shadows around the nineteen swelling gas bags encircling the pond where goldfish make their home, and called out Parisians in thousands to watch the start of the third balloon race for the Grand Prix.

At 3 o'clock menacing black clouds rolled up from behind the Louvre, hesitated an instant, then descended in a deluge. As if by enchantment one hundred and fifty thousand umbrellas appeared on the Place de la Concorde and in the Garden; fifty thousand unfortunates uttered an exclamation of disgust, then prepared to take their wetting stoically. Among the competitors an eye was cast at the bags of sand and rapid calculations made on the number which must be sacrificed at the start.

Since dawn the company of military aeronauts and officials of the Aero Club of France had worked at the installation with such success that promptly at 4:30—the advertised hour—the first balloon drifted slowly upwards and was followed at regular intervals of four minutes by another aerial mass. Automobiles never answered the call of the starter with greater punctuality.

Owing to some stupidity on the part of the railroad authorities the only Italian balloon went astray; consequently none but Frenchmen competed for their national trophy, among them being some of the most experienced sky pilots the country has produced. *Aero Club II* was dragged up to the starting line with Lucien Lemaire in charge, his wife as assistant, and a couple of male helpers. But it was too much of a load for the 1,500 meters of gas and one male had to climb out of the wicker

basket, Madame remaining and smiling agreeably to the cheers which greeted her departure. The *Abeille* took two ladies in its somewhat restricted body; the *Escapade*, with Leon Barthou, brother of the Minister of Public Works, at the helm, had Madame Lafaurie as member of the crew.

Although the rainstorm passed off there was a lot of work to be done on the sacks of ballast. Some of the idlers on the Place de la Concorde objected to the sand coming down, and ladies within the enclosure shrieked as an unopened bag dropped into a pool of dirty water at their side.

At 6 o'clock nineteen balloons were in the air, nineteen drag ropes were being prepared to be cast out, and the entire aerial army had cast a look at the life belts—for the wind was driving the entire battalion seawards.

M. Delobel, piloting the *Nord*, secured the third year's aeronautical Grand Prix by a descent in the North Sea, twenty-eight miles from Ostend, and about one hundred and seventy miles from Paris. Almost before the crew could obtain a knowledge of their position, for the *Nord* had been floating far above the clouds, the balloon was traveling at twelve miles an hour over the sea. Three steamers were in sight, a rapid descent was made, the guide road was seized, the crew dragged on board, and the *Nord*, relieved of its weight, sped skywards to descend later in England. Delobel had won the Grand Prix with an ample margin. Eight others dropped down on the coast line between Calais and Dunkerque, and the rest, after being drenched to the skin, slid down to earth with shorter mileages.

DIRIGIBLE DOINGS OF THE CLOUD WAGONERS

ANOTHER UNIT FOR FRENCH DIRIGIBLE FLEET.

PARIS, Oct. 7.—Another dirigible balloon, to exceed the *Patrie* and the *Ville de Paris* in size, is announced for next spring. This powerful addition to the French fleet of dirigibles will be known as the *Bayard-Clément*, all expense in connection with its construction being borne by M. Gustave Clément, the well-known automobile constructor. M. Capazza, one of the most experienced of European aeronauts, has been charged to design and construct the new balloon, and has taken up temporary headquarters at the Bayard-Clément factory, where a model has been made and preliminary work undertaken. As the balloon will have a capacity of 5,000 meters, actual construction cannot begin until the special shed is ready. A couple of Bayard-Clément motors taken from racing machines will be used.

AIRSHIP COMPANY INCORPORATED IN NEW YORK.

The American Airship and Balloon Incorporation has recently been incorporated under the laws of New York with a capital of \$200,000. Israel Ludlow, director of aeronautics at the Jamestown exhibition, declares that a large part of the capital has been paid in and that several members of the Aero Club of America have taken stock. Charles A. Strobel is president and M. R. Nock and J. C. Mars are directors.

JONES AEROPLANE MAKES THREE FLIGHTS.

BATH, N. Y., Oct. 14.—Three successful flights, one of 200 feet, one of 600 feet and another of 1,500 feet, have been made by the heavier-than-air flying machine, designed and constructed by Charles Oliver Jones, a member of the Aero Club of America. The aeroplane, which weighs 375 pounds, with its seven-horsepower Curtis motor and one operator on board, was started from a special launching car designed to give it the necessary momentum. The flights were made at a height of about twenty-five feet from the ground, and at the end of each the machine was brought to earth without any difficulty or any damage to the structure. G. H. Curtis was in charge of the operations and directed the ground work.

GROWTH OF AERO SOCIETIES AND JOURNALS.

There are now thirty-nine aeronautical societies or clubs in various parts of the world, four of them being in America. There are fourteen aeronautical journals in existence, six being published in France, two in England, and one each in Germany, Austria, Belgium, Italy, Russia and Switzerland. The American addition to the list appeared last July under the title *American Magazine of Aeronautics*. It is edited by Ernest La Rue Jones and published at 142 West Sixty-fifth street, New York City.

"Trapping" Near New York City



by One Tourist

CONDITIONS which have prevailed adjacent to the metropolitan district during the past summer and early fall in the matter of overzealous country constables have well nigh taken the pleasure and enjoyment out of automobiling throughout this territory. It is reported from some sections that no more "trapping" will be done this season, and it would be glad tidings to all users of cars if this should be the case in all directions out of town. These fine autumn days when a man takes his family out for a day's spin to enjoy the gorgeous foliage, it certainly would enhance the pleasure to feel that security which is essential to a thorough enjoyment of an outing.

Unfortunately the average automobilist, though he be ever so careful of the safety of his passengers and considerate of fellow-users of the highway, is made to suffer for the sins of the very small percentage of drivers who have the speed mania in aggravated form. In ninety-nine cases out of a hundred the reckless driver gets away and the careful driver is caught to expiate the sins of the former.

Take, for instance, the trap which has been in operation for the last four Sundays at Merritt's Corners, about two and a half miles above Briarcliff Manor on the State road to Lake Mahopac. This is a favorite Sunday run for New Yorkers. On approaching Echo Lake, there are a few moderate curves; these are posted with danger signs warning one to slow down to four miles an hour. A short distance beyond Echo Lake is Merritt's Corners, where the State road crosses an infrequently used dirt road. An old stone taven, nearly a hundred years old, is on one corner, a barn on the other. Here is where the most atrocious trap in the history of this summer's many aggravated cases is located. The first two Sundays, the speed allowed was only four miles an hour, though there is no curve at this exact point and the law demands that speed only on sharp curves. Almost everyone was halted and brought before a justice, who held court under a convenient tree by the roadside. Everyone was "soaked" \$5, an ingenious amount, as the "justice was perfectly aware that no one would bother about fighting the case and would rather pay such a small fine. Seeing how easy it was to work this game, the fine was raised to \$10 on the third Sunday, but in return the limit at the crossroads was also raised to ten miles an hour, and court was held in a barn instead of in the open. Now this would not seem so very unreasonable, even if a demand for such a reduced speed was justifiable, but the trap measures only 132 feet in length and north bound travel is down grade, besides being laid out just around a slight curve. Nine seconds for the passing through this distance equals ten miles an hour. The length of the trap, the shortest on record, is equal to the length of ten or twelve cars put end to end. Naturally it makes



Merry Villagers



"Judge" waiting!



In the Toils



Line of Victims



A SCENE IN THE LAKE MAHOPAC COUNTRY.

a considerable difference, in such a short distance, what part of the car, the front or rear, is timed in passing the marks at each end of the trap; also the giving of the signals take up time which, though probably very short in itself, may make the distance actually timed many feet less than the length of the trap. Nevertheless, tourists were held up for passing the trap in 8 1-2, 8, and 7 seconds. The arresting constable was not sworn, but merely stated that the stop watch showed so many seconds and no defense was valid, though in one instance, a lame man, using two canes, swore that a certain car kept with him through the trap.

The lack of necessity for this trap and the high-handed treatment received finally drove two arrested autoists to refuse to pay the fine and to demand trial. Cash bail was furnished and

the cases were set for Monday last. Although the Justice acted in the dual capacity of attorney for the people and judge of the court, he was obliged to decide the case against himself. The evidence showed that the trap was inaccurately measured, the time inaccurately taken, that the constable received a fee for each arrest in addition to his salary, that the course laid out was not within an incorporated village, that the houses were more than 100 feet apart, and that the measured trap was not on a curve.

GERMANY WILL PROPOSE DRASTIC SPEED LAW.

BERLIN, Oct. 12.—Members of the special automobile commission representing various Government departments intend to propose radical measures to eliminate speed-crazed automobilists. Among the recommendations which they will bring up at the conference to meet in Berlin at the end of the month is one for the use of a special speedometer, which will register speed attained by hour and for intermediate periods, in such conspicuous figures that they can be read by persons outside the car. At night the figures will be sufficiently illuminated to be read on the street. The apparatus, which, in the opinion of the commission, should be compulsory on all automobiles, shall be so constructed and arranged that it cannot be tampered with. By its use it will be possible to ascertain at what speed a car has been traveling at any time during the preceding twenty-four hours.

LATEST NEWS CONCERNING "THAT STOCK CAR RACE"

From the New York "Herald," October 12.

When the demand of the American industry for a stock car race became so pronounced early in the fall as to be unmistakable to every automobilist and to every automobile organization except the American Automobile Association, the Supervisors of Nassau County, L. I., came to the rescue with an offer of a circuit for the proposed contest.

Failing a movement on the part of the A. A. A., a special organization was called into existence for the promotion of the race. Then unexpectedly some mysterious influence was brought to bear upon the Nassau Supervisors, and the use of a circuit that at first had been invited was peremptorily declined.

That action also angered manufacturers, dealers and others interested in the proposed contest that they immediately began to look elsewhere for an available course for an international stock car race in the spring. T. Francis Moore, who had been prominent in the Long Island negotiations, was commissioned to search for a suitable circuit, with the one injunction that it must not be on Long Island.

As the result of that search a committee representing the metropolitan automobile trade yesterday drove over and practically agreed upon a circuit in Westchester county. That circuit, the exact location of which is withheld by request, is forty-two miles in length, has fifteen turns, a majority of which are so gradual that they may be taken at thirty miles per hour, and only one steep hill. Of this route thirty-eight miles are of excellent macadam, and six miles are of fair dirt. Included in this stretch is one mile of poor road that will need to be improved. The circuit passes through two small towns where it would be necessary to establish controls.

The general scheme of the race, which, it is said, has met with the approval of representative manufacturers, is to hold a contest of five hundred miles on a single day, probably on April 20, open only to stock chassis as regularly built and catalogued.

For this race a trophy of considerable value has been offered by a prominent sportsman. An organization, of which the Metropolitan Automobile Association is to be the nucleus, is to be perfected for the promotion of the event. Any receipts over and above the cost of promotion will be given to a charity in Westchester county.

The actual control of the race is to be vested in a committee, of which Robert Lee Morrell, former chairman of the Vanderbilt Cup Commission, will be the organizer and chief. Job E. Hedges, counsel for the American Motor Car Manufacturers' Association, will head the Legislative Committee. To John McCullough, formerly chief of police of New York, is to be entrusted the arduous duty of properly guarding the course during the race.

Prominent officials of Westchester county are said to favor the scheme, and the residents are eager for the race.

From the New York "Times," October 13.

The latest scheme for promoting an automobile road race, although heralded with much enthusiasm by some of the charitably inclined organizers who profess a deep anxiety to come to the rescue of the American industry by offering a real test for stock cars, is likely to come to a more ignominious end than was the fate of the recent attempt to hold such an event on Long Island. Ever since the failure to secure the race for Long Island roads efforts have been made to obtain a suitable course in either Westchester or Dutchess counties. In these schemes Thomas F. Moore has been the prime mover, and in view of the fact that he took an important part in the Long Island race efforts as an officer of the Metropolitan Automobile Association, which made a request for the use of the roads, the impression has become more or less general that this organization was still working to obtain a suitable course for the race next spring. It was ascertained yesterday that no official recognition to these latest road-racing schemes have been given by the Metropolitan Association.

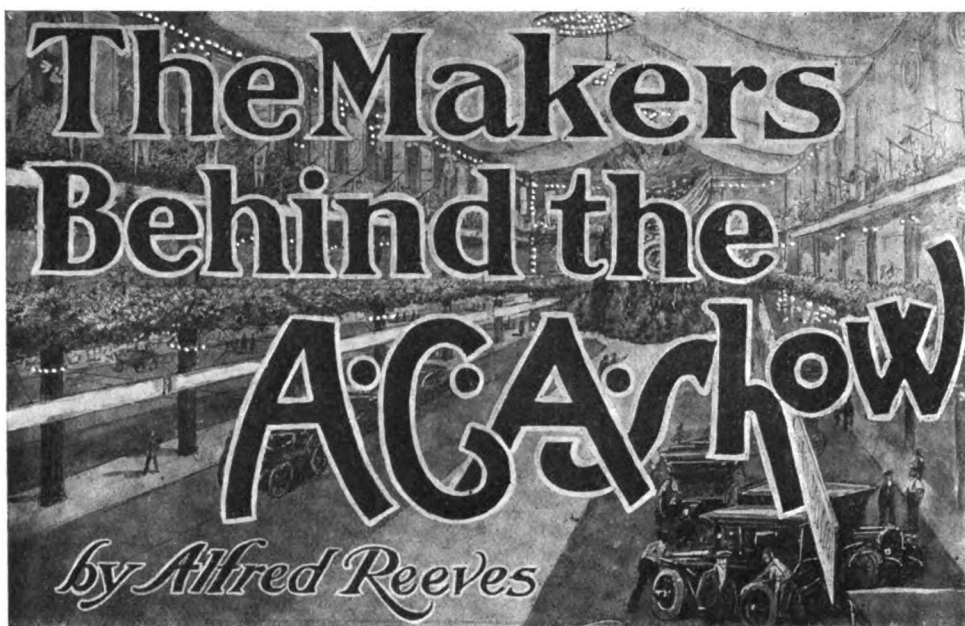
Mr. Moore publicly announced several days ago a vague plan of a proposed race, stating at the same time that Robert Lee Morrell and Job E. Hedges had consented to assume important duties toward making the event a success. Moore has quite a knack of raising a "breeze" with his announcements, and when this last one came only a few of the misguided gave it serious attention.

Had there been the slightest indication that any representative manufacturers were directly interested in the race or that any really serious efforts were being put forth by even a small coterie of automobilists it would have been possible to have given accurate information concerning the course several days ago. It can be stated, however, for the information of those who may have imagined that there was the slightest possibility at the present time for securing such an event that the proposed course covered a circuit of nearly forty miles, starting at Briarcliff Manor. It had also been announced that D. B. Plummer, proprietor of Briarcliff Lodge, was to offer the trophy costing several thousand dollars. "I never made any offer to put up the cup," he said. "Personally, I have very little faith in its success, and I don't believe the race will ever be held in Westchester county."

In addition to Mr. Plummer, the heads of a large wine importing firm and a whisky firm are also said to have promised to offer cups.

From the New York "Times," October 15.

Unanimous and hearty sentiment for a stock car road race was expressed yesterday at the meeting held in the Hotel Astor of representatives of about twenty automobile manufacturers, including both American and foreign machines. As a result of the meeting and the general interest manifested so unmistakably in the project, the possibilities for successfully holding such an event may be said to have taken a long step forward.



DECORATIVE SCHEME THAT TRANSFORMS GRAND CENTRAL PALACE INTO A DREAM OF ART.

STUDENTS of automobile building, as well as intending purchasers, have watched with interest the phenomenal growth of the American Motor Car Manufacturers' Association, the organization sometimes called the "Independents," which from the fifteen members of three years ago is now at the front of all similar trade associations with a membership of fifty-one of America's leading automobile manufacturers. Interest in the work of the association is particularly keen at this time owing to its participation with the Automobile Club of America in the Eighth Annual Automobile Show, which opens in the Grand Central Palace October 24, and at which show the members occupy almost all of the main floor space.

As far as can be ascertained from reports received at this time, it is estimated that the members of the A. M. C. M. A. will in 1908 make about 37,000 cars, or more than 60 per cent. of America's automobile production, with a selling valuation of something over \$55,000,000. The spirit of the Association is to further the interest of the sport of automobiling; increase the use of automobiles for commercial, professional, and pleasure purposes, and assist the common interests of its customers as well as its members. The makers holding membership conduct their business independently of each other and are not restricted as to the volume of their business; the price at which they sell their cars, or in any other way.

The one great aim of the A. M. C. M. A. is to bring about benefits and offer guidance to its members that they may turn out the best cars at the lowest possible cost, with the ultimate object of being able to supply these cars to the general public at prices within reason and yet permit of a fair margin of profit. In the manufacture of automobiles, safety and comfort are the first essentials, with the price the next consideration. When all this can be combined so that the maximum of quality can be given for the minimum of price, the trading is certain to be satisfactory to buyer and seller.

The aims and purposes of the American Motor Car Manufacturers' Association are to arrange for suitable exhibitions of its members' products; to conduct race meets; to increase the interest in the purchase and use of motor cars; to secure desirable rates of transportation and shipment for machines made by its members, and for people who buy them; to furnish agents full information regarding trade in motor cars, the new forms of construction, the merit of the car itself and the developments in general; to promote public interest in good roads in every way possible and to oppose inimical legislation. Also to further the exchange of scientific information by the constructing engineers of the

various companies with a view of improving the manufacture and standardization of motor cars.

Just now the greatest work of the Association is in connection with the show at Grand Central Palace, for, besides having the preferred space, experts are engaged to describe their products in detail to the public; books are distributed telling of the work of the Association and why buyers should purchase the cars made by its members and a number of other similar conveniences for the visitor.

Not the least important work undertaken by the Association this year was that of securing the use of docks for gasoline vehicles. A member of its Freight and Transportation Committee appeared before about seventy of the freight agents, and subsequently secured the endorsement of the insurance companies and a record of their work, so that gasoline vehicles are now allowed on more than half the docks of New York,

with the others fast coming into line. This has been of tremendous benefit to those who manufacture commercial vehicles, and who up to this time have been handicapped in selling to business concerns that use the docks.

The foreign representative, A. E. Schwartz, has this year been of decided benefit to the members, bringing over in July much valuable information regarding foreign trade, besides closing the agencies for a number of important lines including axles and bearings. The compilation of automobile agents and dealers, has been another good work of the A. M. C. M. A. Another important matter which has received attention, is a uniform guarantee that is liberal to the buyer and fair to the maker. Advertising advice and plans; work for a national law providing for a single license number good in every State, and of course, the perennial question of good roads, have all supplied work for committees well versed in those subjects. Much hostile legislation has been opposed this year, including some proposed bills, which, if passed, would have seriously decreased interest in automobiling and have proved a decided setback.

One of the greatest works of the association is the publicity department under the management of Leon Myron Bradley. This department disseminates authentic information to the daily newspapers and trade publications, furnishing them with photographs of new models, mechanical specifications of the members' cars, prepares timely articles on important subjects, such as legislation, good roads, etc., and prepares exclusive stories for the various periodicals upon request. During the past summer the work of the publicity department has been broadened to a large extent and the results actually accomplished for members have been commendable.

The matter of liability insurance, freight rates, larger and more freight cars, and similar work, has been the subject of much work on the part of the association.

Importations have fallen away so much during the past year, that this did not take up as much time as usual, but it has been given the thought it deserved, and members have been informed of the cars brought from the other side.

Efforts to form combinations in various lines that might result in advancing the price of automobiles, have been bitterly opposed. The formation of the Ajax-Grieb Rubber Company; the opposition to the proposed pool of steering-wheel makers and of the combination of steel frame makers, have all worked out well for the members and for the buyers of cars. The tips that the association has given its members on the supply market have been extremely valuable, particularly the one on aluminum, which

went up almost twenty-five per cent., after all the members had warning to buy when the market was low.

Although there are other things that the association is doing quietly and industriously, those mentioned will give a fair idea of its work.

The chairman of the Committee of Management for two years was James Couzens, of the Ford Company. The present Committee of Management consists of Benjamin Briscoe, chairman; R. E. Olds, vice-chairman; H. O. Smith, treasurer; William Mitchell Lewis, secretary; Charles Lewis, W. H. VanDervoort, Charles E. Duryea, W. C. Marmon, Barney Everitt, and Alfred Reeves, general manager.

Members American Motor Car Manufacturers' Ass'n.

Abendroth & Root Mfg. Co.,	Newburgh, N. Y.,	Frontenac
Acme Motor Car Co.,	Reading, Pa.,	Acme
American Machine Mfg. Co.,	Detroit, Mich.,	Commerce
American Motor Car Co.,	Indianapolis, Ind.,	American
Austin Automobile Co.,	Grand Rapids, Mich.,	Austin
Atlas Motor Car Co.,	Springfield, Mass.,	Atlas
Bartholomew Co., The,	Peoria, Ill.,	Gilde
B. L. M. Motor Car Co.,	Brooklyn, N. Y.,	B. L. M.
Brush Runabout Co.,	Detroit, Mich.,	Brush
Buckeye Mfg. Co.,	Anderson, Ind.,	Lambert
Chadwick Engineering Wks.,	Philadelphia, Pa.,	Chadwick
Continental Auto Mfg. Co.,	New Haven, Conn.,	Continental
Crawford Automobile Co.,	Hagerstown, Md.,	Crawford
Dayton Motor Car Co.,	Dayton, O.,	Stoddard-Dayton
DeLuxe Motor Car Co.,	Detroit, Mich.,	De Luxe
Dolson Automobile Co.,	Charlotte, Mich.,	Dolson
Dragon Automobile Co.,	Philadelphia, Pa.,	Dragon
Dorris Motor Car Co.,	St. Louis, Mo.,	Dorris
Evansville Automobile Co.,	Evansville, Ind.,	Simplicity
Ford Motor Company,	Detroit, Mich.,	Ford
Gaeth Automobile Works,	Cleveland, O.,	Gaeth
Gearless Transmission Co.,	Rochester, N. Y.,	Gearless
Imperial Motor Car Co.,	Williamsport, Pa.,	Imperial
Jackson Automobile Co.,	Jackson, Mich.,	Jackson
Kingston Motor Car Co.,	Kingston, N. Y.,	A.-K.
Mack Bros. Motor Car Co.,	Allentown, Pa.,	Manhattan
Marion Motor Car Co.,	Indianapolis, Ind.,	Marion
Maxwell-Briscoe Motor Co.,	Tarrytown, N. Y.,	Maxwell
Mitchell Motor Car Co.,	Racine, Wis.,	Mitchell
Moline Automobile Co.,	East Moline, Ill.,	Moline
Moon Motor Car Co.,	St. Louis, Mo.,	Moon
Mora Motor Car Co.,	Rochester, N. Y.,	Mora
Motorcar Co.,	Detroit, Mich.,	Cartercar
National Motor Vehicle Co.,	Indianapolis, Ind.,	National
Nordyke & Marmon Co.,	Indianapolis, Ind.,	Marmon
Overland Auto Co.,	Indianapolis, Ind.,	Overland
Penna. Auto-Motor Co.,	Bryn Mawr, Pa.,	Pennsylvania
Pierce Engine Co.,	Racine, Wis.,	Pierce-Racine
Premier Motor Mfg. Co.,	Indianapolis, Ind.,	Premier
Pullman Motor Car Co.,	Chicago, Ill.,	Pullman
Rapid Motor Vehicle Co.,	Pontiac, Mich.,	Rapid
Reliance Motor Car Co.,	Detroit, Mich.,	Reliance
Reo Motor Car Co.,	Lansing, Mich.,	Reo
Simplex Motor Car Co.,	Mishawaka, Ind.,	American Simplex
St. Louis Car Co. (Auto Dept.),	St. Louis, Mo.,	American Mors
Wayne Automobile Co.,	Detroit, Mich.,	Wayne
Welch Motor Car Co.,	Pontiac, Mich.,	Welch
York Motor Car Co.,	York, Pa.,	York-Pullman

BOSTON SHOW DATES NOT DISTURBED.

BOSTON, Oct. 14.—Manager Chester I. Campbell, of the Boston Automobile Show, will this week issue the applications for space at the show to be held in Mechanics Building next March. Owing to the advancement of the date of the New York shows there has been considerable discussion here of the advisability of putting the Boston show ahead a month or more. The officers of the Boston Automobile Dealers' Association, however, have refused to change the date because they believe that for a retail business, such as is conducted at the Boston show, March is a better time than either January or February, and that coming just before the riding season the show in March creates more enthusiasm than it would at an earlier date.

In the show next spring nothing but automobiles and their accessories will be included, the management having been obliged to secure more room by excluding the motor boats.

PROGRAM OF EVENTS DURING PALACE SHOW.

Thursday, Oct. 24, P.M.: Private view of exhibition.
 Friday, Oct. 25, P.M.: Merchants' night.
 Saturday, Oct. 26, P.M.: New York City officials' night.
 Saturday, Oct. 26, P.M.: Smoker, clubhouse of Automobile Club of America.
 Sunday, Oct. 27, All Day: Open house at Automobile Club of America.
 Monday, Oct. 28, P.M.: Engineers' night.
 Tuesday, Oct. 29, 1 P.M.; Second annual show luncheon of the American Motor Car Manufacturers' Association at Hotel Manhattan.
 Tuesday, Oct. 29: Society night. Admission \$1 instead of 50 cents.
 Wednesday, Oct. 30: Meeting A. M. C. M. A. Committee of Management.
 Wednesday, Oct. 30: Meeting A. C. A. Board of Governors.
 Wednesday, Oct. 30: Military night.

A. A. A. Meetings During the Shows.

Wednesday, Oct. 30, 10 A.M.: Conference of representatives of A. A. A., N. A. A. M., A. L. A. M., A. M. C. M. A., and I. A. S., for the purpose of considering the advisability of automobile racing upon one-mile or less circular tracks. No. 437 Fifth avenue.
 Wednesday, October 30, 4 P.M.: Conference of representatives of A. A. A., N. A. A. M., A. L. A. M., and A. M. C. M. A., discussion of plans for the general good of automobilng. No. 437 Fifth avenue.
 Thursday, Oct. 31, 10:30 A.M.: Meeting of Executive Committee A. A. A. Board of Directors.
 Thursday, Oct. 31, P.M.: Meeting of A. A. A. Finance Committee, subject to call of Chairman George E. Farrington. No. 437 Fifth avenue.
 Thursday, Oct. 31, 3 P.M.: Open A. A. A. meeting for members, Convention Hall, Grand Central Palace.
 Wednesday, Nov. 6, 2 P.M.: Meeting of A. A. A. stockholders at 525 Main street, East Orange, N. J.
 Thursday, Nov. 7, 10 A.M.: Meeting of Board of Directors, A. A. A., 437 Fifth avenue.
 Thursday, Nov. 7, 3 P.M.: Open meeting for A. A. A. members, 437 Fifth avenue.

CHICAGO'S COMMERCIAL VEHICLE SHOW.

CHICAGO, Oct. 14.—When the First Annual Commercial Vehicle Exhibit, in conjunction with the Seventh Annual Show at Chicago, was announced, it was the opinion of the management and of the directors of the National Association of Automobile Manufacturers, Inc., that if twenty exhibitors could be obtained a good start would have been made and that the times when commercial cars had attained such importance as to warrant a separate exhibition would have been suitably marked. The show is still nearly two months off, but with the closing of last week there were twenty-four exhibitors on the list and at least eight others in correspondence with the management. It is reasonably certain that there will be at least thirty exhibits of cars, fire apparatus and farm implements.

It is intended that the admission shall be largely by invitation. Each exhibitor will be supplied 1,000 invitation cards, to be mailed to interested persons. The exhibitors of cars, up to Saturday last, were the Studebaker, Franklin, Buckeye, Rapid, White, General Vehicle, Commercial Motor Truck, Logan, Reliance, Lear, Pope, Mitchell, Knox, Meiselbach, Pittsburgh Motor Vehicle, Johnson Service, Advance Mfg. and Couple-Gear companies, Gifford Pettit Mfg. Co., and Sayers & Scoville.

DETROIT'S FEBRUARY AUTOMOBILE SHOW.

DETROIT, MICH., Oct. 14.—The Tri-State Automobile & Sporting Goods Association have obtained a sanction from the Motor & Accessory Manufacturers, Inc., and will hold their seventh annual show in the Detroit Light Guard Armory the week of February 10 to 15, inclusive, 1908. Automobiles, commercial cars, accessories and motor cycles will be shown, and every effort is to be put forth to make the show one of the most representative of dealers' exhibitions in the country as befits Detroit's standing.

SOME MICRO-STRUCTURAL CONSIDERATIONS*

BY JOHN MAGEE ELLSWORTH AND THOMAS J. FAY, E.E., NEW YORK.

TIME was when metal was judged almost exclusively by the appearance of the fracture, but the fracture was viewed "a la nature" by the naked eye, and it is not to be wondered at if, on occasions, judgment failed. As the art advanced, and the needs of the occasion became more exacting, other methods were devised and introduced, all with the idea of realizing a greater degree of accuracy and in so far as possible to eliminate errors. But in the course of time it became more and more apparent that the first idea was right, in principle at any rate, and in these days to go back to the appearance of the fracture is the natural sequence.

Instead, however, of viewing the fracture in the old crude way, it is now the practice to make micro-photographs of polished and etched sections, and by magnifying the section even as high as two thousand diameters, bring out the structure so boldly as to enable one to view its details and to decide as to the condition obtaining with a marked degree of accuracy. True, micro-photographs are not new, nor are they of recent introduction, but they were mostly the product of advanced laboratories and were rarely ever referred to in commercial zones of activity. It will be understood, then, that the authors of this paper make no claims tending to advocate a new principle, but desire only to point out that what was once an academic matter is now verging into common practice, amounting to no more than a refinement of the foundryman's practice of old, in which he graded pig in accord with its fracture, and it is remarkable indeed how well the task was performed.

Mal-conditions Readily Revealed by Micro-photograph.

Just why micro-photographs will disclose defects not likely to be exposed to view by any other process is quite easy to set down, if only the matter is afforded a little consideration. For illustration, an inferior product, manipulated by an expert, will develop physical properties of the conventional sort, quite up to average expectations for the given grade of material. On the other hand, this inferior product, with its best foot forward, is still the same inferior product, and in shock service or vibratory testing machines would expose the other foot. A micro-photograph would disclose the mal-condition directly and enable one to know without any further trouble just what might stand in the way of the success of a venture using such a product.

Take for illustration a piece of steel, disclosing "oxides" in the micro-structure, say at 350 magnifications, such a product can never be made safe for any exacting service, even though the steel might be so manipulated as to render it fit, from the point of view of a set of specifications; moreover, a chemical analysis might be quite up to the expectations in every way. It would seem, then, as if the micro-photograph, as a modern sequence of the old "fracture method," is as essential to success under present exacting conditions as the fracture viewing process of grading pig was in the days of old, and in view of the wide use to which "alloy steel" is now being put the micro-photograph takes on an especial significance at the present time, because micro-photographs of alloy steel are not easily obtainable and but little understood, even by advanced students who have been offered an opportunity to go into the matter the greatest possible length.

As regards micro-photographs of carbon steel and gray cast-iron, enough of them have been published to make it unnecessary to go further into this phase of the question at the present time, and the authors will confine themselves to alloy steel products involving chrome nickel steel and vanadium steel for the most part. In each case the micro-photograph will include chemical analysis and physical tests of the steel exposed to

view, and in this way it is hoped to fix upon a standard of comparison, such as may serve a very useful purpose in the long run, in view of the fact that these micro-photographs are of steel of the finest qualities for automobile work.

In this paper the micro-photographs offered are as follows:*

Fig.	Subject.	Magnifications.
14.	Bischoff, chrome nickel steel.....	350
15.	Bischoff, chrome nickel steel.....	580

In these illustrations are represented practically all the conditions of the micro-structure of alloy steel, such as can be recommended in automobile work. Some of the specimens show the finest micro-structure possible to obtain, whilst one, Fig. 14, shows the structure of a supposedly abused product. For each specimen the test record gives all obtainable information, so that a further discussion in the text will be of no avail.

In proceeding, then, this paper will set down a résumé of the question of the constituents of steel as developed in the micro-structure and otherwise, whereas ordinarily carbon in steel is referred to as graphitic or combined, as the case may be.

To begin with, it is the carbon that is most likely to influence the structure, although the metalloids and the alloys are largely responsible for the selective carbon condition. As regards graphite, it will suffice to point out that its presence as an excess can only be assured in a product so high in total carbon that all may not combine. Graphite, then, may be regarded as

CHEMICAL COMPOSITION	
CARBON	TOTAL
	COMBINED
	GRAPHITE
	FERRITE
	PEARLITE
	CEMENTITE
Cr.	Ni.
V.	W.
Mn.	Si.
Al.	Cu.
S.	P.
Sn.	Zn.
Pb.	Sb.
As.	
PHYSICAL PROPERTIES	
T.S.	LBS. PER SQUARE INCH
E.L.	
EX.	PER CENT.
CO.	
PROOF	DIAM.
	LENGTH "
FRACTURE	
RATING	U.
	H.
TREATMENT	TREATED

SUBJECT: CHROME NICKEL STEEL
 NUMBER: CLXXXX1 MARK: H-5
 FROM: FELIX BISCHOFF, DUISBURG RHINE, NEW YORK, 5-10-07
 SPECIAL HARD VARIETY
 SHOWING WRONG TREATMENT.
 THIS IS A GOOD EXAMPLE OF A TREATMENT THAT CANNOT BE CORRECTED BY ANY SUBSEQUENT PROCESS.
 THE OXIDE FORMATION SHOWS WHITE, AND STEEL BURNT IS NOT RESPONSIBLE
 MAGNIFIED 350 DIAM




FIG. 14.—Bischoff chrome nickel steel, magnified 350 times.

*Eighteen micro-photographs with their corresponding test records accompanied the paper, but only two of the most representative are reproduced here, owing to lack of space.

*Extract from paper read before Society of Automobile Engineers, Buffalo, N. Y., July, 1907.

a regular component in gray cast iron or in white iron, because these products are all so high in total carbon that excess graphite is assured. In general it may be possible to consider that up to 2 per cent. total carbon, steel is the normal product, and graphite is not as a rule likely to abound. Above a total of 2 per cent. carbon graphite will be an excess, and in the product holding graphite the proportion of combined carbon can be very low, say 0.05 per cent., or very high, depending upon the proportioning of the metalloids and the conditions of manufacture. The total carbon rarely exceeds 4.50 per cent. at all events, and the exact carbon content is also dependent upon the ratio of metalloids and the process.

Considering steel free of graphite, it is fair to say the combined carbon in the products of commerce rarely exceeds 1.50 per cent., and in this product *in its normal state* the carbon condition is that, holding substantially fixed proportions of ferrite, cementite and pearlite, depending upon the total carbon, all combined.

It has been fairly well decided that with a total carbon of 0.90 per cent. normal steel consists of 100 per cent. pearlite, and for any "hypo-eutectic" condition in which the total carbon is less than 0.90 per cent. the whole carbon will be divided into pearlite in proportional relations and *excess ferrite, to make up the difference*; i.e.

$$\therefore .90 : a :: 100 : b$$

in which :

- a = the points of carbon present,
- b = percentage of pearlite.

Hence for illustration it would be possible to say for a 0.45 per cent. carbon

$$\therefore .90 : 45 :: 100 : 50$$

hence the pearlite ratio would be 50 per cent. and

$$100 - 50 = 50 \text{ per cent.}$$

ferrite difference, because ferrite is the excess in hypo-eutectic steel *under normal conditions*.

If, however, the total carbon is all combined and exceeds 0.90 per cent., the excess over and above the pearlite ratio *will be cementite*, instead of ferrite; hence, knowing the total combined carbon, one may at once know how much should be excess ferrite or cementite, *if the steel is in the normal state*, since all the excess will be the one or the other, depending merely upon the question of whether or not the product is a hypo- or a hyper-eutectoid.

Normal and Abnormal Steels Specifically Considered.

Of course, a product to be *normally constituted* must be allowed to freeze from its molten condition to its solid, cold state, within what might well be called *normal time*, and unhampered by any adverse environment. It is not the purpose here to fix a time or settle upon the environment, but in general slowly cooled carbon steel satisfies the condition and results in the normal selective eutectoid agreeable to the total of the carbon, whatever it may be in point of magnitude.

Abnormal steel, then, is the sole product of any set of conditions that may bring about a variation from the normal selective process in freezing or in cooling from any point high enough in the scale of temperature to disturb the steel out of its normal state of repose, or to upset the condition of the carbon.

It is not necessary to raise steel to the melting point to bring about a change in the carbon condition, and heat treatment consists in elevating and lowering the temperature to and from various points and at various rates, for no other purpose than to upset the normal state of repose and fix other states, with a view to take advantage of the resultant properties. The danger lies in not being able to establish conditions affording advantageous results, for of all conditions possible to fix by heat treatment only a few of them are of known advantage.

The main question, then, is that involving the alloying elements, as chromium, nickel, tungsten and vanadium, etc.

The rôle they play is in fact the matter of most concern, and probably the question least likely to be explained sufficiently. In

the main this matter can be treated in a way not differing in principle from the view taken of the simple compounds, since in the freezing process a eutectic is involved.

The freezing point of carbon steel depends, amongst other things, upon the carbon present and is influenced by the metalloids, but for a given percentage of carbon in steel the freezing point will again change if alloying elements are added, and if a compound product holding two or more alloying elements is considered, then the resultant freezing point will be something besides.

What would seem most to be desired would be a set of conditions, brought about by alloying, if necessary, that would tend to a uniform level of freezing for all the elements simultaneously from and at the same temperature. Then the resultant product would be uniform and would hold this uniformity for all time unless released by some process consistent with its natural characteristics. Vanadium, for illustration, seems to serve as a binder for the mass during the freezing process, and the result is a uniformity not so easily obtained in the absence of vanadium. Likewise, chromium, nickel, tungsten and other elements have their influences upon the temperatures of freezing and the selective process is influenced for good or evil, depending upon proportions and the process. Because these alloying elements do influence the selective process and the temperature of freezing, is not in itself a reason why the result may be good, and whilst vanadium, for illustration, is accredited with properties tending to abort segregation, even so, it is quite possible that the steel, although uniform, may not be *of even passing merit*. On the other hand, a perfectly uniform product has the intrinsic merit of being uniformly good or uniformly bad throughout, and that in itself is much to be desired, for then, upon devising a mixture and a process evolving good results they may be regarded as stable and can be duplicated at will.

CHEMICAL COMPOSITION			
CARBON	TOTAL	0.204	
	COMBINED	0.204	
	GRAPHITE		
	FERRITE		
	PEARLITE		
	CEMENTITE		
Cr.	1.69	Ni.	4.26
V.		W.	
Mn.	0.18	Si.	0.22
Al.		Cu.	
S.	0.006	P.	0.012
Sn.		Zn.	
Pb.		Sb.	
As.			
PHYSICAL PROPERTIES			
T.S.	LBS. PER SQUARE INCH	20600	
E.L.		185920	
EX.	PER CENT.	15	
CO.		60	
PROOF	DIAM. "	0.50	
	LENGTH "	8.00	
FRACTURE		D.S.C.	
RATING	U.		
	H.		
TREATMENT		TEMPERED	

SUBJECT: CHROME NICKEL STEEL
 NUMBER: CCXIII MARK: 523
 FROM: FELIX BISCHOFF DINE-
 BURG. NEW YORK, 5-10-07
 SPECIAL SOFT VARIETY.
 PHOTO OF A SECTION OF
 THE SOFT CORE OF A TEM-
 PERED SPECIMEN.
 NOTCHED BAR TEST:
 72 FOOT POUNDS TO RUPTURE
 NOT NOTCHED BAR TEST:
 217 FOOT POUNDS TO RUPTURE
 MAGNIFIED 580 DIAM.

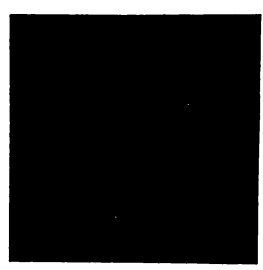


FIG. 15.—Bischoff chrome nickel steel magnified 580 times

Unfortunately, uniformly inferior products are prevalent, and no rule seems to be at hand by following which they may be avoided, hence the problem is one demanding the utmost care and attention, coupled with the closest possible observation.

One would naturally infer that the steel mill is the place in which to settle all such matters, but the failure of the steel mill to do so is reason enough for proceeding independently. Steel mills are places engaged for the most part in whipping raw material into shape on the basis of using the cheapest and most abundant raw material, into the shape that will command the highest price. Mills wax sarcastic when they are called upon to deliver what they term "jewelry steel," and it is now a fairly established fact that jewelry steel from common grades of blast-furnace pig is *cheap jewelry at best*.

Desirable Properties that Alloy Steels Should Possess.

Alloy steel possesses merit in proportion as the alloying elements are dissolved in iron free from all else besides. Of course, it is not possible to alloy pure iron with chromium, nickel, vanadium or tungsten, as the case may be, because some carbon must be present, and the metalloids are not to be entirely eliminated.

The best products thus far obtainable have compositions, viz.:

- (a) almost devoid of phosphorus.
- (b) almost devoid of sulphur.
- (c) very low in silicon.
- (d) closely limiting manganese.
- (e) holding an appreciable percentage of copper.
- (f) with the merest trace of arsenic.

Experience so far gained has established limits within which the alloys must be confined, and the relations of the alloys, each to the other, is equally a matter that cannot be ignored.

That the micro-structure is the most beneficial to view when it is desired to know just what transpires if variations are made in the relations of the alloying elements is now quite plain, and changes in the metalloids or in the carbon content are readily noted, even at fairly low magnification.

Besides variations of components there are variations in condition as well, as, for illustration, the pearlite may be granular or lamellar, depending upon circumstances, or the structure may be abnormal.

It has been said the normal structure is that produced by the selective freezing process, conditioned upon the composition of the product, allowed to solidify and to further cool down to the atmospheric temperature, slow enough not to interfere with the selective freezing process.

The abnormal product, then, would be that resultant of a heat manipulation, since in any case the composition—generally speaking—would be the same for the normal as for the abnormal steel, but the carbon condition would not be the same, so that whilst the total carbon, as found by a "combustion test," might be the same in both the normal and the abnormal steel, the carbon would not be the same as viewed by the microscope, or as would be depicted in a micro-photograph.

Critical Points in Cooling Steel.

It is now generally well understood that steel, if heated to a sufficiently high point, say 850° C., will, if allowed to cool slowly, exhibit phenomena observed by Osmond as follows:

In the cooling process, if allowed to proceed uninfluenced, points in the range will be observed, at which the cooling process arrests, a pause takes place, as it were. These "critical points" are designated as Ar₁, Ar₂ and Ar₃, of which there are three points during the cooling of iron and steel if it is quite low in carbon.

On the other hand, during the heating process there are "converse critical points" and they are designated as Ac₁, Ac₂, Ac₃ points. If, however, the carbon content is quite high, the critical points Ar₁ and Ar₂ verge, whilst the converse points verge also.

These critical points do not always become apparent at pre-

cisely the same temperature, for, as Mr. Osmond stated, they are influenced by the ratio of heating or of cooling, as the case may be. At all events, it is the carbon present that the authorities ascribe these phenomena to, and by observation and through the utility of micro-photographs they have been enabled to fix the probable carbon condition, in view of the temperatures to which a given product may be subjected. Moreover, the allotropic condition of the iron would take on states depending upon the nearness of critical points, and right here it may be well to say the working of nature hard steel will be much facilitated by taking into account the critical points and ranges, together with the time allowed for both heating and cooling, in all attempts at heat treatment.

Harboard sets down the Ar ranges as follows:

CRITICAL RANGES.			
	Commences.	Maximum between.	Conclusion.
Ar ₁	845°	825° to 810°	800°
Ar ₂	755°	736° to 725°	710°
Ar ₃	680°	662° to 655°	645°

Temperatures given in Centigrade.

These ranges and temperatures hold for iron and mild steel. It is further pointed out that changing the carbon changes the temperature, hence carbon is the source of the phenomena. Moreover, the rate of cooling is something to be taken into account.

In the heating up process the critical points do not hold at the same point on the thermometer scale, because of a lag or a lead depending as the temperature moves up or down. The difference is fixed at something like 30° C.; that is to say, the heat retarding influence takes place on the scale some 30° C. above the point observed for the heat addition on cooling down.

Vanadium seems to be entitled to the center of the stage just at the present, although it may not be out of place to say that vanadium has been in quite extensive use for several years. Most of us used vanadium unconsciously in some of the superior alloy steel products, but took no notice of the fact because the amount of vanadium present was in many cases so low as not to attract attention; moreover, the analysis for vanadium is attended by much difficulty. It now seems to be quite certain that a "poison dose" of vanadium is that, even as low as 0.20 per cent., and the authors have actually succeeded in establishing the fact that 0.25 per cent. vanadium in an alloy steel product is a considerable excess, and it has been shown that the same steel without vanadium up to 0.25 per cent. would render superior service. It is no wonder, then, that small increments of vanadium as 0.08 per cent. would go unnoticed for a long period of time, and yet so little of this element in some grades of steel would suffice for "scavenging" purposes. The American Vanadium Company, in their advanced work, are persistently recommending a limit of 0.18 per cent. vanadium, and whilst the amount desired, according to them, is a variable, the maximum is fixed at this low point.

There is now some chance for controversy leading up to the question whether or not nickel should be a content if vanadium is present. Chrome vanadium steel holds excellent properties and should find a wide range of uses, but the tests accompanying this article will show some remarkable results using nickel, and it is proper to point out that such steel as the Bischoff Special Auto Steel holds nickel as well as chromium and vanadium.

It is regrettable that the American Vanadium Company did not include in their comparative tests as given with this article tests of such products as the Bischoff Special Auto Steel; moreover, some of the Krupp products are chrome nickel vanadium steel, and their properties are quite too good to be ignored.

So far the authors have been unable to get away from the fact that any considerable amount of vanadium in alloy steel poisons the product and they are of the opinion that for steel of the greatest strength a very small dose of vanadium, retaining nickel and chromium, of course, holds out the most promise.

WILES OF THE UNTAMED CHAUFFEUR

By CHARLES B. HAYWARD.

WE were riding uptown in a car together, a chauffeur whose acquaintance I had made and myself, and the subject of "being pinched" came up for discussion. "Now, there's one of them, over there with his bike," and the man at the wheel beside whom I was sitting, inclined his head to indicate the position of one of New York City's traffic policemen, whose chief duty nowadays seems to be that of apprehending those whose desire to "let her out" gets the better of them at times.

"He's a fresh guy," continued my seat mate at the wheel. "Just watch me fool him," he added, happening to catch the eye of the guardian of the law who was regarding us suspiciously from a distance. Suiting the action to the word, the moment their glances met the chauffeur shifted back to second with a bang and pressed the accelerator pedal down. We had previously been running along smoothly on the high at about ten miles an hour, as shown by the speedometer, and the change resulted in bringing the speed to about twelve, but the car—an old one of the side-chain type—sounded as if it were going thirty.

"Here he comes," piped up my friend, announcing the success of the ruse, then carefully keeping his eyes straight ahead. Sure enough, the policeman had ceased to pose and was coming after us on his bicycle. As our speed had only increased a mile or two, he naturally had no trouble in overtaking us, but verifying the reading of his own speedometer by ours which was in plain sight from his seat, he indulged in some choice compliments, during the delivery of which my friend discreetly maintained silence, and then sheered off to watch for other game.

"That gets 'em, every time," gleefully chirped up the deceiver, once the threatened "ride to the house" was no longer an impending risk. "They think every time they see you handle the lever and the car makes a little more noise, you're hittin' it up at a good thirty or more, and this is the old bus to fool 'em all right." Something to which I tacitly gave assent, for on the second with the motor speeded up she made a hullabaloo like a saw-mill cutting through hard knots in a pine log.

Things lapsed into silence for several blocks, during which time we passed other minions of the law without attracting unfavorable attention, and the sight of which did not appear to induce a desire to give further demonstrations of the efficacy of the deception. Then my friend suddenly exclaimed, "There goes a 'skunk'!"

With solid rows of houses on either side of the street and nothing more suggestive of the country than a sun-dried strip of grass under which the subway trains rumbled at intervals, I looked around in a puzzled way to detect the unsavory quadruped that had called forth the remark. Finally, unable to contain my curiosity any longer, I innocently inquired, "Where is it?" which only brought forth an amused look of amazement.

"Huh, you're not on, eh? Well, there comes another," and he indicated the negro driver of a big, spic-and-span car approaching from the opposite direction. "We have no use on earth for them fellers," he went on, from which I learned for the first time that the race problem had been injected into the business of driving and taking care of an automobile.

"They're no use, and every one of us makes life a burden for every coon 'shover' that comes our way," he went on, detailing in his own way the deep-rooted dislike that every white driver had for his brothers of a darker shade who had the effrontery to so demean a high profession as to enter its ranks. Then, lapsing back into his usual good humor, he added: "Those fellers certainly do have a hard row to hoe. They simply can't get a square deal in any of the garages in this town," he went on laughingly as he recalled an incident that tickled him.

"Only last week one of 'em got a job taking care of a big imported car that was stalled in our place regular. It was bran' new—just run around from the carriage maker's, not a speck on it anywhere—but that coon went round with a magnifying glass

and a chamois givin' things an extra polish off before he quit that night. We fixed him allright allright. He wasn't much more than out of sight before we had the spark plugs out of the machine and filled the cylinders with about a gallon of thick shellac. Trouble? Well, I guess. That car was in the shop two or three weeks and I wouldn't have taken the job of cleanin' up that mess for a hundred plunks.

"Oh, no, nobody did it. The woman what owned the rig made a holler, but the garage keeper don't have the hirin' of us, so no one lost his job. You see," he added, in a tone meant to put an effective quietus on the subject, "the garage keepers ain't got any more use for skunks than we have."

Not to pursue an unpleasant subject any further, I inquired how much truth there was in the reputation that most chauffeurs had acquired for grafting on the gasoline supply, not to mention a host of other things. But any fears that I might have had as to professional reserve on such a delicate subject of inquiry, proved entirely unfounded.

"Sure thing, some of the fellers pinches the gas right under the old man's nose. Of course, I ain't givin' no names, but a friend o' mine who drives a big 60 —, turned the trick neat. His boss put up a holler about the car usin' so much gas when he hadn't been making any long runs, and he wanted to be shown. So my friend rigs up a deal to show him. Says the old man one day, comin' into the garage, 'put ten gallons of gas into her and we'll see how long it lasts.' The boss goes back into the office for a little while and my friend gets to work and fixes up the plant. He takes a five-gallon can, takes out the drain plug of the carbureter and puts the can under it. The gas sure comes out in a good stream, but a funnel and a chamois for it to drop on, and it doesn't make a bit o' noise. Then he gets things ready at the tank and invites the boss out to see the ten gallons put in. By delayin' things good and plenty, by the time he has the ten in the tank, five is out again in the empty can, and it's no trouble to get the plug back without any one gettin' wise, for all he has to do is to turn the stopcock in the line to cut off the flow, and then people expect you to be always doin' some fussin' or other about the car anyway. He fooled him allright.

"Ah, cut it out! we fellers don't get the rake-off on tires and things that people talk about. That's all a pipe," he returned in a disgusted tone to my lead about other kinds of graft. "When a feller wants to show the old man that the car is chewin' up twice as much gas as she ought to, he don't do it for the coin. He might be runnin' the car himself. A run down to the beach and back means 50 or 60 miles easy, and then when the governor's away over Sunday, a feller might take his friends a couple o' centuries or more, without any one bein' the wiser except for the half-barrel o' gas or so that he uses up."

"These big ones do use a powerful lot o' gas," he replied to my audibly expressed doubt that a car could consume as much fuel in a day's run as he had indicated. Then, you see, we don't spare it none, so we hardly ever do more than twelve or thirteen to the gallon, and most of us not that much by a good deal. Besides, we always hit the tank for a pint or so every time we do any wiping and to wash up on after gettin' through.

"Oh, yes, same way with oil and grease," he laconically assented in reply to a suggestion in that direction.

"Who pays for the tires you happen to damage on these 'joy rides' with your friends?" I inquired, cautiously.

"Oh, the governor has to dig down for everything. We don't stand for anything of that kind. What's the use?"

Unfortunately, I had to cut the interview short at this point by leaving the car, but promised to accede to the pressing invitation of my friend to take another ride with him in the near future, and, by the way, learn something more of the under side of taking care of a car, though this was not expressly included.

CHARACTERISTICS OF THE AMERICAN RUNABOUT

By WALTER IRVING.

WHATEVER may be said with reference to present-day standardization of automobile engineering practice, a study of the characteristics of American runabouts will reveal an astonishing variety of ideas as to the relations that should exist between the weight of the car, the power of the engine, and the price for which the car should be sold. Some conception of the great diversity of opinion that must necessarily exist among automobile engineers and manufacturers may be gathered from a study of the accompanying table, which gives the weight, horsepower, and selling price of a number of well known runabouts, equipped with engines having from one to four cylinders. Naturally such a tabular analysis cannot take into account the differences in design, workmanship, and quality of materials, as well as of finish, all of which must be considered by the prospective purchaser in deciding what type of car most nearly meets his requirements as to external or internal finish, durability, power, and economical performances.

However, the table may serve a useful purpose in directing attention to facts that would otherwise be less well understood. For example, the table shows that, according to catalogue ratings, the majority of runabouts having single cylinder four-cycle engines weigh from 1,000 to 1,200 pounds, the average weight being 1,011 pounds, as shown in the summary. Most of the buggyabouts, or high-wheel runabouts, a typical western product of growing popularity, weigh from 500 to 900 pounds, while runabouts having the double opposed type of four-cycle engine

weigh from 1,000 to 1,800 pounds. Considering only maximum and minimum weights to obtain an average for each class of runabouts, the results are approximately as follows: Buggyabouts, 750 lbs.; single-cylinder cars, 1,050 lbs.; double-cylinder opposed, 1,500 lbs.

Price popularity is indicated by the table about as follows: Buggyabouts, \$600; single-cylinder cars, \$650 and \$800; double opposed, \$800 and \$900; low power four-cylinder cars, \$600 and \$750. When the prices for each type of runabout are averaged, however, the figures obtained are about as follows: Buggyabouts, \$530; single-cylinder runabouts, \$680; double opposed, \$1,025; low power four-cylinder, \$600 and \$750.

Power ratings for runabouts of approximately the same weight vary within surprisingly wide limits. Curious as it may seem to many, the western buggyabout, or high-wheel type of runabout, is provided with an engine rated as being from 20 to 25 per cent. more powerful than those of the older style of runabout—having single-cylinder vertical and horizontal engines of the four-cycle type. Doubtless, this is due somewhat to the development of the two-cycle type of engine, with which several of the runabouts are equipped. Two-cycle engines having single and twin cylinders and also double opposed cylinders are employed; in fact, there seems to be a growing tendency to find a wider application for this type of engine in all classes of motor vehicles, regardless of their size or weight.

Most of the runabouts equipped with double opposed four-

COMPARATIVE ANALYSIS SHOWING RESPECTIVE WEIGHTS, HORSEPOWER AND PRICES OF AMERICAN RUNABOUTS.

Name of Car and Type of Engine	Weight of Car, in Pounds	Maximum Horsepower	Weight per Horsepower	Selling Price	Price per Pound of Weight	Price per Horsepower	Name of Car and Type of Engine	Weight of Car, in Pounds	Maximum Horsepower	Weight per Horsepower	Selling Price	Price per Pound of Weight	Price per Horsepower
BUGGYABOUTS.							Marvel, A..... 1,800 14 92.8 800 .615 57.14						
Albany, B.....	500	7	71.4	\$325	\$0.65	\$46.43	Mason.....	1,700	24	70.8	1,285	.756	53.54
Chicago.....	900	15	60.0	750	.833	50.00	Maxwell.....	1,100	12	91.6	825	.750	63.75
Cosmopolitan..	500	5	100.0	350	.700	70.00	Monarch, E....	1,100	14	78.5	900	.818	64.28
Dayton, C.....	1,050	15	70.0	600	.571	40.00	Northern, C... 1,800	24	75.0	1,600	.883	66.66	
Duer, A.....	950	12	79.2	750	.789	62.50	Pierce-Racine, A-3.....	1,200	12	100.0	750	.625	62.50
Farmers' Auto	800	14	57.1	600	.750	42.85	Queen, E.....	1,300	16	81.2	800	.615	50.00
*Federal.....	650	12	54.1	475	.730	39.58	Rambler, 27... 1,600	16	93.7	950	.633	59.37	
Hatfield.....	800	12	66.6	600	.750	50.00	Steel Swallow. 800	8	100.0	700	.875	87.50	
Holsman.....	845	10	84.5	650	.769	65.00	Wayne, H..... 1,000	14	71.4	800	.80	57.14	
Postal, I.....	900	12	75.0	475	.523	39.58	Two-cylinder, Vertical.						
Schacht.....	650	12	54.1	640	.984	53.33	*Atlas.....	1,400	20	70.0	1,250	.892	62.50
Success, B....	450	4	112.5	275	.611	68.75	Mitchell.....	1,100	10	110.0	750	.681	75.00
Success, C....	700	10	70.0	400	.571	40.00	Twyford.....	1,400	15	95.5	1,000	.714	66.66
RUNABOUTS.							Wolverine.... 1,000 10 100.0 750 .75 75.00						
Single Cylinder, Vertical.							Four-Cylinder, Low-Powered Cars.						
Brush.....	850	6	141.6	500	.588	83.33	Ford, N.....	1,050	18	58.3	600	.571	33.33
Covert.....	750	6	125.0	650	.866	108.33	SUMMARY.						
*Jewel, D.....	900	8	112.5	600	.666	75.00	Buggyabouts:						
*Palmer.....	800	8	100.0	500	.625	62.50	Min.....	450	4	54.1	275	.523	39.58
Single Cylinder, Horizontal.							Max.....						
Cadillac, K....	1,100	10	110.0	800	.727	80.00	Av.....	1,050	15	112.5	750	.984	70.00
Courier, F....	1,100	7	157.1	650	.591	92.85	Av.....	745.7	10.7	73.4	530	.710	51.38
Gale, C-7.....	1,100	10	110.0	600	.545	60.00	Single-cylinder Cars:						
Glide, C.....	1,350	10	135.0	800	.592	80.00	Min.....	750	6	83.3	500	.545	60.00
Hewitt.....	1,200	12	100.0	1,000	.833	83.33	Max.....	1,350	12	157.1	1,000	.866	108.33
Hewitt.....	1,200	12	100.0	800	.80	66.66	Av.....	1,011	8.81	117.8	686.36	.681	80.29
Nelson, 7.....	1,000	12	83.3	800	.80	66.66	Double-cylinder, Opposed:						
Reo.....	975	8	121.8	650	.666	81.25	Min.....	800	8	66.6	700	.600	50.00
Double Cylinder, Horizontal Opposed.							Max.....						
Aurora.....	1,000	14	71.4	700	.700	50.00	Av.....	2,200	24	120.8	1,600	1.00	100.00
Autocar, XV..	1,450	12	120.8	1,200	.827	100.00	Two-cylinder, Vertical.						
Buick, G.....	1,600	22	72.7	1,150	.718	52.27	Min.....	1,000	10	70.0	750	.714	62.50
Cartecar, D..	1,800	24	75.0	1,250	.694	52.08	Max.....	1,400	20	110.0	1,250	.892	75.00
Continental ..	1,000	14	71.4	900	.90	64.28	Av.....	1,356.8	16.27	80.9	1,025.45	.763	65.01
Crown.....	1,000	12	83.3	750	.750	62.50	Two-cycle.						
Detroit.....	1,800	24	75.0	1,500	.833	62.50							
Gale, G7.....	1,500	14	107.1	900	.600	64.28							
Jackson, D....	2,200	24	91.7	1,500	.681	62.50							
Knox, F4.....	1,600	16	100.0	1,400	.875	87.50							
Leader, B....	1,200	18	66.6	1,000	.833	55.55							
Logan, F.....	900	10	90.0	900	1.000	90.00							

*Two-cycle.

*Two-cycle.

cycle engines are rated at from 12 to 14 horsepower, but there are quite a number of cars having engines rated as high as 24 horsepower. The low or medium-powered runabouts having four-cylinder, four-cycle engines are popularly rated as having 16, 18, 20, and 24 horsepower. On referring to the summary, it will be noticed that the average power ratings are as follows: Buggyabouts, 10.7; runabouts with single vertical and horizontal engines, 8.81; double opposed, 16.27; low power, four-cylinder, 15.

Other things being equal, the car having the most power for the least weight is generally considered to be the most desirable, for the cost of maintenance of tires for a given mileage over ordinarily good roads is much less with light than with heavy cars. Examination of the table shows that, as one would naturally expect, the single-cylinder runabout weighs more per horsepower than any of the others. The lowest tabulated weights per horsepower are as follows: Single-cylinder cars, 83.3 lbs.; buggy-

abouts, 54.1 lbs., showing rather a great disparity in this respect.

Considering the question of price per horsepower, the table shows that the Ford, Model N, costs less than any other car. The price per pound of weight is correspondingly low, but it is not as low as that of the Postal, a 12-horsepower buggyabout weighing 900 pounds and selling at 52.3 cents per pound of weight. Reference to the table will show that the average prices per horsepower are approximately as follows: Buggyabouts, \$50; two-cylinder runabouts, \$65, and single-cylinder cars, \$80, there not being as much difference here as in the weights.

A tabular analysis such as is here presented may not answer the query, "Which do you want, ability or pounds?" but eliminating questions involving design, strength of materials, endurance, fuel economy, and general equipment, it does give some idea of the comparative merits of different types of runabouts from a mechanical standpoint.

TO OBTAIN FACTS: COMPARE INITIAL COST AND MAINTENANCE

CLEVELAND, O., Oct. 14.—Prof. L. J. Buschman, instructor on gas engines and automobile engineering at Case School of Applied Science, recently presented a paper on the "Efficiency of the Motor Vehicle." Prof. Buschman was one of the technical committee in charge of the recent endurance contest given by the Cleveland Automobile Club, and he has made a study of the efficiency of gas engines and gasoline automobiles. In part Prof. Buschman said:

"Of course many owners do not care how much the operating expenses amount to, but the majority of prospective purchasers are men who would buy if they thought that they could keep up the running expenses. Little data can be obtained from the manufacturer, as he has not taken the time to collect such information, because he can sell his cars as fast as he turns them out, although one company has been publishing some data in the advertising columns of the trade papers.

"Economy cuts more figure with the commercial than with the pleasure vehicle. The prospective purchaser knows what his horses cost and what they can do. Glittering generalities do not go and the salesman must come down to facts and figures.

"How, then, are we to judge of the merits of the different cars? Why not the same as when buying any other piece of machinery by comparing the initial cost and the operating expenses? To show how necessary it is to be careful in the various adjustments the following experiments are noted:

"In some experiments on fuel economy it was found that with the engine giving the same power, the consumption of gasoline would vary as much as twice that really required. The writer in experimenting with spark coils found that with apparently the same size of spark that one coil could be made to run on the battery with from one-half to two amperes by giving the vibrator screw a half turn, and with other coils four and five amperes with one turn or more.

"One way of getting satisfactory information is by a sealed bonnet contest where an account is kept of the gasoline, oil, and water consumption. It has been urged that the Glidden tour be made a contest of this kind. To this end every car should carry an observer appointed by another contestant. The cars should not only be penalized for breaking of seals and making repairs, but also for excessive gasoline, oil, water, tire, and battery consumption. The schedule for the day should not call for more than 15 miles an hour. In case two or more cars had perfect scores, the lowest powered car should be declared the winner.

"Various contests have been run to show the efficiency and economy of the motor car. A contest was recently run off in London where the car ran up an incline and stopped while the engine ran for ten minutes. This was then repeated with the car backing up the incline. Samples of the exhaust gases were then taken and an analysis determined the winner."

SOME FIGURES ON AMERICA'S RECORD OUTPUT

A striking example of the growth of the American automobile industry is furnished by figures on the output of the most important firms of the American Motor Car Manufacturers' Association exhibiting at the Grand Central Palace show. It is estimated that the output during 1908 of the fifty-one firms included in the A. M. C. M. A. will be 37,000 automobiles, selling at an average price of \$2,533. The estimated total output in the United States for next year is 55,000 cars.

Eight firms occupying the center spaces at the Palace show will produce during the coming season at least 27,000 cars, most of them of the low power, popular type. During the past twelve months the Ford Company sold 10,000 runabouts and will produce 15,000 next year. The Maxwell people will make 5,000 cars at their factories in Tarrytown, N. Y., Pawtucket, R. I., Chicago, and New Castle, Ind.; R. E. Olds announces that the Reo Motor Car Company's output will be 4,000 cars; the Mitchell Motor Car Company will make 3,000; Stoddard-Dayton about 2,100; the Premier company, 600; Wayne, 600; and National, 400. Even

conservatively listing the Ford output at 12,000, this gives a total of 27,700 automobiles of a popular type. It is worthy of note that a large number of these firms having contributed to place the American automobile industry in the lead numerically are of quite recent origin.

Complete figures on the output of every American constructor are not yet available, but the estimate of 55,000 cars is considered to be a fairly accurate and conservative one, and the 27,700 of the eight makers of popular cars is alone sufficient to show the huge proportions which the industry has assumed in a few years. It also bears striking testimony to the fact that the American maker has been forehanded in this respect. He has realized that the ultimate demand will be for the popular-priced car, which must be turned out in vast quantities if the demand is to be successfully met, and the surprisingly good materials and workmanship he has been able to put in them is the wonder of foreign makers. In this field the American manufacturer has far outstripped the foreigners, already sending large numbers abroad.

LETTERS INTERESTING AND INSTRUCTIVE

REGARDING SELDEN PATENT AND ROYALTIES.

Editor THE AUTOMOBILE:

[942.]—I have been a constant reader of your "Letters Interesting and Instructive," and would like to ask a few questions.

1. What particular part or principle in automobile construction is covered by the "Selden" patents?

2. Are all builders of automobiles in this country paying a royalty to the "Selden interests?" If so, how much?

3. Would there be any serious objection to tightening down the adjusting screws on a four-unit vibrating coil, making it a non-vibrating coil, the putting an ordinary electric buzzer with platinum contacts in the primary circuit between the battery and the "ground" connection on the frame, thus using the buzzer as a master vibrator?

SUBSCRIBER.

Moline, Mich.

1. Broadly speaking, the Selden patent covers the combination of an internal combustion motor of the compression type to a road vehicle or horseless carriage with a means of disengaging the connection between the motor and the road wheels. On that account, it is considered basic, and if upheld as valid will apply to practically all gasoline automobiles as at present constructed.

2. Earlier in the career of the American automobile industry, the majority of the more prominent makers formed an association and each agreed to pay a royalty. This is the Association of Licensed Automobile Manufacturers, or, more familiarly, the Licensed Association, or Selden Interests. The royalty is 1-4 per cent. It has been the policy of the association to restrict its membership practically to the organizers, as its constitution is to the effect that only firms who were established automobile manufacturers at the time of its formation, are eligible to membership. In the meantime, the American industry has grown to such an extent that the members of the Licensed Association now only represent about 1-3 of the total, though the value of the cars turned out by them annually is much greater, proportionately to the total, than their numbers would indicate.

3. There would be no objection to this in principle—in fact, one firm is now marketing a master vibrator designed for exactly this purpose. But there would be considerable practical objection to the use of an ordinary electric buzzer. The latter is not an instrument of precision by any means, as will be apparent from the fact that probably two or three dozen buzzers could be had for the price of a single well-made vibrator. They are not designed for fine adjustment or hard work and would be constantly giving way.

ADVISABILITY OF INSTALLING ROLLER BEARING.

Editor THE AUTOMOBILE:

[943.]—I have a Jewell stanhope which answers my requirements in all respects, except that it runs hard on account of the plain babbitt bearings being badly cut out by sand.

Which would be better, to have the plain bearings rebabbitted, or to have roller bearings put in? If roller bearings would be the best, can you give me the names of some reliable makers of such bearings in the vicinity of San Francisco?

Berkeley, Cal.

D. D. DAVENPORT, D.D.S.

Roller bearings would certainly be preferable to the old plain type, provided the design of the parts in which they are to be installed permits of their use without too much change, and also, in case you wish to go to the extra expense involved in equipping your car with an anti-friction type of bearing. The most obvious remedy, however, would be to have the old bearings rebabbitted and provide them with an efficient sand-excluding housing which would prevent a repetition of the trouble you complain of. We do not know of any maker of such bearings in or near San Francisco, but you will find the announcements of various makers of anti-friction bearings in the advertising pages of THE AUTOMOBILE, and the majority of such manufacturers have agents or branch houses on the Coast.

WHAT CAUSES WATER TO ISSUE FROM EXHAUST.

Editor THE AUTOMOBILE:

[944.]—More especially since the cooler weather of autumn, I have noticed a profuse liquid discharge from the exhaust of my car. My motor is of the double-opposed type, and this discharge is more marked after the engine has been at rest over night, and it apparently ceases after the engine has been running a few minutes. I first thought the liquid was unburned gasoline, but closer inspection reveals neither the odor nor taste of gasoline. Muffler explosions have occurred but a couple of times during the past six weeks, with the engine in use about every day. The engine runs very well and develops the usual power, but sometimes starts a little slow. Close attention has been given to the ignition and the carbureter. While the latter is wasteful, in that it leaks from one to two minutes after the motor stops running, I do not think it can cause this spray at the exhaust. Is this liquid unburned gasoline, notwithstanding my decision to the contrary, or is it water, as I believe it to be? If water, is it contained in the gasoline I use, or can it in any way result from condensation of atmospheric moisture, owing to the cooler weather?

For pages of "Letters Interesting and Instructive."

Farmland, Ind.

L. N. DAVIS, M.D.

The moisture in the air is largely accountable for the liquid discharged at the exhaust for the first few minutes after starting. It is composed of the water of condensation and contains gasoline in almost the same proportion as the fuel mixture did, but this is so slight as to be hardly perceptible in the fluid in question, as it is an extremely dilute mixture. The warm air of the mixture will naturally condense as the cylinders cool on a frosty night and the same is true of the gasoline vapor. The carbureter needle valve doubtless needs adjustment, as it is evident that too much gasoline is being drawn through the nozzle, otherwise the carbureter would not leak when the motor was stopped. The presence of this water in the cylinder makes starting more difficult, and as a preliminary the cylinder drain cocks should always be opened so as to relieve the motor of it. Steam condenses in the same manner in a steam engine and it is frequently dangerous to attempt to start it without having allowed the water to escape. The quantity is naturally greater than is the case with a gasoline engine, but the same conditions obtain to a very great extent.

A COMMON DIFFICULTY WITH COMPLICATIONS.

Editor THE AUTOMOBILE:

[945.]—Will you kindly publish through "The Automobile" a remedy for the following? I have a two-cylinder, small touring car about 10 horsepower, which is equipped with a Schebler carbureter. In winter my carbureter becomes clogged with soft ice, and the motor then stops. The air intake is about 2 1-2 or 3 inches from the exhaust pipe. I am using 1-2 inch standard gas pipe from carbureter to intake valves, and carbureter is about 16 inches below intake valves. Would covering this pipe with tape or flannel be a benefit, or would putting on an extra long piece of pipe from carbureter to exhaust pipe, and thereby take very hot air, do any good? I have it piped so that the carbureter is low down at the forward end of the motor, as shown by the accompanying sketch. Will you kindly advise me regarding this?

New York City.

F. C. FRANKS.

From the arrangement of the piping on your car, coupled with the fact that the inlet manifold is but 1-2 inch iron piping, it is the greatest mystery to us that you have ever been able to make the motor run at all, or at least, satisfactorily. Piping hot air from round the exhaust pipe to the carbureter will doubtless overcome the fault you refer to, but the whole arrangement is fundamentally wrong and not calculated to give anything like as efficient service as the motor is doubtless capable of under favorable conditions. We should recommend discarding the present manifold entirely for a number of reasons. In the first place, it is far too small; it is too long; it has too many elbows and last but not least it is not of the proper material as iron pipe is not at all suited to the purpose. To add to all these, the



THE OASIS, WHICH INVITES REST AND REFRESHMENT.

town, painfully new and European, but it is the point from which an excursion may be made to the ruins of Timgad, 37 kilometers distant, by an excellent though remarkably sinuous road. We went there in the afternoon and agreed on our return that we had had perhaps the most interesting experience of our trip and one that we should have been very sorry to have missed.

An Unearthed Early-Century Roman City.

Timgad, the ancient Thamagudi, was situated at the intersection of six Roman roads and was one of the outposts of the Empire in Numidia. It was built by order of the Emperor Trajan as the headquarters of the Third Legion, and the soldiers of that legion were employed in its construction, which began in the year 100 A. D. and was completed about the year 170. It was a flourishing city for more than 500 years and then succumbed to the Arab invasion in the seventh century. Shattered by earthquakes and covered by a slow accumulation of sand from the plain and soil from the mountains, it lay buried for nearly 1,200 years. Its excavation was begun under government auspices in 1881, and with a small annual appropriation has been continued ever since. About two-thirds or three-quarters of the area of the ancient city has been disinterred, including the Forum, the Capitol, the Basilica or Court of Justice, the Theater, the principal temples, the Arch of Trajan, the Market Place, extensive baths or thermæ (these are very striking), fountains, shops, and private residences. Miles of the original street pavements, bearing the marks of the ancient chariot wheels, stand revealed; and altogether these ruins are the most interesting Roman remains that have yet been found, with the possible exception of Pompeii.

Timgad was a more important city than Pompeii, with a larger population and finer buildings; and as it was built by im-



STREET IN KAIROUAN—MOSQUE OF THE SWORD IN CENTER.

perial fiat, at the height of Rome's power and splendor, it may be taken as an adequate example of the Roman conception of what a city should be. No doubt some of the best Roman engineers and architects were sent to supervise its construction, and it is probable that before a stone was laid or a foundation dug the city had been planned as a whole, and the location of its principal streets, monuments, and buildings determined. At Paestum, at Girgenti, and at Segesta, also at Dougga and El Djem here in North Africa, may be seen single temples, theaters, or other structures in better preservation than any building at Timgad; but nowhere else can one obtain so vivid and so accurate an idea of what a Roman city was as a whole in the classic days of the Empire.

In the museum near the entrance to the ruins are some of the finest ancient mosaics yet found, and in the baths or thermæ some of the mosaic pavements have been left in their original position. If possible, a whole day should be given to Timgad, and such a visit will repay all the trouble and expense of a trip to North Africa.

On the way to Timgad, about ten kilometers from Batna, are the ruins of Lambese, the ancient Lamboesis. The most interesting of these can be seen from the road in passing, and the time required for a closer inspection can be spent more profitably and interestingly at Timgad.

The road from Batna to Constantine leaves nothing to be desired, though the country traversed is without interest, and very fast running is safe. We made the distance, 120 kilometers, in a little more than two and one-half hours and arrived at Constantine in time for midday lunch on Thursday. There are two first-class hotels at Constantine and a spacious garage where supplies and accessories of all kinds may be had, but the charge for garage (5 francs or one dollar a night) is excessive. The charge for gasoline is 50 centimes a liter (40 cents a gallon.)

Constantine, a Mighty City of Eighty Sieges.

The city of Constantine is, next to Algiers, the most important and populous in Algeria. It has about 50,000 inhabitants, of whom nearly 16,000 are French, 8,000 are Jews, and 25,000 are Arabs. Each of the latter races has a distinct quarter of the old city, which are especially interesting to visitors, and the European quarter is growing rapidly and contains some fine modern buildings. By reason of its location on a gigantic mass of rock rising precipitously and towering a thousand feet above the surrounding plain, from which it is cut off on three sides by the profound chasm of the river Rummel, it must have been from the very earliest times the site of a city and fortress. As a Phœnician colony it was known as Cirta. Captured by the Romans about 70 years B. C., it took the name of the Emperor Constantine in the fourth century of our era. Falling like the other cities of this region before the Arab invasion, it was taken by the Turks in 1535 and by the French in 1837. During its long history it successfully withstood eighty sieges, and before the invention of longrange artillery it was practically impregnable, for direct assault was impossible.

Besides the Arab and Jewish quarters, the places best worth visiting are the Palace of the Bey el Hadj-Ahmed, a fine specimen of Moorish architecture, the Mosque Djama-el-Kattani, the Palais de Justice, the Casbah or citadel, and the markets; and no one who wishes to get an adequate idea of the remarkable situation of Constantine should fail to traverse the Chemin des Touristes (Road of the Tourists) cut out of the opposite cliff of the Gorge of the Rummel and affording startling views looking either up or down.

A Run Through the Granary of North Africa.

Between Constantine and Hammam Meskoutine, a distance of 112 kilometers, the road is one of the most serpentine ever constructed. Otherwise it is good, the descent from Constantine to the level of the sea at Bone being very gradual. The aspect of the country and of the few towns en route is distinctly European.

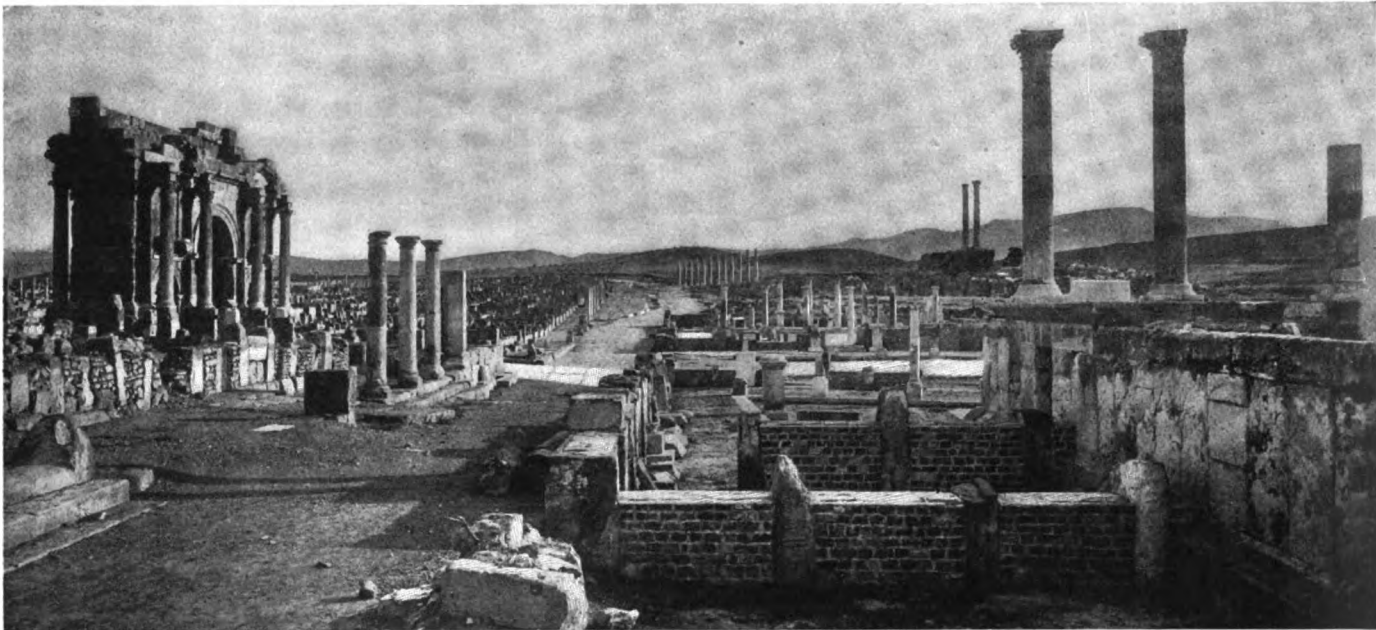
Few Arabs or other natives were seen, and the European colonists are scattered in farm houses that lie at long distances from each other. This is one of the chief wheat growing sections of North Africa and vast wheat fields extended in every direction as far as the eye could reach. Farming operations are evidently carried on on a large scale, and the soil looks fertile and well tilled. During the Roman period Northern Africa was the granary of the Empire and was the source from which the bread came that was furnished free by the Cæsars to the turbulent populace of Rome. Under proper cultivation Algeria and Tunis could now supply France with all the wheat she needs to import, but native agriculture is primitive and the average yield of wheat in Algeria is only eight bushels to the acre. In the section between Constantine and Bone, however, the yield must be much greater, as the result of European methods.

To reach Hammam Meskoutine we had to make a divergence of five kilometers from the main road at a distance of 107 kilometers from Constantine, but no automobilist should fail to make it, for the road is good all the way, and Hammam Meskoutine is not only one of the most attractive and interesting

The waters are utilized for bathing purposes in two establishments, one for natives and the other for visitors. There is a comfortable and well managed hotel with several sun-terraces. And the mildness and uniformity of the temperature are shown by the luxuriant vegetation, of which orange and lemon trees are the most striking feature, though there are olives, myrtles, and palms in abundance, and multitudes of flowers in marvelous variety. After desert wastes the sight is delightful.

After enjoying an excellent lunch at the hotel and inspecting the attractions of the place, we returned to the main road and resumed our journey toward Bone, distant eighty-six kilometers. Soon the hilly character of the country changed and we traversed level prairies on a road almost as straight and direct as those of France and nearly as good.

Bone was reached at 6 P. M. It is a prosperous little seaport, very new and European looking, though its history goes back to the Phœnician period. It is built on a portion of the site of the Roman Hippo Regries, of which St. Augustine was bishop at the end of the fourth century and where he died while the city was being besieged by the Vandals. On a hill overlooking



RUINS OF TIMGAD, CITY OF THE THIRD ROMAN LEGION IN NUMIDIA, BUILT BY THE EMPEROR TRAJAN.

places in Algeria, but has a garage where repairs can be made and gasoline bought (60 centimes a liter, or about 48 cents a gallon), and where the usual supplies are stocked.

The hot springs here must have been known and used at a very remote period of antiquity, for vestiges of Punic structures have been found, while Roman ruins abound in the vicinity. But by far the most interesting constructions are those of the springs themselves. These springs are almost twenty in number and the water gushes out at a temperature of 205 degrees Fahrenheit, nearly the boiling point. As it cools, the carbonate of lime with which it is very strongly impregnated is deposited, hardens, and forms a wall around the source which continually grows higher and higher. When it gets so high that the forces below can no longer drive the water up over the rim of the cone, the water seeks a new opening, which becomes another spring and begins anew the process of upbuilding. In this way, in the long course of ages, a chalk cliff nearly eighty feet high has been built up, and over this the water from the principal springs trickles, forming what is known as the Cascade. This cascade is unique among natural wonders, for it looks exactly like a petrified waterfall played upon by sunlight and showing nearly all the colors and tints of the spectrum, and its beauty is indescribable. The sight should certainly not be missed.

the plain on which the Hippo stood has recently been erected an imposing basilica to commemorate him. The best hotel at Bone leaves much to be desired in the matter of cleanliness and its stuffy rooms were freezing cold on the night of our arrival (March 29). But there is an excellent and well equipped garage there at which supplies of all kinds may be had. The price of gasoline was 2 francs 70c. for the bidon of 5 liters (about 45 cents a gallon), and we found here some Michelin inner tires which could not be obtained at Constantine.

Tunisian Frontier Roads Might Be Improved.

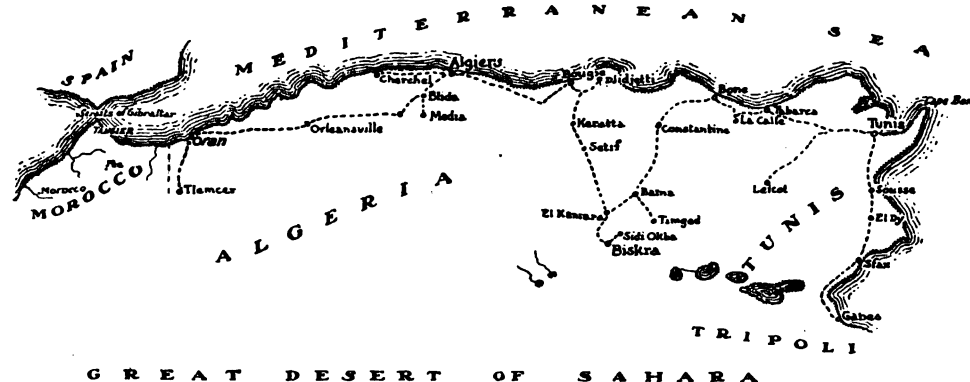
The road eastward from Bone to the frontier of Tunisia is one of the worst we encountered. As far as La Calle (86 kilometers) and for some distance beyond, it is encroached upon in places by a railroad track, and the roadbed itself was in very bad condition, especially between kilometer posts 45 and 55 (from Bone). Beyond La Calle there is a pretty stiff climb through cork forests, and then a succession of ascents and descents until the frontier is reached at Babouch, about 26 kilometers from La Calle. There are only two or three inconspicuous houses at Babouch, and we would have passed at full speed but for a gesticulating Arab who shouted "Douane" (custom house). If our car had been of foreign make we should have had to pay

duty. As it was a French car it was only necessary to show our *passavant*, or permit, to travel in France and her colonies.

Until last year the usual route from the frontier to Tunis was via Tabarka and Béja. This is the more direct, but at Bone we were told by the very intelligent and well-informed manager of

for El Kef is situated on a lofty plateau which looks down steeply on the plain and offers nothing of interest to the visitor. We were also told at Souk-el-Arba that no gasoline could be obtained there, but we did not make inquiries ourselves.

Turning sharply to the left again after the cut-off had been traversed, we found ourselves on the "grande national route" that runs southwest from Tunis to El Kef. The distance from Tunis was 161 kilometers, and the road all the way, except where repairs were in progress, was superb, though passing through a country that possesses no interest from the scenic point of view. At Teboursonk, on a hillside two kilometers off the main road, we stopped early for lunch, intending to visit afterwards the ruins of Dougga about 4 miles distant. Unfortunately for our plan a new road is in process



of construction along the route of the old bypath, which has been totally destroyed, rendering Dougga inaccessible, except on foot. In a year the new road will be finished, and as it is a part of a national route it will be all that an automobilist could reasonably wish to travel over.

When it is practicable a visit to Dougga should not be missed; in fact it is well worth a special journey from Tunis, and many make it. The present inhabitants are Arabs living in miserable huts, but the ruins of the old Roman city of Thugga, which was founded by a colony from Carthage, are among the most notable in this part of Africa. One of them, the Temple of Jupiter, Juno, and Minerva, dating from the reign of the Emperor Marcus Aurelius, is well preserved and is one of the most beautiful relics of antiquity left to us. Other noteworthy monuments are the Theater, the Triumphal Arch, the Mausoleum, the cisterns, and a noble aqueduct that is no doubt part of that which anciently conveyed water to distant Carthage.

From Teboursonk to Tunis is 101 kilometers, and as the country traversed is flat and without interest and the road very good we covered the distance in a little more than two hours. When about 8 kilometers away, after climbing a slight hill, we came in sight of Tunis, nestling around the head of a deep bay almost land-enclosed. It gleamed white in the sunshine and a dozen minarets lifted their slender spires, but as the city lies very low and presents no prominent features it was difficult to distinguish it clearly from the neighboring towns of Carthage, La Marsa, and La Goulette. At 3:30 P. M., of Sunday, March 31, our long journey of more than 1,500 kilometers (934 miles) from Algiers ended at the Tunisia Palace Hotel, the best in Africa outside of Egypt.

From Teboursonk to Tunis is 101 kilometers, and as the country traversed is flat and without interest and the road very good we covered the distance in a little more than two hours. When about 8 kilometers away, after climbing a slight hill, we came in sight of Tunis, nestling around the head of a deep bay almost land-enclosed. It gleamed white in the sunshine and a dozen minarets lifted their slender spires, but as the city lies very low and presents no prominent features it was difficult to distinguish it clearly from the neighboring towns of Carthage, La Marsa, and La Goulette. At 3:30 P. M., of Sunday, March 31, our long journey of more than 1,500 kilometers (934 miles) from Algiers ended at the Tunisia Palace Hotel, the best in Africa outside of Egypt.

Stopping for lunch at the high-lying village of Ain Drahan, we reached the railroad again at Souk-el-Arba at 4:30 P. M. Here we found a comfortable little hotel (Hotel du Commerce), and having learned that decent accommodations could not be had between Souk-el-Arba and Tunis, 194 kilometers distant, we decided to remain overnight and finish our journey next day.

Better Roads but Poorer Scenery in Tunisia.

The general aspect of Tunisia is that of a more developed country than Algeria. The population seems larger, the methods of tillage less primitive, the people more prosperous, the surface less rugged and mountainous, and, what is more important for automobilists, the roads are well planned from the engineering point of view and nearly always in first-class condition. As far as scenery is concerned, it is not nearly so attractive as Algeria—in Algeria we were never once out of sight of mountains—but for comfort in motoring it is much superior.

At the drug store at Souk-el-Arba gasoline may be obtained at the comparatively moderate price of 50 centimes a liter (about 40 cents a gallon). Here, as throughout Tunisia, the only gasoline sold is "Pratt's Naptha," which is put up in large tin cans holding 18 liters (5 gallons). It is necessary to fill up the reservoir here, as no more is obtainable before reaching Tunis, where the price is higher unless a special bargain is made.

Twenty-two kilometers beyond Souk-el-Arba on the road to El Kef is the small Arab village of Nebeur, and three kilometers beyond this village a new-made road leads sharply to the left. This road, recently opened, is the "cut-off," and its 7 kilometers save 28 kilometers and a long and hard climb to El Kef,



THE "SHIP OF THE DESERT" AND HIS PILOTS.



NEW WAYNE "30" IN COMPLETE RUNNING ORDER.

IN accordance with a previously adopted policy, the makers of the Wayne cars, the Wayne Automobile Company, Detroit, Mich., announce that, for the season of 1908, they will devote their entire attention and energies to the production of a single model. This will be known as the Wayne "30," and while it will be supplied either as a touring car or roadster, or as a closed car, the chassis construction and details will be identical throughout in every case, except of course where required to conform to the purpose of the model in question, such, for instance, as the additional rake given the steering column, placing of seats and similar details in the case of the roadster.

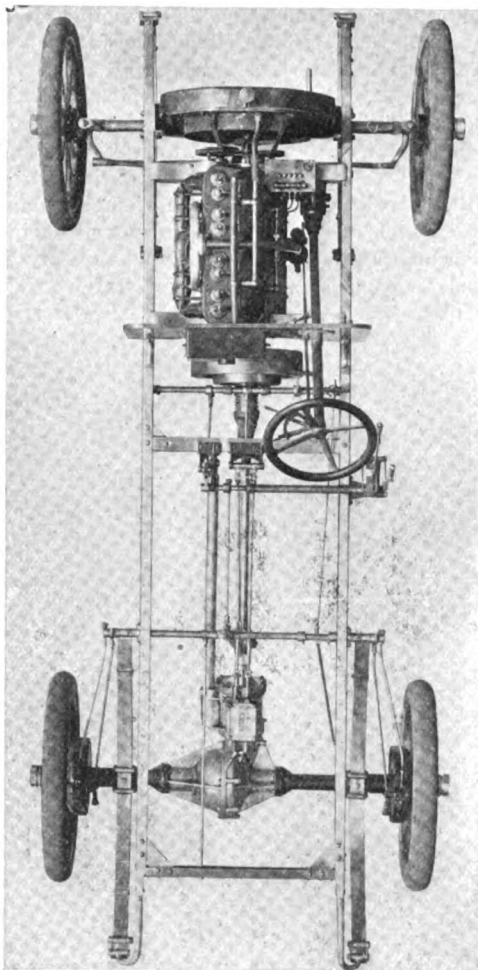
Motor Details.—Where the power plant is concerned, the standards set by the Wayne company's designers and adhered to consistently for the past two seasons, will again be followed, as having thoroughly demonstrated their fitness. The cylinders are of the best gray iron and are cast in pairs, with the water-jackets integral. The valve-seats are also made integral with the cylinders and long flanged gray iron guides are pressed into seats in the cylinders. The valves themselves measure 1 3/4 inches in diameter and consist of nickel-steel heads electrically welded to machine steel stems. The cam-rollers are in forked lifters with the ends projecting above the roller forks to enter slots in the flanged lifter-guide bodies. The pistons are of the usual Wayne construction and are made gas tight with the cylinder by four eccentric cut rings above the piston pin, while lubrication is facilitated by cutting three oil grooves in the lower part of the piston.

The connecting rods are drop-forgings with bearings consisting of Parson's white bronze half boxes, as are also the main or crankshaft bearings. The latter, as well as the camshaft bearings, are attached to the upper half of the aluminum crankcase, the

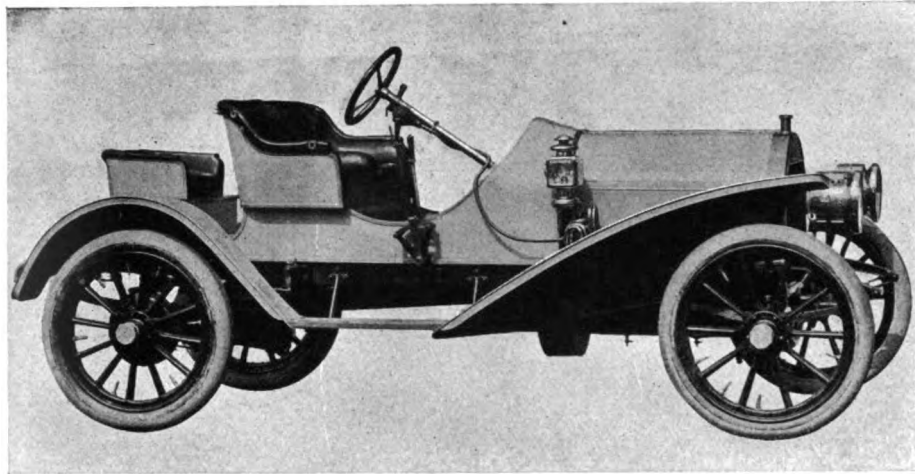
lower part serving merely as an oil pan. The cams are made separately and are not pinned into place on the camshaft until the motor has been properly timed, thus insuring their accurate setting. The crankshaft timing gears are of steel and are enclosed in the crankcase, where they receive the benefit of the splash lubrication. The valves are all placed on one side and are operated by the direct lift method. Ignition is of the high-tension type, using the familiar four-unit coil mounted on the dash, and with accumulators as the source of current, while a mechanical force-feed oiler takes care of the essential of oiling, the main bearings being provided for by special leads from the oiler as well as by splash, in the crankcase, the oil-pan of which is suitably divided.

Cooling is provided for by a vertical tubular radiator of efficient design, consisting of a large number of small tubes and copper plates, the circulation being maintained by means of a gear-driven, two-piston pump. This is supplemented by a fan. Considerable attention has been devoted to the matter of making every part of the motor as accessible as possible.

The Car's Foundation.—It is a question whether the motor or the chassis foundation, which is in turn the foundation of the entire car itself, is of greater relative importance, though logically the chassis frame and running gear should come first in a description. In the case of the Wayne "30" this consists of a pressed steel frame of the standard channel section of a heavy gauge of steel, substantially reinforced by gussets and cross pieces. The spring eyes and hangers are drop-forgings. Both the power-plant and transmission are supported directly from the main frame, weight being saved by the elimination of a sub-frame. The four supporting arms of the crankcase extend to each side members of the frame



PLAN VIEW OF CHASSIS, WAYNE "30"



WAYNE "30" ROADSTER FOR 1908, BUILT ON STANDARD WAYNE CHASSIS.

and are flanged to hang on top of the latter. The forward cross-member is of channel iron and is dropped 5 1-2 inches to receive the radiator, which is thus relieved of all destructive side strains tending to twist it from its foundation, and sooner or later causing bad leas. The suspension consists of semi-elliptic springs of substantial size at all four points and liberal-sized tire equipment is provided. Special attention has been devoted to the matter of brakes, two independent sets being provided. Both are located in special drums on the rear hubs, these drums being of pressed steel, measuring 12 inches diameter by 2-inch face. The inner faces of the drums are acted upon by an equalized set of internal expanding brakes actuated through toggles, while the external contracting brakes on the outer faces of the same drums are of the Raymond type. Both the external and the internal shoes are faced with camel's hair felt, and either pair of brakes is designed to have a high factor of safety, making it capable of holding the car under the most difficult conditions, independently of the other set.

The Transmission.—The first step in the transmission of the power to the road wheels consists of a clutch of special design. It is in the form of a cylindrical drum cast integral with the flywheel and is of the internal expanding type. A leather-faced band pivoted at one end forms the engaging member. It is attached at the meeting end of flywheel turning direction, so that the movement of the flywheel tends to disengage the clutch. The engaging spring is only set at about 20 pounds pressure, so that the clutch is readily disengaged by a very slight pressure on the pedal through the medium of a sliding wedge.

The gear-set is of the sliding type with selective method of operation, all the pinions being of specially treated chrome-nickel steel, as is also true of the squared shaft on which they slide. They are cut of six pitch, but only to a depth equal to an eight-pitch tooth, thus giving a short, thick tooth especially adapted to withstand the hard service an automobile gear-set is always called upon to perform. The gear-box is conveniently located on the rear axle following out the plan of arrangement adopted by the designer of these cars on previous models, and which has been found to be so successful. Connecting the clutch and

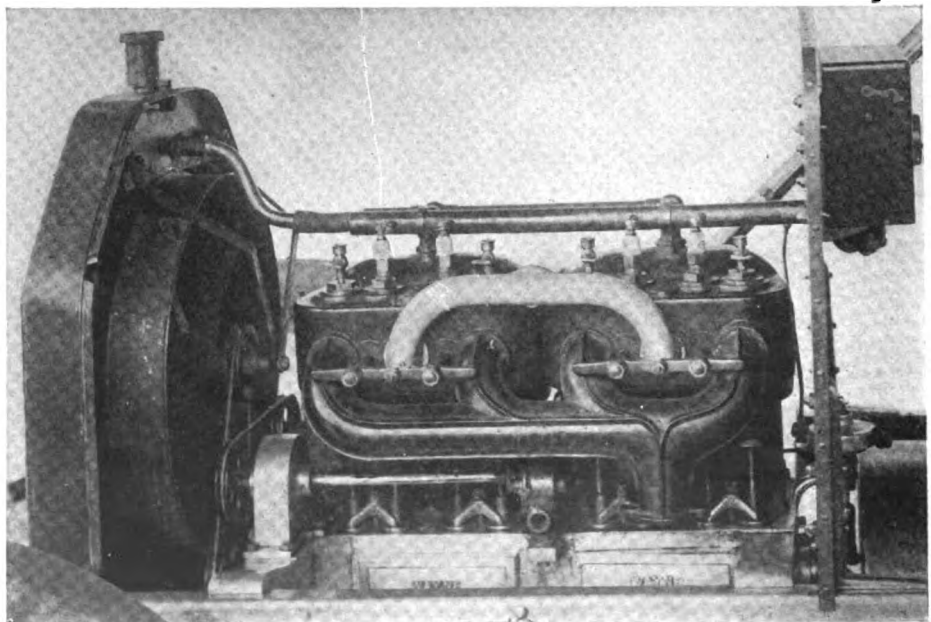
gear-set is a 1 1-4-inch solid steel shaft, 36 3-4 inches long and with self-oiling and dust-proof universal joints of special design at each end. While joints are an absolute necessity in such situations to compensate for the relative movement of the different parts of the car when traveling rough roads, or passing over obstructions, the design of the Wayne "30" in this respect is such that the maximum propeller shaft angle is but 2 1-2 degrees, and the shaft is practically level with normal load.

Realizing the importance of this essential, particular attention has been paid to the design and construction of the steering gear. It consists of an external right-hand thread and an internal left-hand thread, made on the steering shaft at its lower end and integral with the steering column proper

and a nut moving on the latter. The movement set up here is communicated to two bellcrank levers—that is, the steering arm has a double bellcrank end, taking two compression links, one at each end in crutch seats, one compression link being pressed by the exterior thread nut movement and the other by the internally threaded screw plug. The thrust is taken up by a special ball-bearing, and by adjusting the cone of this bearing all lost motion in the steering action can be readily and accurately compensated for—an adjustment of the greatest importance, as even the best of steering gears will wear loose in the course of time and become a source of danger.

The gasoline tank is of the gravity feed type and is located under the forward seat. It has a capacity of 16 gallons, thus giving the car a wide traveling radius. As the mechanical oiler, which is bolted directly to one of the supporting arms of the motor, holds three quarts of lubricant, there is no extra tank provided.

The touring car body is of the straight-line type and is made of sheet aluminum and steel put on over wooden forms, the former providing a surface that can be japanned. It has a normal capacity of five, but with the addition of the extra folding seat in the tonneau has a seating capacity of seven persons. The runabout body is of the same construction.



OPERATING SIDE OF NEW WAYNE "30" MOTOR, SHOWING COMPACTNESS OF POWER-PLANT.



MODEL B, 40-HORSEPOWER CONTINENTAL, DESIGNER JOHNSTON IN REAR SEAT.

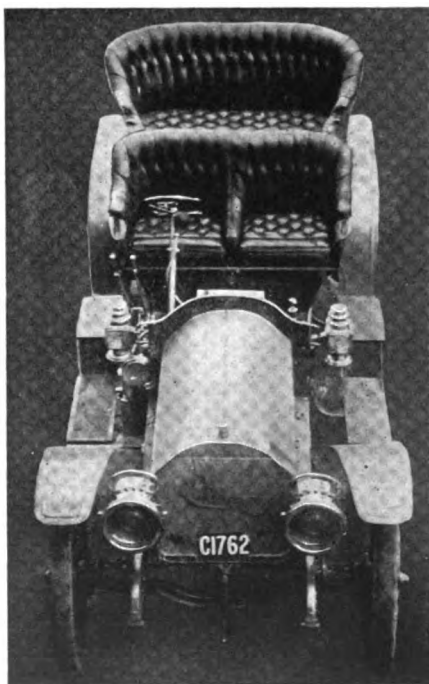
AN American car built after the best foreign standards, briefly suffices to describe the Continental, which claims New Haven, Conn., as its birthplace, with C. S. Johnston as its designer and builder, as well as its driver, as he has been a familiar figure in most of the competitions of the past season. To build and market the car in commercial quantities, the Continental Automobile Manufacturing Company was organized and has established a factory at New Haven. This concern has recently been admitted to the ranks of the American Motor Car Manufacturers' Association or, more familiarly, the "independents."

For the coming season, several models will be marketed, a standard four-cylinder touring car naturally forming the mainstay of the line. This is known as Model C and has a 120-inch wheelbase, 34 by 4-inch wheels and tires, six-passenger body of the familiar straight-line type, and lists at \$3,000. With the motor placed farther back on the frame and with a special three-passenger semi-racing body, the same chassis is known as Model B, and will be the 1908 Continental roadster, listing at \$2,700. The line will be completed by a 50-horsepower four-cylinder model and a 40-horsepower six-cylinder model, which will be known respectively as models D and E; 12 of each of these cars will be built on special order during the coming season. In Models B and C, which will, in consequence, form the bulk of the cars to be turned out, the motor dimensions are 4 1-2 by 5 1-4-inch bore and stroke, developing 40 horsepower at 1,000 r. p. m., although the car is nominally rated as 28-32 horsepower. The cylinders are cast separately, the valves all being interchangeable and mechanically operated. They are nickel-steel die forgings.

while the crankshaft, which is slightly offset, is of high-grade steel machined directly from a solid billet. There are five main bearings of liberal size, Parsons' bronze being the material employed. The lubrication in this model is of the splash type, fed by a mechanical force-feed lubricator placed under the hood so that the sight-feeds may be seen through the dash. In Models D and E, splash lubrication, fed by siphon jet in connection with an oil-pump placed in the crankcase, will be employed.

The clutch is of the multiple disc or ring type, of very compact and simple construction, running in an oil bath, and is bolted directly to the flywheel, occupying but little space. It consists of but five rings, two of which are of phosphor bronze and three of steel. A heavy, helical spring serves to engage the clutch, which is maintained in its position by bell hangers. The gear set is of the sliding type with selective operation and is of familiar standard design. It is enclosed in an aluminum housing and its pinions and shafts are of specially hardened chrome steel, running on Hess-Bright ball bearings. Final drive is by propeller shaft through double universals, and the rear-axle unit is fitted throughout with Timken roller bearings.

Among the special features of the car are its braking system and its ignition. The former consists of four powerful independent brakes which may all be operated simultaneously, or any one of them separately. The first is a 10-inch drum with 2-inch face, located on the propeller shaft just back of the gear-set, and is operated by a pedal. Just in front of the gear-set housing is a second small brake in the line of the transmission which is operated in connection with the clutch and facilitates gear-changing. The reg-



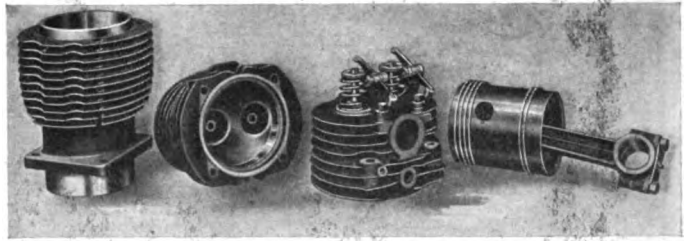
CONTINENTAL AS SEEN FROM FRONT.

ular running brake operates on a 12-inch band with a 2-inch face, while the emergency brake has a 14-inch band with a 2-inch face, a camel's hair band acting against steel. As a regular equipment, the models in question are fitted with an accumulator and set of dry cells in reserve, acting through a standard timer and set of four unit Lacoste coils on the dash. But for an additional charge of \$150, a special magneto of the firm's own design and construction is fitted. This is of the high-tension type with coil, and is extremely simple, provision being made for operating on either the magneto or storage cells, merely by throwing a switch a single set of plugs and wiring being employed for both systems, though the makers guarantee it to be as easy to start on the magneto as with the battery, as the motor is fitted with a special compression relief and can be easily spun by hand at a good speed.

From the foregoing it will be evident that no attempt has been made to incorporate new or radically different ideas into the construction of the car, which is, as a whole, extremely simple, compact and practical, representing, as it does, the concrete materialization of what its designer has learned by close observation in handling the best cars of both foreign and American makes during the past five years. It is noticeable that the best foreign lines that have come to be regarded as standard to a great degree the world over have been adopted in the design of the Continental. For instance, the honeycomb radiator is placed slightly to the rear of the 2-inch I-beam axle, and this, together with the car's long, low, straight lines, gives it an unusually attractive appearance. The selective type of gear-set is equipped with the Mercedes pattern gear-shifting levers, while the 25-gallon gasoline tank is placed at the rear of the car. The entire mechanism is protected from beneath by a sheet-steel pan which has been designed not alone to act in this rôle, but with a view to minimizing the amount of dust raised from the road, as it causes no suction or back-draft.

MARMON 1908 LINE HAS SEVERAL MODELS.

In accordance with the practice that is coming to be more and more generally followed by American makers, Nordyke & Marmon, Indianapolis, Ind., builders of the Marmon air-cooled cars, announce that their line for 1908 will comprise several models. There will be two standard touring cars, Model G, listing at \$3,000, and Model H, listing at \$3,500. Both are equipped with the 90 degree air-cooled motors evolved by this concern. Model G is a five-passenger car, having a 104-inch wheelbase, 34 by 4 1/2 inch wheels rear and 34 by 4 inch front and equipped with an attractive straight-line type aluminum



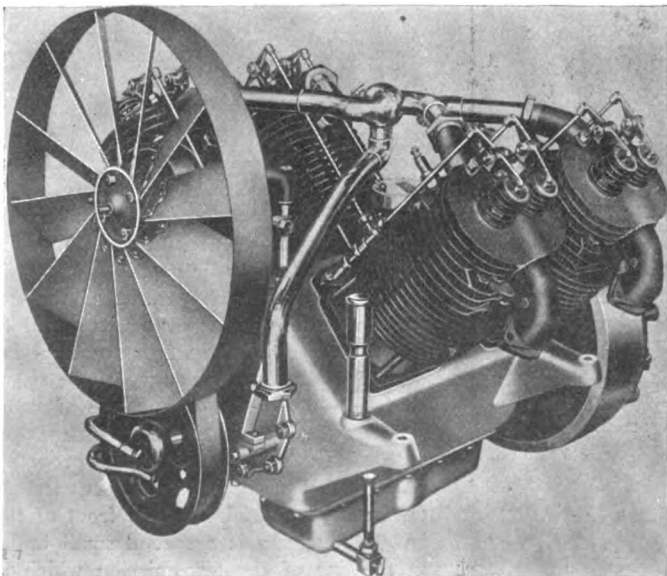
COMPONENTS OF THE NEW MARMON AIR-COOLED CYLINDERS.

body. It is provided with a disc clutch, selective type of sliding gear set, shaft-drive and roller-bearing steering column. Model H is also a five-passenger car, but has sufficient room in the tonneau for two extra seats to accommodate seven in all. Its wheelbase is 114 inches, while its running gear is the same as Model G, quick detachable rims and tires being used in both cases, while its mechanical features are also the same. It is provided with a cast aluminum body designed in a combination of straight-line and curve effects.

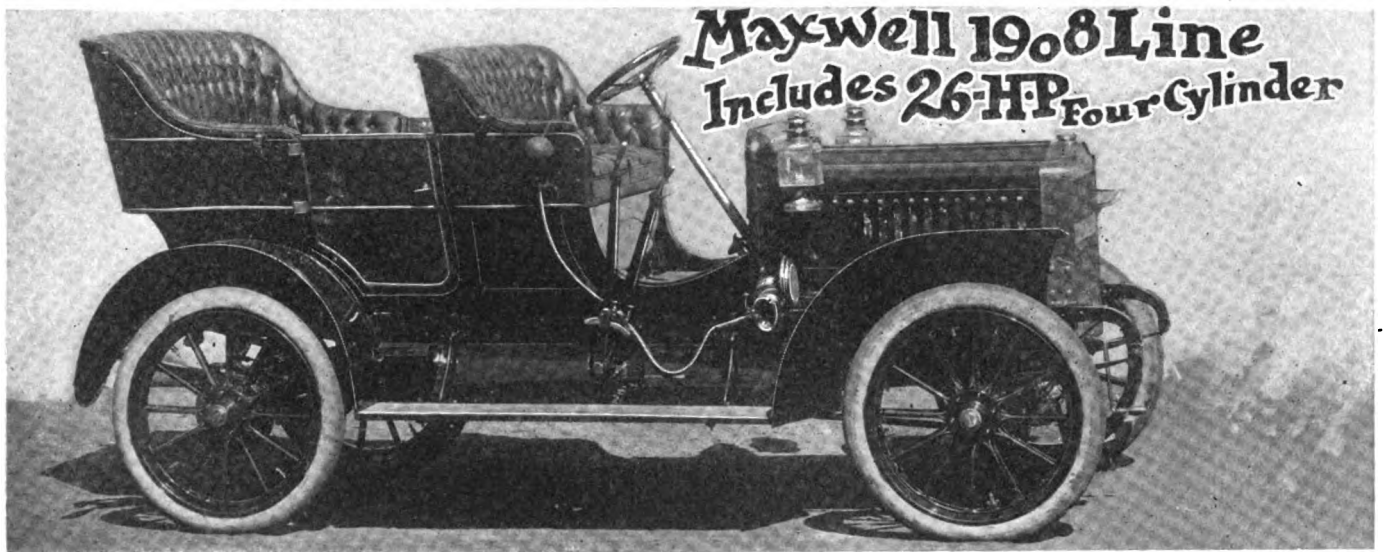
The Model H will also be furnished with a four-cylinder vertical water-cooled motor, the cylinders measuring 5 by 5 inches, the remainder of the chassis being the same as when equipped with the standard Marmon air-cooled motor. The water-cooled motor is of Marmon design and is closely patterned after standard practice in every respect, with long connecting rods, large valves oppositely disposed and mechanically operated, magneto ignition, Marmon oiling system and other up-to-date features. Where the air-cooled motors are concerned, the numerous features characteristic of the Marmon design and construction as embodied in this special type have practically all been retained, with the exception of one radical improvement on which the makers dwell to a considerable extent in their announcement. The most prominent of these features are the 90 degree placing of the cylinders, the Marmon system of lubrication through the hollow crankshaft, and the double three-point suspension whereby the power plant is on one frame and the body on another.

To these has been added an improved form of two-piece cylinder construction. Instead of being cast in one piece, the new cylinders are now made with detachable heads. The latter are cast with a liberal provision of radiating flanges and contain the exhaust and inlet valves and ports, the head as a whole being secured by four long studs passing down through the cylinder flanges and into the crankcase, the nuts being placed on top. This construction eliminates the bother of separate valve cages, reduces the number of joints and gives unusually easy access to the valves, as well as to the interior of the cylinder and the top of the piston head when necessary to remove carbon deposits. The head joins the cylinder just above the piston stroke and is seated on a large copper-asbestos gasket. Removable valve stem guides are set in the heads, the rocker arm support being held to the head by three studs with nuts and lock washers. The head is tapped for the spark plug and priming cock and the exhaust and inlet ports are threaded for elbows; once the latter are in place it is unnecessary to disturb them. The exhaust manifold is attached by flanges bolted to the elbows, while the intake is secured with a large brass union, this manifold being specially designed to deliver a uniform mixture to each of the cylinders.

With the construction above outlined, it has been found that the motor runs much cooler and valve noise is reduced to a minimum. At the end of a continuous 3,000-mile test, covering a period of three weeks' driving, the cylinder heads were removed and they were found to be remarkably clean, with the valves in perfect order. In addition to the changes mentioned, a number of minor details have been refined here and there as the result of experience, so that the Marmon air-cooled motors for 1908 will be better than ever.



THE NEW MARMON AIR-COOLED MOTOR WITH SEPARABLE HEADS.



LATEST FOUR-CYLINDER ADDITION TO THE MAXWELL LINE FOR 1908.

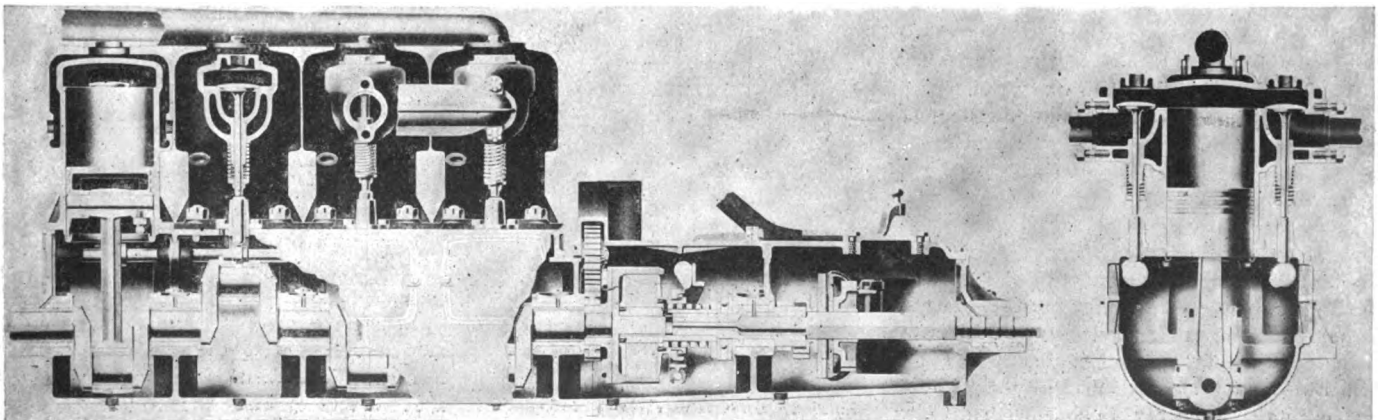
IN connection with the appearance of the Maxwell line for 1908 an announcement of unusual interest is made. It concerns the advent of a new four-cylinder, 26-horsepower touring car of standard type and equipment to sell at \$1,750. The 12-14-horsepower Maxwell runabout and the 16-20-horsepower two-cylinder opposed car will be as prominent factors as ever in the line, the latter being more generously equipped than formerly. In addition to the three brass oil lights, horn, tools and tire repair outfit, a top, gas lamps and generator are now included, despite which the car will still continue to list at \$1,450. The runabout, officially known as Model LC, will also be listed the same as previously, viz., \$825. The line is completed by the Model M, 40-horsepower touring car.

Interest centers chiefly in the new Model D, 26-horsepower car, the power-plant of which is of the unit type, so long a distinguishing feature of the Maxwell two-cylinder cars. In this form of construction the motor, clutch and gear-set become practically an integral unit and as such are not subject to the damaging stresses which frequently cause disalignment where these essentials are mounted separately, permitting relative movement between them. The motor is of the standard, four-cylinder vertical type, the cylinder dimensions being 4 1-4 by 4 1-2 inches, while the motor rating is based on the very conservative speed of 800 r. p. m. The cylinders are cast separately, making possible the use of five liberal-sized bearings, the inner three of which are formed by the crankcase compartment walls. Four good-sized hand plates are provided on each side of the crankcase, making it easy to reach and adjust any part of the interior mechanism of the motor without dismounting it or some other part in order to get at it. The valve chambers are of liberal proportions and are of the outboard or extension type, cast integral with the

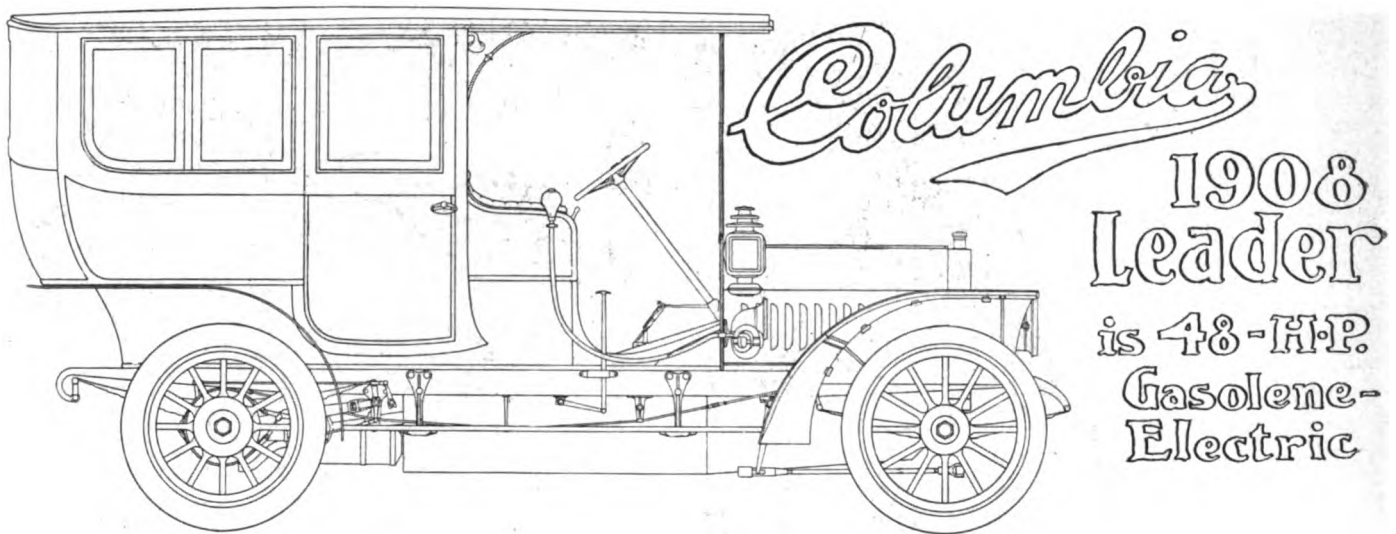
cylinders, while the valves themselves are all mechanically operated. The crankcase and the gear-set housing consist of a single aluminum casting, so that the power-plant entire is placed on a three-point suspension, thus giving the car great flexibility and a large capacity for enduring the kind of roads usually met with in this country.

The gear-set is of the sliding type with progressive operation, providing three speeds forward and reverse. Between it and the motor is interposed a multiple disk clutch consisting of 19 plates of a size affording an amount of friction surface greatly in excess of all reasonable demands. It is fully encased and runs in a bath of oil. An interlocking device prevents the shifting of gears without disengaging the clutch so that even an inexperienced operator cannot damage this essential of the car. Final drive is by propeller shaft through two universal joints of the cross type and which are equipped with a special form of oiling device. These crosses are designed to hold a quantity of oil, thus making lubrication automatic for long periods. The live rear axle revolves in a tubular housing of drawn steel, perfect alignment being insured by a special thrust bearing. The frame is of the usual channel section, pressed steel construction, tapering at the ends to accommodate the spring yokes, while the type of sheet metal body so long a feature of the Maxwell cars has been retained, the upholstery being of good quality leather and hair.

The wheelbase of the new car is 96 inches and the tread standard, while in complete running order it only tips the scales at 2,100 pounds. As a roadster this car is known as Model K, and lists at the same price. The details of the design and construction are the same as those just described, except that the touring body is replaced by a semi-racing type with the divided front seats. In other respects the chassis is identical with the Model D.



THE COMPACT UNIT POWER-PLANT OF THE NEW MAXWELL IN PART SECTION.



COLUMBIA MARK 66-3 LIMOUSINE ON ELECTRIC TRANSMISSION CHASSIS.

INTEREST naturally centers about the "electric transmission" Columbia car, which will form the *pièce de résistance* of the Columbia line for 1908. As regards the others, the 28-horsepower car is continued with a few important changes, as is also true of the electric brougham, in addition to which a new chassis construction in an electric victoria phaeton will be listed, this car also being supplied with an inside-operated coupé body. But the chief stress is laid upon the combination gasoline-electric chassis with its gearless transmission, which under the A. L. A. M. formula is rated at 48 horsepower, its cylinder dimensions being 5 1-2 by 5 1-2 inches, and its normal r. p. m. rate is moderate.

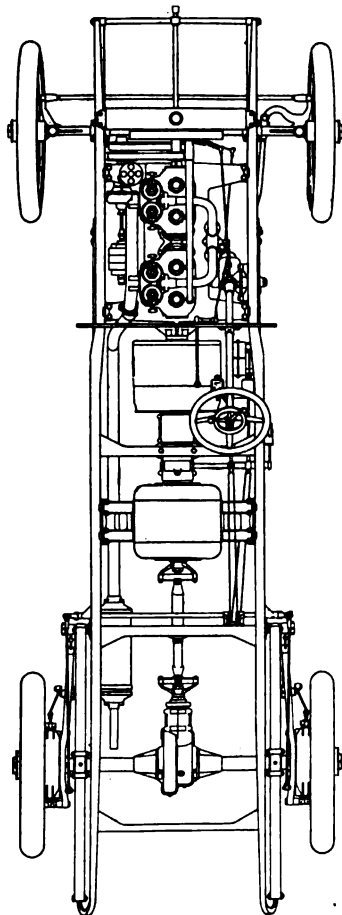
This motor is a new design, its cylinders being cast in pairs, while the valve chambers are designed to occupy the least cubical space consistent with uniform water-jacketing of the exhaust valve seat and guide. Provision has been made for lubricating the inlet valve stem in order to prevent sticking. The spark plugs are set between the exhaust and inlet valves and are located directly in the path of the fresh incoming gases, while they are also waterjacketed. The inlet valves are operated by rocker arms while the exhaust valves are actuated by the direct thrust method, both being placed on the left-hand side of the motor, to which the centrifugal gear-driven pump and high-tension magneto are also attached below the frame line of the chassis. The magneto is a Gianoli, using a single coil and combined distributor and timer, so that both the magneto and battery systems of ignition operate through a common distributor and the same set of plugs.

Where this car is concerned, the greatest interest naturally attaches to its transmission, as it is the only one of its type built in this country. Coupled direct to the rear end of the crankshaft is a continuous-current generator of the ironclad type and extremely compact in form. The fields of this generator, which weigh considerably more than the ordinary flywheel, act in this capacity, as they are fast to the motor crankshaft, while the generator armature is coupled to the forward end of the propeller shaft, thus constituting the generator an electric clutch. As the fields revolve, they drag the armature round after them and the latter transmits the energy thus imparted to it

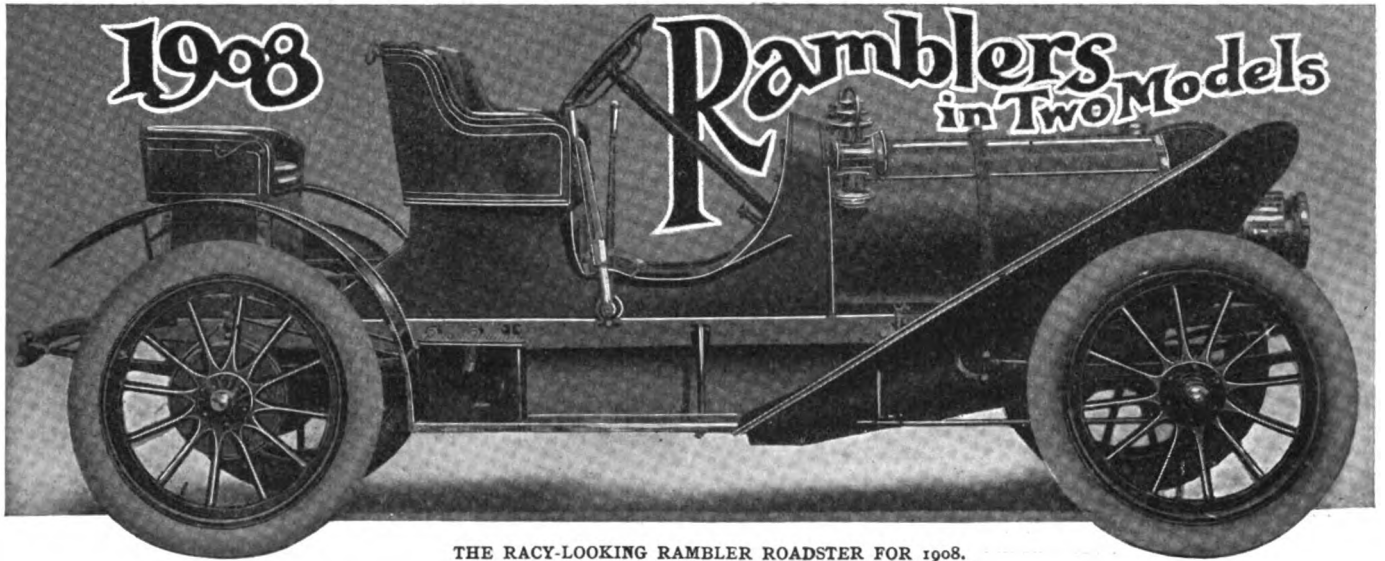
directly to the rear-axle driving unit, which is of the standard type so long a feature of the Columbia cars. However, as there is always more or less slippage between the fields and armature in such an arrangement and as the latter does not provide a sufficient range of speeds or starting torque, an electric motor is mounted on the propeller shaft directly back of the generator. The slippage in question does not manifest itself as heat, as in the case of a friction clutch, to which it is analogous, but takes the form of electric current which is utilized in the motor just mentioned.

Changes in speed are all effected by means of a small controller handle similar to that used on electric street cars, there being five forward and two reverse speeds, the wiring of the controller being

so arranged as to make different combinations with the generator fields and armature and the same essentials of the motor in order to obtain the various changes of speed. The driving effort of the engine can thus be multiplied greatly and the maximum effort of which the combination power plant is capable may be used continuously even with the car at a standstill, as the revolving field generator forms a clutch which may be slipped continuously and uniformly, and which will deliver the result of this slippage as electric energy instead of in the form of wasted heat. The control involves no change in the mechanical relation of the motor to the rear-axle driving unit, and in shifting from point to point, the driving effort is not disconnected from the bevel pinion, even momentarily. Only that portion of the energy developed by the motor which is represented by the slippage of the armature and field of the generator is transformed into electric energy, so that the makers figure that the transmission has an efficiency of 95 per cent., which is unusually high. The capacity of the electric clutch generator and motor in this system is about four times greater than it would be with a generator and motor acting in their usual capacities. That is, this system will transmit and control the power of the engine with one-fourth the weight and far greater efficiency than if all the power of the engine were used to drive the generator, which in turn delivered it to the motor to be transformed into mechanical energy, as too great a percentage is wasted in such a system.



PLAN OF GASOLINE-ELECTRIC CHASSIS.



THE RACY-LOOKING RAMBLER ROADSTER FOR 1908.

NOTHING that will be placed on the American market in the shape of low-priced car during the coming season will show the hand of progress to any greater extent than is revealed by the design of the new Ramblers. The Jeffery designers have ever strained the last point to give the purchaser of a Rambler something more than the other fellow did for the same price, and in the evolution of what will constitute the leader of the Rambler line for 1908 they have succeeded admirably, as a brief review of the car's specifications will show. It is known as Model 34, and will be the only one of its kind that the Rambler factory will turn out during the coming year, although a roadster body will be fitted to the same four-cylinder chassis, the attractive *ensemble* of this combination being evident from the photograph reproduced at the head of this page. The remaining member of the line is known as Model 31, and is a continuation of the two-cylinder horizontal type of chassis with which the success of the Rambler cars has so long been associated. It is regularly fitted with a five-passenger body and the tonneau is detachable, thus making it convertible into a runabout at short notice. It is also listed without the tonneau, and with a torpedo deck as a nonconvertible runabout. Both models have been submitted to severe tests for several months past, and, having thoroughly tried them out, the reproduction of these two types will be undertaken on a large scale, as the entire factory facilities of the large plant at Kenosha, Wis., will be concentrated on them alone, thus greatly simplifying manufacture and insuring greater accuracy.

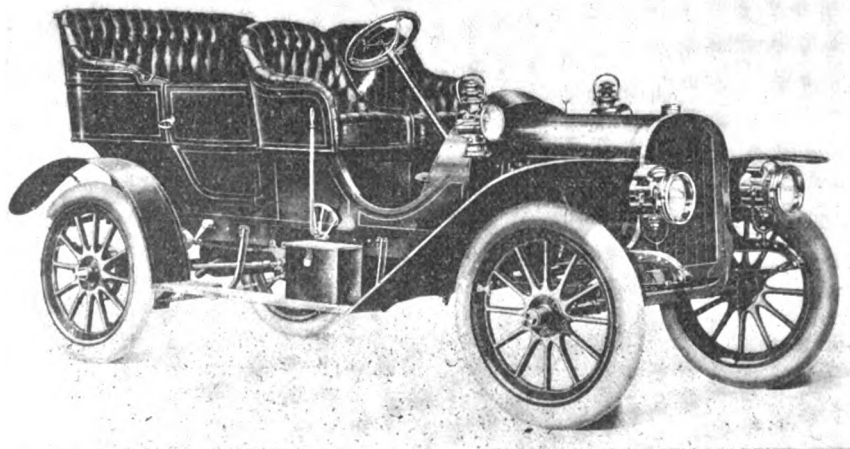
In the new four-cylinder model there have been quite a few changes in the power-plant. In fact, it may be said to have quite a new motor, embodying numerous improvements over the previous design. This is particularly noticeable where the crankcase is concerned. The latter is of the non-divided type, the crankshaft being inserted through the end of the case with the rear end and center bearings assembled and adjusted. The motor is supported by means of a tube passing through an extension of the forward end of the

case supported on the side members of the frame, while a second transversely placed support is attached to the under side of the rear end of the crankcase. The valves are now set in outward ports or valve chambers and are operated by direct-thrust tappets. As was the case in the preceding model, the gear-set, propeller shaft and rear axle are built as a unit, and to all appearances they retain much the same features. There have been numerous changes of note, however, chief among which is the substitution of a selective type of operation in place of the old progressive gear-box, while both the main and lay shafts are now supported on roller bearings. The rear axle is similarly equipped and, as in this year's model, it is of the floating type. But the wheel hubs are of entirely new design, the brake drums being heavy steel stampings bolted directly to drop-forged hubs. These drums are 13 inches in diameter by 2 1-2 inches face, thus providing 410 square inches of braking surface in the aggregate on the four brakes, two being operated on each drum, one internally and the other externally.

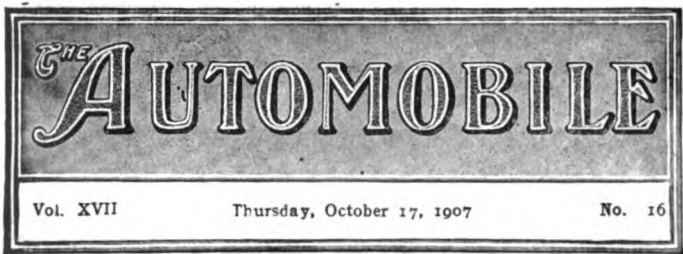
A correspondingly important improvement consists of the adoption of 36-inch wheels with 4-inch tires, so that the 1908 Rambler may well be termed a popular-priced car with all the earmarks of the most costly. The higher wheels give easier riding qualities and provide a better clearance, but the former have been further increased by the adoption of liberal-sized semi-elliptic springs front and rear. The steering pillar is of new design and a larger wheel, 17 inches in diameter, is employed, the old type of Rambler control also having been superseded by the adoption of the standard type of levers set over the wheel on a stationary quadrant.

As a roadster there will be several changes made in the chassis. The car will list at \$2,250 in either type.

The double-opposed motor of 5-inch bore and 6-inch stroke has been improved considerably. The valves have been placed at the side and are now actuated by direct thrust from the single vertical camshaft. This car, Model 31, will list at \$1,400 complete, or \$1,300 with rear deck.



SUCCESSOR OF THE POPULAR RAMBLER TWO-CYLINDER TYPE, MODEL 31.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor

R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT

A. B. SWETLAND, Business Manager

LOUIS R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.

C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hilffe & Sons, Limited, 20 Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor
Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903,
and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905, - - - - -	730,000
" " in 1906, - - - - -	791,000
" " This Issue - - - - -	17,500
" " Since January 1, - - - - -	690,650

American Carriage Makers Coming into Their Own.

It was not until the luxurious enclosed body made its appearance on the scene that the carriage maker actually came to a realization of what the coming of the automobile meant to him. With but one or two striking exceptions, prior to that time he regarded it, either with utter indifference as but the passing fad of the moment that meant little or nothing to him, or, foreseeing its ultimate expansion, viewed it in an antagonistic spirit as a menace to his own welfare. Then he awoke to the reality—to the fact that making coach and carriage work and repairs for automobiles was as much a legitimate part of his business as that of continuing to manufacture horse-driven vehicles, just as if a new and powerful rival had not been developed. Time has lent wings to his ambition, and now, instead of the attitude of apathy or antagonism, we actually find carriage builders and dealers constructing and selling the automobile entire. Instead of succumbing to the inevitable with bad grace, as many others who consider their interests menaced by the automobile were content to do, he has accepted the situation and taken advantage of it.

During the past fortnight there have been held in New York City the annual shows of two different branches of the carriage-building industry, and in the course of the business meetings held by the various interests concerned, much sound sense regarding the attitude of the American carriage builder to the auto-

mobile was expressed. It may all be summed up in the statement that the carriage builder realizes the permanency of the new style of locomotion, and, instead of combating it, will foster its interests and his own, whether they consist of building costly inclosed bodies, or low-priced power-driven buggies. In a word, he has simply made up his mind to sell automobiles to the same people he has formerly been selling carriages to, and it has taken many carriage builders a long time to realize that, in the main, they are the same people.



Increasing Numbers of Autoists in the United States. It seems a pity that some far-seeing legislator with a statistical turn of mind could not have been responsible in earlier days, for some more logical and satisfactory form of registration than is at present in vogue in the majority of the States in this country. Abroad, it is far easier to arrive at an approximately accurate estimate of the number of cars actually in use owing to the systems of taxation in force, which, with the fine-tooth comb method of their application, let few escape. Here, on the contrary, we have a mass of meaningless figures that only serve to confuse, and, as time goes on, they are certain to become worse rather than better. A system of registration that took exact account only of cars in actual use, might be difficult to devise and more so to maintain, but there could be no objection on this score to one that took separate account of pleasure and commercial vehicles, and one that did not swell the registration figures every time a car changed hands.

Present systems of registration serve the chief object for which they were devised—that of identification, as well as could be expected, but the statistics which could thus have been automatically compiled throughout the country at the same time would have been of far-reaching interest, if not of considerable value. In this connection, the vast increases shown by a number of the States is noteworthy, and this is particularly true of the Eastern States, though on a percentage basis, the showing made in the West is truly astonishing. In New York, for instance, which has always led in this respect, the figures have advanced more than 12,000 in the past year, representing an increase of about 1-3; in Indiana, 3,000 have been added, or almost 50 per cent. of the registration of a year ago; and the same is true proportionately of the majority of the Eastern and Middle Western States, while the advances in the Pacific Coast States have been truly prodigious and almost beyond belief.



One-price Livery Service for Urban Auto Owners.

To one who had sufficient perspicacity to look ahead a few years, it was evident, even in the earliest days of the popularity of the automobile, that the new method of conveyance and the old had considerable in common, and sooner or later, that fact would be recognized and taken advantage of. The Britisher, with his greater conservatism and closer adherence to form, came to that conclusion about a year ago, so that the London autoist has had the benefit of a service, the inauguration of which antedates that about to be enjoyed by his New York confrère. This is the practice of taking automobiles at a fixed rate by the month or year, the charges to cover the majority of those items which have hitherto figured as extras, and the glorious uncertainty of which has made many a prospective owner hesitate at the brink, lest the plunge prove utterly beyond his financial depth. The charge for stabling a horse includes the cost of his maintenance where most of the things pertaining to his welfare are concerned, and there appears to be no reason why the same plan is not applicable to the automobile. In fact, the simile may be carried further, as shoeing is an extra that must be paid for and the same is true of tires under the new arrangement for keeping a car, although evidently with more reason in this case. Storage, cleaning, fuel and oil supplies, and repairing are all provided for, the item of tire maintenance being the only extra, so that the autoist can figure just what the upkeep of his car will cost.

AMERICAN FIAT MATTERS SOMEWHAT MIXED.

The Hol-Tan Company, Broadway and Fifty-sixth street, New York City, no longer possess the exclusive right to sell Fiat cars in this country, as was made apparent by the announcement this week that a new company, of which E. R. Hollander is the vice-president, would market the Italian car on upper Broadway and at prices somewhat under previous figures. It is known that some time ago differences of opinion arose between the Hol-Tan Company and the makers of the Fiat cars, with the result that each party to the agreement brought suit against the other. It is stated that the Hol-Tan Company has some other very extensive plans in view for the immediate future, and it is known that it made no effort whatever to interfere with Mr. Hollander, formerly one of the concern, from organizing a new company to exploit the Italian car in this country.

The other importers state that they are not disturbed by the reduction in Fiat prices, several of them claiming that they already have their values lowered sufficiently to meet whatever competition exists.

PITTSBURGH'S ACTIVE DEALERS' ASSOCIATION.

PITTSBURGH, Oct. 14.—Under the title of the Automobile Dealers' Association of Pittsburgh, seventeen of the largest automobile dealers in this city incorporated in August last with a capital of \$5,000, and the organization is now in a highly flourishing condition. Spacious and finely furnished offices have been opened at 5919 Baum street, with a clubroom in connection for the members. A notary public has been retained in order to facilitate the procurement of licenses for the members, and many other conveniences provided. The officers are W. N. Murray, of the Standard Automobile Company, president; W. H. La Fountain, of the Atlas Automobile Company, vice-president; A. L. Banker, of Banker Brothers, secretary, and C. P. Moore, of the Keystone Automobile Company, treasurer. The Show Committee consists of W. N. Murray, W. H. La Fountain, Thomas I. Cochran, and Earl Kiser, Thos. I. Cochran being the show manager. The date has been set for April 4-11 at the Duquesne Garden.

SPEED REGULATORS TO HAVE DAY'S SPORT.

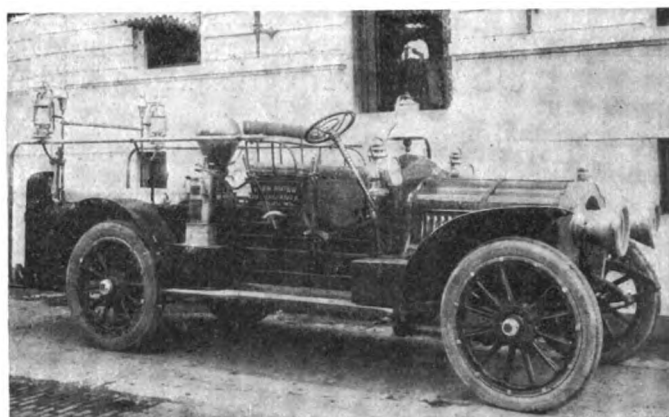
Motorcycle policemen will modify their usual daily round on Saturday next by a series of races among themselves at the Morris Park track. The program of the meet comprises a two and a five-mile race, a one-mile novelty race for a prize offered by Commissioner Bingham and one mile races for the championship of the Bronx, Brooklyn, Queens and the five boroughs. A number of valuable silver cups have been offered as prizes by prominent automobilists. Theodore K. Hastings will act as starter and Commissioner Bingham will assume the duties of referee.

A. S. M. E. REGULAR MONTHLY MEETING.

The second regular monthly meeting of the season will be held by the American Society of Mechanical Engineers on Tuesday evening, November 12, in the building of the Engineering Societies, 29 West Thirty-ninth street, New York. Charles R. Pratt will read the principal paper of the evening, on the gearless traction elevator, which is being installed in New York's two skyscraping towers. The subject will be exhaustively treated from the viewpoint of both the architect and the engineer.

DRAGON CONSIDERING NEW ENGLAND LOCATION.

BOSTON, Oct. 14.—Officials of the Dragon Automobile Company, including John Kane Mills, its president, Henry Rawle, treasurer, and A. L. Kull, sales manager, have been in New England for the past two weeks investigating several plants offered for a new home for their car. It is contemplated removing the Dragon plant from Philadelphia and considerably extending the capacity of the factory in its new location.

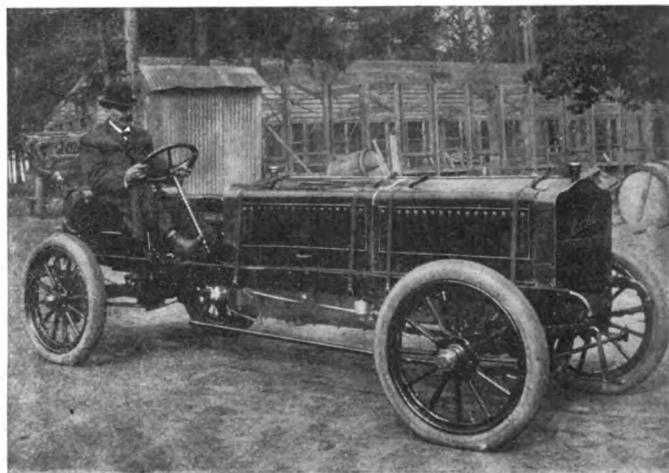


THOMAS FLYER CONVERTED INTO FIRE ENGINE BY A. C. WEBB.

HOW JOPLIN, MO., GOT AN AUTO FIRE ENGINE.

By a simple but ingenious arrangement A. C. Webb, of Joplin, Mo., has utilized a Thomas Flyer chassis in the building of an auto fire engine. Mr. Webb built his fire engine by placing a rotary pump on two cross frame members in the rear of the transmission, connecting the pump gear with the transmission by a shaft running from one of the auxiliary shaft gears and controlled by a lever placed at the side of the driver's seat. This gear connecting with the pump may be thrown into mesh and the rotary pump started when the scene of the fire is reached. Incidentally, the shifting of the pump gear into commission automatically cuts off the radiator from the motor, water being supplied for the cylinders from a separate feed from the rotary pump. When this gear is again shifted out of mesh, the radiator is automatically connected up with the motor and resumes its duties. It was thought necessary by Mr. Webb to provide this auxiliary water supply, owing to the fact that an automobile fire engine might be forced to stand for hours with the motor going at high speed and the pump in operation.

The first experiments were made at Buffalo, Mr. Webb spending two weeks at the plant of the E. R. Thomas Motor Company. Officials of the Buffalo Fire Department witnessed these tests and were enthusiastic over the results. With a rotary pump smaller than the one now in use on the car, a stream of water was thrown completely over one of the three-story concrete and steel buildings.



EIGHT-CYLINDER MAXWELL, WITH DESIGNER J. D. MAXWELL AT WHEEL.

This new creation of the Tarrytown factory is not designed as a stock addition to an already numerous line, but is for racing purposes, and it is the intention of its constructors to see what it can do in the way of speed on the southern sands this winter. Its power-plant consists of two standard Maxwell four-cylinder engines coupled tandem and its design is practically identical, where the rest of the chassis is concerned, with that of one of the racing Maxwells which was built to take part in the Vanderbilt elimination trials last year.

BUSY DOINGS IN THE REALM OF CLUBLAND.

BAY STATERS HAVE GYMKHANA SPORT.

BOSTON, Oct. 14.—The second annual gymkhana of the Bay State Automobile Association, held Saturday afternoon at the Newton athletic grounds, brought out a good list of entries. The honors went chiefly to Walter Schmunk, who drove a White steamer and succeeded in capturing first place in four of the contests. The contestants in the cigar race were required to start their cars at a given signal, drive to a barrel, stop, dismount, and take a match, remount and drive to another barrel, take a cigar and light it, and then drive once around the quarter-mile track. Schmunk's time in this contest was 58 2-5 seconds, just two seconds better than that of his nearest competitor, John L. Snow, who drove a Peerless. Mr. Schmunk also won the backward driving contest, circling the track in 44 3-5 seconds. Mr. Schmunk's third victory was in the barrel-touching event, and he touched all the barrels in 2:13 1-5 seconds. S. H. Baker, driving a Stevens-Duryea "six," was second, and Ralph Coburn with a Maxwell was third. The barrel-knocking-over test also went to Schmunk.

The twelve-miles-an-hour was won by Harry W. Knights in his Pierce Arrow, while A. A. Knights with his Oldsmobile was second and F. A. Hinchcliffe with his Winton took third place. The brake test, in which contestants were required to stop on signal while moving at 15 miles an hour, was won by John L. Snow with his Peerless, which he stopped in 18 feet 4 1-2 inches. Ralph Coburn with a Maxwell was second, stopping in 21 feet 4 1-2 inches. The obstacle race went to Ralph Coburn with his Maxwell. A. A. Knights was second with his Oldsmobile and Walter Schmunk with his White was third.

DELAWARE'S ASSOCIATION IS GROWING.

WILMINGTON, DEL., Oct. 14.—The Delaware Automobile Association is growing. At the annual meeting, held a few days ago, it was announced that it now has about seventy-five members. Thirty applications were received, which will be acted upon at the next meeting. The annual election resulted in the choice of the following officers: President, John Bancroft; vice-president, Ernest Dupont; secretary, Charles G. Guyer; treasurer, W. C. Jackson. Executive Committee: J. J. Satterthwaite, W. C. Spruance, Joseph Bancroft, F. S. Garrett, and P. S. Dupont.

Complaint having been made about scorching at night on the Wilmington & Kennett turnpike, the managers have decided to keep the gate men on duty until 11 o'clock hereafter, instead of relieving them at 7, which means that toll will have to be paid until 11 o'clock, whereas no toll has been charged in the past after 7 o'clock.

PHILADELPHIA'S PROGRESSIVE WOMEN.

PHILADELPHIA, Oct. 14.—The erstwhile home of that arch-traitor, Benedict Arnold—"Mount Pleasant," in Fairmount Park—has been converted to the use of the Quaker City's latest and most select organization of women automobilists, which glories in the title "La Moviganta Klaubo," and on last Wednesday afternoon the old Revolutionary mansion was the scene of the gathering of members and friends to honor the opening of the new clubhouse. There are 29 active members of the club at present, all of whom own and are able to drive their cars, besides which there are nearly 50 subscribing members and a long waiting list. Miss Margaret L. Corlies is president of the club, with Miss Frances C. Griscom vice-president, Miss Frances von Lehr Earle secretary, and Miss G. Dilworth Beggs treasurer.

The club had made an effort to purchase the old mansion, but an old ordinance of Councils prohibited its sale because of its historical associations, a feature which, in the eyes of patriotic Philadelphians, makes its sale a practical impossibility.

INDIANA CLUB DOES EFFECTIVE WORK.

LOGANSPOBT, IND., Oct. 14.—That an automobile club need not confine its attention to cut-and-dried methods of furthering the interests of its members or of the fraternity generally was strikingly illustrated by an incident that will make one Indiana farmer remember the Cass County Automobile Club for some time to come. Miss Winifred Van Buskirk and Miss Laura Howe were driving on the Eighteenth-street bridge recently when a man in a wagon compelled them to stop, leave the car and stand in front of it until he passed, enforcing his demands with a revolver. The matter was kept quiet, not even the police being notified, but Secretary Fred M. Taft of the club undertook a still hunt. Nothing developed for a week or two and the perpetrator of the action doubtless considered it as a closed incident. An account of it was then published in the *Logansport Journal*, and John M. Bowyer, a farmer living south of the city, unguardedly boasted that he had been the hero of the day. One of the club members heard of it, and, taking the victims of the affair in a car, together with Bailiff Frank Livingston armed with a warrant, went to Bowyer's place and arrested him. He was brought before Justice Reid and pleaded guilty, receiving the limit sentence, which cost him a fine of \$48.50.

MARYLAND AUTOISTS AFTER GOOD ROADS.

BALTIMORE, Oct. 14.—Backed with the hearty endorsement of the Maryland Automobile Association, the Frederick, Carroll, Howard and Montgomery Counties Roads Association, has just been organized for the purpose of obtaining better roads for the State. The meeting was attended by a large and enthusiastic delegation from the four counties, and it is probable that in the near future thousands of dollars will be spent for the macadamizing of the roads of Maryland. The meeting was held at Mt. Airy, and was presided over by Jesse P. King, with William A. Walker, secretary, and W. Frank Burdett, treasurer. These officers, together with Frank I. Lewis and Dr. R. Claud Flout, were appointed to frame a constitution.

DAKOTA HAS ANOTHER AUTO CLUB.

PARK RIVER, N. D., Oct. 14.—This city has about 25 automobile owners at present, with the prospect of having the number increased steadily in the future. With the object of improving the roads in the outlying districts and particularly those leading into the town, an automobile club has been organized with the following officers: President, Dr. T. E. Waugh; secretary, C. D. Lord; treasurer, J. D. Robertson. The club's membership roll already comprises practically all the town's autoists.

ROCHESTER HILL CLIMB, OCTOBER 19.

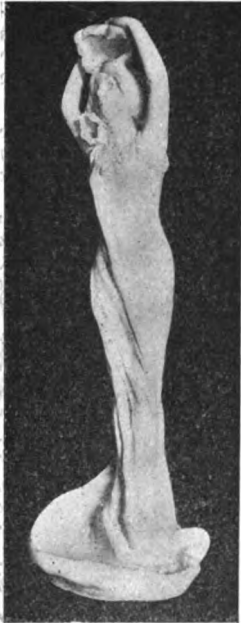
ROCHESTER, N. Y., Oct. 14.—A drizzling rain starting when everything was in readiness for the annual hill climb of the Rochester Automobile Club at the Dugway in Penfield, last Saturday, caused much disappointment to the fifty or more members of the club who were at hand to participate in the events. By common consent of those who had the matter in charge, the hill climb was postponed until Saturday, October 19.

CLUB NIGHTS RESUMED AT THE A. C. A.

NEW YORK, Oct. 14.—The Automobile Club of America will resume its usual weekly "club night" on Tuesday evenings, and Orrel A. Parker has been appointed chairman of the entertainment committee to arrange for suitable lectures, smokers, and entertainments. It so happens that the first club night this week will take place on Thursday evening, a combination of circumstances making this necessary.

GARDEN WILL NOT BE STATUELESS THIS YEAR.

Though the decorators who have charge of the preparations of the elaborate setting that is to transform Madison Square Garden for the reception of the automobile during the A. L. A. M. show, November 2-9, decided not to use plaster as in former years, they will not do away with that valuable adjunct to artistic effect altogether. Some quantity of staff will be used in reproducing the goddess represented in the illustration. The artists have labeled the new deity, and fixed her origin among the famous godheads of the Nile. She is Egyptian, and will visit the Garden during show week in numerous duplicates, looking down from her classical pedestals upon the beauties of the Italian villa, which will be the prevailing theme in decorative effect. The word-builder who wields the pen of publicity so effectively for the Garden show presents a pen picture, so effective of the enchantress, that we yield gracefully and publish his description in full:



"A CHUM OF ISIS."
Egyptian goddess only statue of the Garden show.

"One beautiful Egyptian girl, a college chum of Isis, possibly, is the sole thing in the line of statuary among the decorations that will be seen by visitors to the automobile show in Madison Square Garden. There will be several replications of her along the platform railing on each side of the Garden. The figure is particularly appropriate for the garden scheme of the decorations, as the single robe in which it is draped swirls at the

bottom into eccentric outlines which resemble an inverted lily. The lady wears her hair à la Merode and has an expression of languor as she lightly holds a lotus flower poised on the crown of her head, while a smaller lotus lies upon one shoulder."

'FRISCO TO HAVE A DECEMBER SHOW.

SAN FRANCISCO, Oct. 12.—The members of the Automobile Dealers' Association of California came to life last week and held a meeting. For months some of the enthusiastic members have been trying to get the rest of the trade together to discuss many items of importance and interest, but they have been so busy selling cars that it was not until the other night that they found time. The magnet that drew them to the meeting place was a notice that at that time a date for the second annual automobile show in San Francisco would be selected. It was definitely settled to hold the show the first or second week in December, the exact date depending upon what time the most desirable building to hold it in could be secured. A committee was appointed to investigate several offers.



MAX L. ROSENFELD.
President Automobile Dealers' Association of California.

J. W. Leavitt, president of the association, at a meeting of the board of directors held prior to the meeting of the association, resigned his office on account of pressure of business. When it was found that it was impossible to get him to retain the office, Max L. Rosenfeld, widely known from the Atlantic to the Pacific in athletic circles as an officer of the Olympic Club, was selected to fill the vacancy.



A RAMBLER PARTY OF NEW OWNERS FROM JOLIET, ILL.

GOOD PLAN FOR INSTRUCTING NEW OWNERS.

The Joliet, Ill., representatives of the Rambler Company recently hit upon an excellent plan for imparting instruction to new purchasers of their automobiles. Five citizens of Joliet had placed orders for four-cylinder touring cars, all of which were ready for delivery at about the same time. It was therefore arranged that the five customers should visit the factory together, spend a day in inspecting the plant, and travel home by road, each on his own car, with an experienced driver as instructor. The trip of about one hundred and twenty miles was performed most successfully, each owner feeling confident in his machine and his own ability to handle it under all ordinary circumstances. In addition the five owners had obtained, by their visit to the factory, a better knowledge of automobile construction than is usually picked up in several years by the average automobilist. The plan is one that has been tried in scattering instances at various factories, but with few exceptions its execution has arisen from a desire of the new owner of the car to drive it home himself rather than pay freight charges, and has not been done on the initiative of the manufacturer. These trips have varied all the way from less than a day's drive—a matter of but a few hours—up to stretches of 500 or 1,000 miles that lay between the factory and the home of the purchaser, so that it would appear, not alone feasible but beneficial for the maker to recommend this course whenever the customer can be interested in attempting it.

R. G. HOWELL TO SELL NORTHERNS.

The R. G. Howell Company, recently incorporated in the State of New York, is about to establish its headquarters at 1657 Broadway, New York City, where the Northern, manufactured at Detroit, Mich., will be handled. In addition to the selling line, an endeavor will be made to provide parts for the numerous Northern cars now in this vicinity. The territory covered will include Greater New York, Long Island, Northern New Jersey, Southern New York, and the western half of Connecticut.



R. G. HOWELL, OF NEW YORK, IN TWO-CYLINDER NORTHERN

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

The Auto Accessories Sales Company, of 3919 Olive street, St. Louis, Mo., sales agents and distributors, are desirous of receiving communication from manufacturers of oil and grease pumps, horns, auto clothing, caps, gloves, etc.

L. E. Hoffman, traveling representative for the H. H. Franklin Manufacturing Company, advises that reports from Southern automobile dealers indicate that there will be an increase of at least 50 per cent. in the number of automobiles sold during 1908.

In order to obtain facilities to enable them to turn out cars on the orders already in hand, the Hatfield Motor Vehicle Company, Miamisburg, O., makers of the Hatfield buggyabout, has found it necessary to lease the large machine shop of David Allen, in that city.

A. Auble, of the Akron Auto Garage, left the H. H. Franklin Manufacturing Company's works, Syracuse, N. Y., at 5 A.M., October 2, in a 1908 D touring car and reached Akron, O., at midnight on the same day, making the run of 391 miles in 19 hours, an average of over 20 miles an hour.

In the October 3 issue of *THE AUTOMOBILE*, page 475, it was erroneously stated that the H. H. Franklin Manufacturing Company had five branches throughout the country. It should have read that the Franklin Automobile Company has three branches, one in each of the following cities: New York, Boston and Chicago, the home office being at Syracuse, N. Y.

In announcing the formation of the Oto Sales Company, of St. Louis, in *THE AUTOMOBILE* of October 3, it was stated that Charles E. Halliwell, one of the officers of the company, was formerly St. Louis representative of the Warner autometer. Mr. Halliwell was formerly president of the Kansas City Mirror Manufacturing Company. It is his brother, W. H. Halliwell, Jr., who is representative of the Warner Instrument Company, as sales manager for Missouri and Kansas.

Following the erection of the new Rainier factory at Saginaw, Mich., some changes have been made in the personnel of the Rainier Motor Car Company. At the annual meeting in New York the following were elected: John T. Rainier, president and treasurer; Paul N. Lineberger, vice-president and general manager; James G. Heaslett, second vice-president and chief engineer; Directors: John T. Rainier, Paul N. Lineberger, Jack A. Rainier, Harry T. Wickes, George C. Comstock.

The newly established collection department of the New York Automobile Trade Association is already justifying its existence, and as the association now numbers sixty-three of the largest garages and dealers in the city, it is probable that the bulk of the collection business in the metropolitan district will be handled through this efficient department of the association. The latest addition to the membership roll is the Charles Setzer Garage at 561 Pelham avenue, and the association is now the largest of its kind in existence.

The Newby Automobile Company, Newcastle, Ind., has just been organized

with a capital of \$15,000, and will shortly take over the retail business of J. A. Newby, Mr. Newby being one of the incorporators of the new company. The latter will erect a handsome garage in the near future, continuing the business in the interim at the Newby garage on West Broad street. The Maxwell cars are handled at present and it is the intention to establish a general sales agency for practically all of eastern Indiana. The directors are George M. Connor, J. D. Maxwell, Benjamin Briscoe, J. A. Newby and A. D. Ogborn. The officers are J. D. Maxwell, president; George M. Connor, vice-president; J. A. Newby, secretary and treasurer.

RECENT BUSINESS CHANGES.

The name of the Linkroum-Smelter Automobile Company, of 17 Bank street, Newark, N. J., has been changed to the Linkroum Automobile Company. The business will be continued by W. H. Linkroum, with S. H. Stern, former manager for E. Lamberjack & Company, of New York, as local manager.

Having severed their connections with the National Auto Top Company, G. A. Mackey, G. L. Wilson and E. Eisenstein have organized the New England Auto Top Company and will continue in the manufacture of automobile tops, slip covers, folding wind shields, auto upholstery and painting at Broadway and West Fifty-fourth street, New York City.

The Capital Automobile Company of Indianapolis, Ind., which was organized about one year ago, has been reorganized, President R. J. Irwin retiring from the company. It is understood that Mr. Irwin is to head a new company that will handle a large line of high-grade automobiles. The Capital Automobile Company had the Indiana agencies for the Overland, Reo, Jackson and Wayne this season, but in 1908 will carry the Olds and make a number of changes in their old line.

Two more important trade changes are announced in Boston. The first is that the Harry Fosdick Company, which last year handled the Thomas, will have the Springfield, with New England as its territory, the coming season. The second announcement is the formation of a new company to handle the Thomas line. This is the Whitten-Gilmore Company, consisting of Charles E. Whitten, a well-known dealer of Lynn, and Ernest A. Gilmore, now connected with the White Company in New York and formerly manager of the Rambler branch in Boston.

NEW AGENCIES ESTABLISHED.

The Hercules Auto Specialty Manufacturing Company, makers of the Hercules shock absorber, has just opened a salesroom at 1038 South Main street, Los Angeles, Cal., and will carry a line of auto specialties in addition to their own product.

PERSONAL TRADE MENTION.

L. J. Sackett, until recently with the Simplex Automobile Company, of New York City, has recently severed his connection with that concern to go with the Allan-Kingston Motor Car Company,

of Kingston, N. Y., and will represent the latter on the road.

Percy Owen, president of the New York Automobile Trade Association, and American representative of the Bianchi cars, is being congratulated on the arrival of a future president for the trade association in the person of Percy Owen, Jr., who arrived during the past week.

The successor to Milton J. Budlong, who retired from the presidency of the Electric Vehicle Company last August, has been selected in the person of Walter G. Henderson of Philadelphia, who has for some time been affiliated with the company as treasurer. Mr. Henderson will probably take up his residence in Hartford, in which city he is well known. After a trip to Europe, Milton J. Budlong has returned to Hartford. Reports are abroad that he will quit the automobile field entirely.

INFORMATION FOR AUTO USERS.

The Velocimeter.—This is a new instrument for indicating the speed alone of an automobile that is being placed on the market by the Connecticut Gauge Company, Norwich, Conn. It works on the centrifugal principle and is equipped with a large open face, round dial, calibrated in divisions representing five miles, this scale having been found perfectly satisfactory for ordinary road work. The case inclosing the mechanism is handsome and symmetrical in appearance, highly finished and is water and dust-proof. As in telling time, the driver of a car fitted with a velocimeter is easily able to tell the speed by the relative position of the hand, whether he can see the figures on the dial or not. The driving mechanism consists of the well-known Coates unit-link style of flexible shafting; the gears are hard brass with cut teeth and are held in place by



CONNECTICUT GAUGE COMPANY'S VELOCIMETER.

a specially designed universal clamp fixture, adapted to fit any make of American car without alteration or special work. The intention of the makers has been to produce an instrument of this kind at a popular price, but neither the quality of the material entering into it nor the workmanship has been sacrificed on that account.

THE AUTOMOBILE

VOL. XVII

NEW YORK—THURSDAY, OCTOBER 24, 1907—CHICAGO

No. 17



THE first of the shows is in progress. It began this afternoon with a private view to members of the Automobile Club of America and their friends. To-night the general public was admitted, and came in overwhelming numbers to see what manner of cars are included in the 1908 productions of those makers who take no reckoning of the name Selden. With few exceptions, these "independents" are segregated under the banner of the American Motor Car Manufacturers' Association, and this organization supplies the backbone of the "Club" show in the Grand Central Palace. And it is a mighty reassuring backbone that the Reeves line-up presents, for it includes cars that range in value from the most reasonable-priced buggy type up to the heavyweight tourer which carries seven and can crowd in several more if required, and many want cars thus provided.

When one reminisces a bit and goes back to that corner in the bicycle show of the winter of 1898-'99, which contained all there was to illustrate to the public what was meant by "automobiling," it brings a startling realization of the progress of a great industry. Now Madison Square Garden is appropriated entirely by the Seldenites, while the Palace is filled from cellar to garret with the vehicles of the "independents." And in neither of

these exhibitions is the foreigner to be found this time. The products of European makers are to have a separate setting later on. All this in the short space of less than a decade, and we appear to be only on the threshold, for, in addition to the users of pleasure cars, the call for autocabs and autobuses and farmobiles is scarcely heeded, to say nothing of the other demands of the commercial vehicle field.

It is true that the replacement of the horse should be gradual, and not forced, but it is as certain as the rising of the sun on the morrow. The shows tell the story convincingly, and this exhibition of the "independents" indicates more the growth of the industry than does the event of the Seldenites, whose ranks are kept limited as a result of the policy followed. Not a few new names are to be seen in the Palace, and of those who were there a year ago all are present with few exceptions. It is inevitable that some will fall by the wayside in any field, but the causes belonged to the concerns individually and not to the industry itself.

The Motor and Accessory Manufacturers constitute a good barometer of the trade, and in the Palace their members are more numerous than ever before. Besides, there are those outside who sell things that figure in some way in the making of cars or their use. It is a big list.

The management of the "Club" show has never been extravagant in the matter of decorations, but it would take a good many thousands of dollars to give the Palace a dressing that would hide its ugliness. The futility of the effort may have caused the subject of decorations to have come in for even less attention than a year ago. An effort has been made for an autumn out-of-door effect, and the vari-colored foliage utilized partially



accomplishes what seems to have been desired. The green background of the past again fits into the picture, while the dark red floor covering blends into the scheme. The removal of obstructing partitions has improved the exhibiting spaces and one gets a better idea of the magnitude of the show.

October dates caused not a few exhibitors some difficulty in arriving at the Palace with a completed exhibit, and it is apparent that a fortnight or more might have been employed by some of the firms in bettering that which they show to the throngs of interested persons.

But contrast this for a moment with the result that would have met the first-nighters of a few years ago had an attempt been made to hold a show in October, or, for that matter, in December, as the average maker had to move heaven and earth to be able to come to a January show, usually after it was well under way, if half-empty floor spaces could constitute such a condition, and dragging his exhibit in with him much in the same manner as the farmer gets an unruly prize heifer before the judges of the county fair at the last moment. Instead of the forlorn-looking gaps in the line of exhibits that were seldom filled up until half the show week had passed—some of them not at all—long ranks of polished chassis and complete cars are to be seen in every direction.

If this were a complete representation of the entire American industry, it would indeed be an imposing sight, but when it is realized that, taken altogether, this immense aggregation of cars and sundries is but a part of the total, the mind can scarcely grasp the significance of it. It is next to impossible to take in the fact that practically all of these makers have come into existence in less than half a decade, and that every car in the great exhibition building is of American origin and construction.

And it is in this respect particularly that the present show at the Palace will go down into history as the first of its kind. In 1900 raking the entire metropolitan district and the outside territory included with a fine-tooth comb failed to materialize more than a mere handful of cars, but one or two freakish specimens of which could lay claim to being American. The remainder were of foreign make and the property of private owners. The latter soon dropped out of sight as supporters of automobile shows, but for several years thereafter the foreign makers formed the mainstay of every show held in in the East, so that this first all-American really marks an epoch in the history of the home industry. Every one of this seemingly endless collection of cars of all sizes, types and prices is the creation of American skill and American material and they serve to show how completely the pupil has outgrown the master of but a few short years ago, for many of these cars have their counterparts running on foreign roads as the property of foreigners.

The unanimity with which all makers of cars above a certain size list permanently enclosed models also furnishes a strong contrast to the automobiles that formed the bulk of the exhibits but a few years ago, and accentuate very markedly the fact that the automobile is as much an all-the-year vehicle as the carriage.

Quite the most significant feature of the show, regarded from the point of view of the cars alone, is the collection of "buggyabouts" which are now brought together for the first time at any Eastern show. This indigenous product of the West has sprung into being in such a very short space of time, comparatively speaking, and it has been confined so closely to the home of its origin, that many here in the East do not realize its existence. Two years ago there were not more than two cars of this make being turned out regularly; now there are a dozen or more, and a new firm starts up every month. And this humble high-wheeler is destined to place an entirely new aspect on the pastime of automobiling, which can no longer be justly catalogued as such owing to the fact that a very large proportion of all the cars in use is employed as necessary means of transportation.

The bewildering array of accessory makers and dealers forms a fitting background to the great collection of cars and serves to give some idea of the vast amount of capital and labor involved in the manufacture of articles merely subsidiary to the car itself.

EVENTS DURING PALACE SHOW.

THURSDAY, OCT. 24:

2 P. M.: Private view of exhibition for A. C. A. members.

FRIDAY, OCT. 25:

Evening: Merchants' Night.

SATURDAY, OCT. 26:

Evening: New York City Officials' Night.

Evening: Smoker, Automobile Club of America.

SUNDAY, OCT. 27:

All Day: Open house at Automobile Club of America.

MONDAY, OCT. 28:

2 P. M.: Convention of Maxwell dealers, Murray Hill or Manhattan Hotel, to be followed by a dinner at 5:30 P. M.

Evening: Engineers' Night.

TUESDAY, OCT. 29:

1 P. M.: Second annual show luncheon of the American Motor Car Manufacturers' Association at Hotel Manhattan.

Evening: Society Night. Admission \$1, instead of 50 cents.

WEDNESDAY, OCT. 30:

10 A. M.: Meeting directors of Motor and Accessory Manufacturers, Inc., at Hotel Manhattan.

3 P. M.: Meeting A. M. C. M. A. Committee.

3 P. M.: Meeting A. C. A. Board of Governors.

7:30 P. M.: Dinner of Fairweather Club at Reisenweber's.

Evening: Military Night.

A. A. A. MEETINGS DURING THE SHOW.

WEDNESDAY, OCT. 30:

10 A. M.: Conference of representatives of A. A. A., N. A. A. M., A. L. A. M., A. M. C. M. A., and I. A. S., for the purpose of considering the advisability of automobile racing upon one-mile or less circular tracks, No. 437 Fifth avenue.

4 P. M.: Conference of representatives of A. A. A., N. A. A. M., A. L. A. M., and A. M. C. M. A., discussion of plans for the general good of automobiling, No. 437 Fifth avenue.

THURSDAY, OCT. 31:

10:30 A. M.: Meeting of Executive Committee A. A. A. Board of Directors.

3 P. M.: A. A. A. Legislative Convention to be held in Convention Hall of the Grand Central Palace (take elevator Forty-third street entrance). The meeting will be presided over by President William H. Hotchkiss and Charles Thaddeus Terry, chairman of the Legislative Board.

AERONAUTICS STRONG FEATURE AT PALACE.

Arrangements were made to make the aeronautical section of the Grand Central Palace automobile show the most complete ever held in this country. The Aero Club of America arranged for the presence of the entire Jamestown exhibit to be shown intact, and this was supplemented by two or three score individual exhibits not shown in the South.

In the balloon section there are ten fully equipped airships and balloons, including Dr. Thomas' *Nirvana*.

The dirigible balloons comprise Santos-Dumont's *No. 9*, lent by the Smithsonian Institution; C. J. Strobel's *Harry Cauldwell*, Captain T. S. Baldwin's *California Arrow*; Julian P. Thomas' *New York*; Captain T. T. Lovelace's *John Wetmore*, and Carl E. Myers' *No. 23*. Heavier-than-air candidates for the supremacy of the heavens comprise a number of novelties, mostly in models. Among those who contributed to this section are C. Buschner, with a land and water automobile; A. Reidlinger, of Germany, with a German draschen balloon; and model helicopters and aeroplanes by A. V. Wilson, L. H. Hall, Carl Hartman, Wm. Morgan, W. A. Eddy and W. R. Kimball.

CONCERNING THE FUTURE OF A GREAT INDUSTRY

BY ALFRED REEVES, GENERAL MANAGER, AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION.

REPORTS from various parts of the country indicate excellent prospects for the sale of automobiles in 1908. It will not be an abnormal year, but it should be a very successful one for those dealers who practice ordinary business principles in the conduct of their business. While certain things have contributed to make this year an off one in the automobile trade in the East, the West has continued to be optimistic on the future. Of course, some cars have moved with comparative ease, while others have required some effort to be introduced.



ALFRED REEVES,
General Manager A.M.C.M.A.

Optimism is an excellent thing, but it must not warp our judgment in the careful consideration of the future. New York always discounts the future, and the West must soon feel the money stringency that has affected Eastern conditions for some time. In the opinion of conservative business men, this stringency and general let-up in trade has been an excellent thing, for it is generally admitted that the country has been overtrading and doing a larger business than its capital warranted. A few months easing will be the best thing that could happen, and particularly it is going to impress upon the mind of the automobile manufacturer that conservatism is a keynote worth sounding now and again.

The very bad weather of the Spring, tight money market, the very early shows, and the failure to run the Vanderbilt Cup race, have all affected trade somewhat, but these should all be on the favorable side next year. In my judgment, the first week in December, as we had in 1906, is the best time for shows, for it doesn't affect the Fall business, and yet it is early enough to give the manufacturer an opportunity to get his product out promptly for the Spring selling season.

In my opinion, business had been affected somewhat by the regretful efforts of certain factions in the trade in trying to require a dealer to handle only one make of car, or a car within the ranks of one association. An unbiased view of the situation will make clear to anyone that this has brought into the field

twice as many dealers as were necessary. They have had to pay twice as much rent, have had twice as many salesmen, and have had twice as much overhead expenses of every sort, with the natural result that comparatively few of them have made any money.

I feel confident that the successful dealers of the future will handle three or four different makes of cars in order to make profits commensurate with their investment. Of course this year the independent dealers have had all the best of trade, because they handled the small type of cars that were in such great demand. They have been aided, too, by the broad policy of the American Motor Car Manufacturers' Association, which has done a great deal of good work in the direction of agents. Next year should see a continued big demand for small cars, an excellent sale of the six-cylinders, and good field for the four-cylinders.



J. B. BARTHOLOMEW,
A.M.C.M.A. Show Committee.

The commercial vehicle is receiving more attention, and those in that line, particularly the makers of the gasoline cars, should begin to receive the rewards due their early educational efforts.

A conservative and thoughtful view of the horizon may show a further elimination of weak concerns, but, if so, it will be on account of inability to raise capital, which has been the trouble with some of the companies that passed away during the present year.

For the good of the industry, there should be a continuation of hill climbs, track and road racing, economy tests, endurance runs, tours and shows, both local and national.



WM. MITCHELL LEWIS,
A.M.C.M.A. Show Committee

INCREASING DEMAND FOR THE MODERATE-PRICED CARS

BY BENJAMIN BRISCOE, CHAIRMAN A. M. C. M. A. COMMITTEE OF MANAGEMENT.



BENJAMIN BRISCOE,
Chairman A. M. C. M. A.

THE automobile business is passing through what I have always considered was an inevitable period in its existence, the differentiation period. I believe that the public who buy automobiles are fast coming to a realization of the fact that they can get automobiles that will do all that they require at a cost of \$2,000 and less, and while there will undoubtedly be some cars sold from \$2,000 and upwards, the proportionate yearly sale, as compared with the lowest priced cars, will steadily diminish.

In my estimation there will be three or four concerns whose cars will become standard as high-priced cars, and there will be a large number of concerns, of course, whose cars will become

standard as the moderate-priced cars. At the outside, I do not believe that there will be in existence over twenty automobile companies at the end of the next year whose business will be really worth while.

As to the demand for automobiles, I believe it will steadily increase; the increase, however, will be proportionately greater for the moderate priced cars.

When automobiling was new, and comparatively few people had them, and when they were bought by a great many people simply to let their neighbors know that they could own one, in other words, when the element of pride entered into the situation to a great extent, big, showy cars served the purpose better than cars of utility. Automobiles have now become so general, and in such common use, that one never raises his head to see who it is that is in the automobile, and so people have come to realize that what they want is a car that will get there, rather than one that will excite the envy of their neighbors.

The worth of the automobile has been impressed upon the minds of many who have yet to become owners.

SATISFACTORY RESULTS OBTAINED BY USERS GENERALLY

By H. O. SMITH, MEMBER OF A. M. C. M. A. SHOW COMMITTEE.



UCH talk has been going about as to the future of the automobile business. The statement that the automobile is a practical conveyance will probably not be challenged by those who are posted. Therefore it is a plain business proposition, and must be handled by business men on the same general basis as any other line. It will not stand abnormal and unwarranted expense any more than the average standard line.

If in some quarters the automobile business has proved unprofitable, while in others successes have been met with, there is no doubt a reason for both conditions. The automobile business, if it is in a healthy condition, should not afford more than a legitimate manufacturing profit. Abnormal profits tend to encourage extravagance and invite increased competition to such an extent as to make possible the danger of overproduction.

As in any other manufacturing line, in order to be successful it is not only necessary to have sound business management, but to produce on a manufacturing basis, and in no line is it more important that the product be of good design, proper proportions throughout, and carefully made, than in manufacturing automobiles, which represent a complete power plant to be placed in the hands of the masses for use over roads and rights of way as we find them.

The future of the automobile can only be determined by

the results obtained from automobiles in service. First cost, maintenance and results considered, it must compare favorably with any other means of transportation, if it is to be accepted as a practical conveyance, and if not, it is a fad, and, like all fads, will run its course and die.

The satisfactory results obtained by users generally of many of the recognized makes to-day are due evidence of the fact that the industry has entirely outgrown the experimental period, and has already reached the stage where its product is sure to find a steady and increasing demand, and that the automobile can be considered on the basis of economy and reliability.

There is probably no industry in America which in so short a time has assumed the enormous proportions of the automobile business to-day. We have passed through the developing period, during which many cars marketed were probably pronounced unsatisfactory, and justly, if attending conditions were not considered. However, the progress made in this country as it relates to volume of business and great strides toward the perfecting of a new proposition, is nothing short of marvelous, and it is not only reassuring, but a credit to the broad gauged engineers affiliated with the industry, to note the almost general adoption of certain fundamental and underlying principles.

Most of the practices employed in the modern motor cars are old in mechanics, and we have merely put them to new uses. It is hoped that we have outlived the time when an unknown and untried article can be sold on appearance. Buyers are becoming more discriminating each year and buying more intelligently, not on looks, but on what is in the car and its ability to stand up and make good. And any maker should not hesitate to give evidence of this ability in one form or another of contest.

THE RELATION OF RACING TO THE TOURING CAR

By J. D. MAXWELL.

AT the present time there is a strong feeling against racing automobiles on tracks, and perhaps this is justified in view of recent fatalities, but there is another side to the story. The big road races which are held abroad, and contests like the Vanderbilt Cup of last year, have always been great factors in developing the industry, and I do not believe it is putting it too strong to say that were it not for these contests the touring car would be far from its present state of perfection.

To the layman, racing and touring are totally divorced, yet as a matter of fact they are closely allied. The problems of building a successful racing car and a successful touring car are practically the same. There has never been a case where the designer who constructed a successful racing car has not been able to turn out a thoroughly reliable touring car.

Speed is a powerful factor for destruction, and how many cars do we see which give fairly good satisfaction under ordinary conditions and yet fall down when called upon for all that is in them. Every one who has championed racing has at some time or other come across a man "who never wanted to go more than twenty miles an hour—who does not want to race," etc. And while all that may be true, nevertheless the car built

by a manufacturer who has made good in the racing game is, I find, wanted even under the most adverse touring conditions.

It is interesting to look back for the past two or three years at some of the successful racing cars. They were almost without exception shaft driven. The effect of this on the trade is now evident by the fact that the majority of cars are adopting the shaft drive for 1908. Some of the problems which were worked out on several of the racing cars, as far back as 1904, are reflected in the latest 1908 models.

I do not wish to put myself on record as standing up for racing as it now exists, but I do believe that the best interests of the automobile business are served by the holding of some of the races of international importance.

The Long Island motor parkway, if ever completed, will solve this racing problem by making it possible to police the course, and thus make speeding as safe as it is possible to make it. Of course there are always dangers in traveling at such tremendous speeds, but I do not think the fatalities will be as great as those which we have every year from football, swimming, horseback riding, and kindred sports. There will be mishaps in all strenuous forms of competition, but these events will be held just the same.

Philadelphia, Oct. 21.—Borrowing a leaf from the books of the managers of the national shows, those at the head of the show of the Philadelphia Automobile Trade Association, at the First Regiment Armory, November 9-16, have decided to set apart Tuesday and Thursday nights of show week for "prospects," and admission fee will be raised to a dollar. "Society" is expected to respond in generous numbers.

The *Revue Commercial du Levant*, referring to the announcement that motor cars, which up to the present have been debarred from entering Turkey, are now authorized to do so with certain restrictions, points out that though good roads in the country are nonexistent the inhabitants will probably purchase cars which will have to be made solid on account of the inequalities of the road surface.

THE A. C. A. AND THE AUTOMOBILE INDUSTRY

By S. M. BUTLER, SECRETARY A. C. A.



COLGATE HOYT,
President A. C. A.

WHEN the Automobile Club of America was organized by a mere handful of men in 1889 a very small percentage of the American people had an idea of the enormous extent to which the automobile industry would grow. Even the few enthusiasts who did believe in the future of the self-propelled vehicle have not only seen their wildest fancies realized, but surpassed. But these few, in their wisdom, planned a campaign for the good of the many that was sufficient to provide for any emergency, and the club has prospered through steadfastness of purpose and meritorious action until it stands head and foremost in American automobiling with 1,500 members and the most complete club-

house and garage in the world. It is organization without a selfish purpose. "All for one and one for all" might well have been the motto of the Automobile Club of America.

Important has been the club's work in the fostering of the industry from a trade viewpoint by means of annual automobile shows, of which the exhibition in Grand Central Palace is the eighth yearly event. The initial show was planned when manufacturers and cars were few and the financial responsibility was correspondingly heavy. Individual members guaranteed the exhibit against loss and entered their private cars to fill up the more than ample amount of floor space.

From that year until the present the shows have been repeated under the club's management—not for gain, as profits are shared with the exhibitors—but merely to carry out the original plans of the organizers who saw so clearly into the future.

In a like manner healthy competition has always been fostered. The first parade occurred in January, 1899, with thirty-four horseless vehicles in line, including one bicycle and one delivery wagon. Turning west from Fifth avenue into 110th street, several vehicles fell out of line, being unable to negotiate the grade.

In the second run five of the steam machines ingloriously froze up en route.

In 1900 the first road race was held over a 50-mile course on Long Island, and was won by an electric vehicle, specially constructed, in 2 hours 3 minutes 30 seconds. The first long-distance club run was held in June of the same year from New York to Philadelphia with a stop at Princeton, N. J., for luncheon. Starting at 7:30 A.M., the winner arrived at the destination at 7:20 P.M.—the Bellevue-Stratford Hotel.

Nothing could better demonstrate the advance of the automobile than comparison with recent contests held by the Automobile Club of America. Sixty out of sixty-five starters finished in the two-gallon efficiency contest of



S. M. BUTLER,
Secretary A. C. A.

1906, the Franklin winning with a record of 87 miles on two gallons of gasoline. Another great stride was apparent last June, when forty-one cars tied with perfect scores in the Sealed Bonnet contest. Only forty-eight cars started, and each of those finishing covered 600 miles in the four days without making an adjustment of any kind. It was a wonderful record.

The end is not in sight. Wherever the infant industry, now grown into a lusty child, will profit by advice or assistance, the Automobile Club of America will be found smoothing over the rough places until the automobile world for owners and manufacturers alike shall indeed be a Utopia.

Somebody must do the work, and the A. C. A. is not shirking the task.



GEN. GEORGE MOORE SMITH
Chairman A. C. A. Show
Committee.

A PREDICTION AS TO THE FUTURE AUTOMOBILE

By GEORGE F. CHAMBERLIN, MEMBER A. C. A. SHOW COMMITTEE.

THE manufacturers have been so busy making cars for those willing to pay the prices and indulge in high speeds and luxurious fittings that they have quite overlooked the demand, now steadily increasing, for a reliable road vehicle at a price and cost of maintenance within reach of the farmer, the artisan, and others having moderate incomes.



GEORGE F. CHAMBERLIN,
A. C. A. Show Committee.

The little runabouts, with their short, stubby base and small wheels, shod with expensive pneumatic tires, and their short-lived, high-speed engines, come far from meeting the real popular demand.

The "buggy type," now coming in ever-increasing numbers from the Middle West, is but an expression of the need that is felt by thousands; yet it but feebly represents an early step forward.

When the present mania for speed shall abate, when racing on

public highways is no longer tolerated, when sane owners shall refuse to burn up rubber to benefit the tire monopoly, and 25-cent gasoline to benefit the oil trust, then and not until then will be developed the type of vehicle meeting the urgent demands of that vast multitude which, satisfied with moderate speed, is anxiously looking for a car that shall be simple, safe, economical, and practical in all weather and on all roads open to traffic. Twenty years hence, when our roads shall have been generally improved, the present cars will be either objects of curiosity or consigned to the scrap heap.

What of the car of the future? Not the high-powered racing road locomotive, with its luxurious equipments, but one meeting the conditions as they shall be, with the road surfaces meeting the needs of a civilized community. Such a vehicle will surely involve more of a carriage and less of a locomotive.

Designers seem to have forgotten the freedom from conventional lines which the motor makes possible.

In the writer's opinion, the utility car of the future will have a most flexible frame, with long base, carried on wheels of exceedingly large diameter, shod with tires cushioned with either solid rubber or some cheaper substitute. The weight will be properly distributed, the motor to the rear and near the driving

wheels. It will have long double springs of great flexibility, which will take up most of the vibrations and road shocks now thrust upon the long-suffering tire.

The motive power will be an improved, simple and light form of three-cylinder engine of a two-cycle type, without valves or carbureters, having directly injected fuel, which will be kerosene or even a somewhat cheaper product of petroleum. It is probable denatured alcohol will also be largely used. The engine will be capable of developing at normal speeds one brake horsepower for each five pounds of weight or less and having a turn-

ing effort at slow speeds approximating steam engines. There will be no gears, and the motor will be silent and smokeless. The chassis will be arranged to take on by quick adjustment different styles of bodies suited for different work, the same standard chassis being used for business, agricultural or pleasure purposes, and last but not least, the price of such vehicles will be within reach of all.

These statements will be derided by those who fondly believe the present automobile standardized. They laugh best who laugh last.

"A THING OF BEAUTY, UTILITY, AND A JOY FOREVER"

By WINTHROP E. SCARRITT, A. C. A. SHOW COMMITTEE.



WINTHROP E. SCARRITT AS A 1901 AUTOIST.
Member A. C. A. Show Committee.

THE most gratifying fact in connection with the automobile for 1908 is that it is approaching standardization and that few changes are made from the 1907 models. Refinements in details, a little improvement here and there, a weak part strengthened, surplus weight taken from other parts where experience

shows that it was not needed, and we have the 1908 motor car, the latest product of the master builder's skill, a thing of beauty, utility, and a joy forever.

My faith in the great future of the automobile increases daily. Pardon me if I repeat myself when I say that "The dreams of yesterday are the realities of to-day and the common places of to-morrow." How strikingly we have seen this great fact exemplified during the past few days! Five years ago the scientific world said that Marconi was a mad dreamer when he told it that he could telegraph without wires. That was a dream. This last week Marconi opened up commercial service between England and America and his dream has become a glorious reality. Some of us motor enthusiasts have been dreaming about the coming of the perfect automobile. One glad day this dream will become a splendid reality.

Then those who did the pioneering of automobiling and bore the brunt of educating the public can justly say "I told you so!"

A. C. A. BUREAU OF TOURS HAS A NOVEL EXHIBIT

AN exhibit made by the Bureau of Tours of the Automobile Club of America at the show will probably be of particular interest not alone because of its decided novelty in America, but also on account of the lesson intended to convey in a very effective manner and at a very opportune time.

The rapid growth of the network of improved highways throughout the various States can never be thoroughly enjoyed by the automobile tourist unless hotel accommodations along these highways keep step with the improvements on the road. In order to convey an object lesson to serve as a practical education to the hotel and innkeepers along highways improved and to be

improved, the Bureau of Tours exhibits a model room to serve as a sample of what should be done to give the automobile tourist the comforts of a good, clean bed and a bath at the end of a day's dusty journey. The room is furnished in a sanitary manner with iron bedstead, good quality mattress, linen and bedding, iron washstand and enamel bath tub. The furniture is not expected to be elaborate, but must be sanitary and practically germ and worm proof. It is believed that this exhibit will arouse a great deal of interest among the users of the country districts, and it will benefit all automobile users alike throughout the country if the lesson strikes home.

PREPARATIONS FOR CHICAGO'S NATIONAL SHOW

CHICAGO, Oct. 21.—Recent additions to the list of exhibitors at the First Annual Exhibition of Commercial Vehicles, to be held at the Seventh Regiment Armory, Chicago, at the same time as the annual display of pleasure cars, November 30-December 7, are the Advance Manufacturing Company, Chicago; Safir Automobile Company, Zurich, Switzerland; American Motor Truck Company, Lockport, N. Y.; Brush Runabout Company, Detroit; Streator Motor Car Company, Streator, Ill.; Worth Motor Car Company, Evansville, Ind. These bring the total up to twenty-six exhibitors of cars.

The Worth company has arranged to run a service of passenger cars between the Coliseum and Seventh Regiment Armory. The cars will run at intervals of about five minutes and there will be no charge for the service.

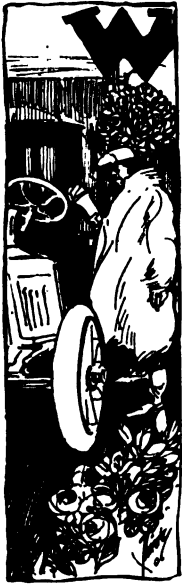
Included in the plan of decoration of the seventh annual

Chicago show will be 142 oil paintings, all of automobile subjects, covering 8,704 square feet of canvas. Of these pictures 112 will form a part of the background of the booths. They are being made by Maratta, one of the foremost of Chicago's artists. The remainder, covering a space of 8 by 668 feet, will encircle the building, around the gallery front, and are the work of the Daniels Scenic Studios.

A little additional space has been pressed into service in the Coliseum basement, making room for three of the automobile manufacturers who had been left out. The west end of the First Regiment Armory gallery will also be used, making room for about ten additional exhibits of accessories. There are fifteen makers of automobiles and forty makers of accessories on the waiting list. Some of them will probably be located in the commercial vehicle section.

TREND OF MOTOR DESIGN REVEALED BY THE SHOW

By CHARLES B. HAYWARD.



THAT few departures from standard practice the passing of a little less than a twelvemonth has brought about are not easy to discern, for the time when the year of a motor's origin could be told at a glance is long since passed. Now it is quite evident that nothing short of a detailed analysis will suffice to reveal changes of a character so small as to appear of little or no importance, except to the experienced eye, and whether these changes really represent improvement or retrogression on the part of a designer is sometimes a question. Frequently the only thing that can be said of them is that they are changes, but as the purpose of the present article is merely to reflect current practice as revealed by the models put forth by the different makers for the coming year, and not to hold them up to criticism, it would be fruitless to pursue this side of the matter further, particularly in view of the impossibility of ever reconciling opinions to the extent of favoring any one standard of design. Despite the almost universal demand for a multi-cylindere motor, which has taken on an entirely new phase in the past year or so, as evidenced by the general appearance of six-cylinder models, the humble single-cylindere car still holds its own and seems destined to do so for a long while to come. Though it has all but disappeared so far as the old-line makers are concerned, the Cadillac and Reo being practically the only representatives of this type marketed, the "one-lunger" has come in for a new lease of life at the hands of the maker of what is destined to prove a large factor in the American automobile industry in the future—the buggyabout. Even here there is a marked tendency toward the adoption of the horizontal opposed type of engine, but there are many equipped with single-cylindere engines, while the number turned out by the two makers in question reaches a very substantial figure every year. The latter has also received new impetus by the production of a vertical type in the shape of the Brush runabout. It was generally thought a year or two ago that the day of both the single and twin-cylinder motor had passed and that within a short time they would be practically extinct, but such a development appears distant now.

Twin-cylinder Motor an Important Factor.

How far this has failed of realization is evident from the fact that the popularity of the two-cylinder motor has increased rather than diminished. Such makes as the Rambler, Reo, Maxwell, Moline and Jackson have been marketed during the past year in greater numbers than ever before, and a number of smaller firms have sprung up in the same time to manufacture this type of car, from all of which it appears quite conclusively that the two-cylinder car has an extremely strong hold on the public demand. Whether it will continue to keep it, once the four-cylinder type of car of equal capacity and attainments is brought down to the price level of the twin-cylinder, is another matter, as, popular opinion to the contrary notwithstanding, the prospective purchaser considers initial cost more than that of maintenance.

It can hardly be said that there has been any great amount of improvement in the design of either the single or twin-cylinder motor in the past few years, and certainly there is not a great deal to chronicle where these types are concerned in the new models offered at the Palace show. An exception is to be found in the case of the Brush vertical single-cylinder and the Rambler horizontal-opposed motor, in which the valves have been placed at

the side of the cylinders instead of on top, now being actuated by direct thrust from a single camshaft placed vertically and driven by a worm gear, this permitting the use of a release cam for starting in place of the usual release cocks.

Minor changes have been made by some of the other makers, but they are not of such a nature as may be taken to indicate any changed tendency of design. The selling price at which cars equipped with engines of this type are usually listed does not permit of extensive experimenting on the part of the makers, which probably accounts for the fact that the majority are quite content to let well enough alone, although it must be added that the well-enough of the past year where the horizontal-opposed motor is concerned has been a far more satisfactory state than that of but a year or two previous, so that great improvement has been brought about with but little visible change.

One of the most noticeable things in connection with the single and two-cylinder cars is the fact that for the first time the East is treated to a comprehensive showing of that product truly indigenous to the Middle West—the buggyabout. Probably the most prominent in the single-cylinder class is one that represents a radical departure in many things—the Brush runabout. In the buggyabout class there are the Holsman, the Reliable-Dayton, the Schacht, the Hatfield, Kiblinger, Success, and others.

To Be a Six-cylinder Year.

To jump to the opposite extreme, it is evident at a glance that 1908 is to be a six-cylinder year. The automobile-buying public has expressed its approval of the type in question in no uncertain manner and the majority of makers have not been slow to note the trend of the demand and to make preparations to take advantage of it. Nominally, then, there are not a few six-cylinder stock models; actually, the greater number of makers who have decided to list such a car in order to be able to cater to buyers of either class without having to sit on the fence, ever ready to drop on either side in accordance with the opinions of the prospective buyer, will only build such cars to order. Of course, all cars above a certain price are really only built to order, but in the case of the six-cylinder models, many of the makers have not quite made up their minds to plunge and will keep more closely within the demand than in the case of their four-cylinder models.

But the number of makers who have decided to list a model of this type leaves no possible room for doubt that the six-cylinder note will be a predominant one; at least it is in the show. In a few instances, such as the Chadwick, the makers have dropped all other models and concentrated their attention on the production of a car of this type. Some of the other makers whose stands will be centers of attraction on this account are the Acme, Ford, Frontenac, Glide, Marion, Mora, Gearless, Stoddard-Dayton, Premier, Welch, Pullman, American Mors, Colt, Frayer-Miller, Napier, Speedwell, and National. In this list will be noted several who will be entering upon their second year in the advocacy of the six-cylinder, such as the Ford, National, Frayer-Miller, and Napier, while considerable novelty is to be found in the Gearless six, not alone on account of its special form of transmission, but the fact that it is equipped with a two-cycle engine and is the first of its type to be presented.

Where motor design is concerned, the six-cylinder cars do not, as a rule, differ radically from those of their predecessors of four cylinders, but in one or two instances, such as that of the Chadwick, where the makers are pinning their faith entirely on the six-cylinder, their cars have been the subject of special attention and embody numerous features of merit. In the majority of instances, however, the six-cylinder merely represents the addition of two cylinders, other changes being confined to minor details or modifications necessary to suit the difference in the

power-plant. Wheelbases are a little longer and the cars, as a rule, are of the seven-seated type. In other words, the six-cylinder, as represented by the numerous models unveiled at the show, is a large car. This characterization may not be entirely just, as some of the makers have shaded matters to a point where their sixes are neither as large as the prevailing type, nor, for that matter, as large as many of the standard four-cylinder types.

Details of Motor Design and Construction.

It is a toss-up whether there has been any appreciable variation during the past year in that essential which really represents the foundation of the motor—the cylinder castings. Those who have hitherto advocated separately cast cylinders are still of the same opinion, and the same is true of their confrères who hold that the twin casting is superior, while there bids fair to be a new element introduced in that the practice current abroad of casting all four cylinders in one piece seems about to be taken up here. The foregoing would also appear to approximately sum up the situation where the matter of valve-placing is concerned; there are just about as many advocates of outboard, oppositely disposed ports, necessitating the use of two camshafts in the direct-thrust method, as there were a year ago, and there does not seem to have been either any additions to or defections from the ranks of those who favor concentrating the valves on one side.

The practice of placing the valves in the head has received at least one notable recruit in the shape of the new Ellsworth car, but so far as numbers are concerned, this is offset by the change on the part of the designers of the Rambler, who have come back to the direct-thrust method after two years in the other camp. But, then, the Ellsworth is a car of many special features, the valves being placed in the usual outboard ports, but actuated from a single superimposed camshaft through bronze rocker arms supported on annular ball-bearings. It also represents an exception to the usual practice of cylinder casting in that the jackets are left open at either side of the cylinder and covered by a light steel plate held on by screws. Apart from this particular instance, water-jacket design has undergone practically no change, the usual method of casting the jacket integral has been followed in the majority of instances, though there is a tendency to provide more liberal-sized openings than previously. The monotony is, of course, varied by such special systems as that of the Pullman, now in use for the past two years or more.

The practice of making the camshafts and cams integral has come to be followed in a greater number of instances and the placing of these essentials in the crankcase in a position to receive the benefit of splash lubrication is almost universal. Crankcase design has undergone but slight change where old line cars are concerned, though some of the new models exhibit a commendable tendency to provide a maximum of accessibility by using extra large hand plates. An exception to the former statement is to be found in the case of the new Rambler motor, which has a crankcase of the undivided type, the shaft with the center and end bearings assembled being put in through the end openings. Crankshaft design naturally depends upon the remaining features of the motor, and as there have been so few changes in the latter, this also applies to this essential. Materials have been improved and there is a decided tendency to regard anti-friction bearings for this purpose in a far more favorable light than formerly.

Improvement in Ignition and Carbureter Systems.

While there has been little or no radical change where either of these essentials is concerned, there is a marked tendency to follow certain definite lines in both cases. In that of the former, it is quite evident that the magneto is coming in for more and more favorable attention, even at the hands of builders of cars the selling price of which does not permit of equipping them with a magneto, except as an extra. In other respects, ignition systems reveal little or no change unless it be in the detailed refinement of coils, timers and similar apparatus, upon the proper design and working of which the ignition of a car depends to such a very great extent. With the exception of a few special-

ized systems, ignition practice as a whole, may be said to have settled down to a well-defined standard, or set of standards, which only vary with the price of the car. Where the latter is high, duplicate ignition with magneto and accumulators, frequently with two entirely independent systems, is the rule, though in many cases the same set of plugs and the magneto distributor are utilized for both sides.

In the case of the carbureter, there appears to be a decided tendency on the part of the builder of cars to shift the responsibility for this essential to the specialist. The latter has devoted a great deal of pains and study to the development of the carbureter, and the automobile designer has found the latter to have resulted so much more satisfactorily than his own efforts along the same line, that he appears to have been only too content to be able to specify an article of known merit for this rôle. It is accordingly not surprising to note the great number of instances in which cars are equipped with such standard makes of carbureters as the Schebler, Holley, Kingston, Universal, Buffalo, Heitger, and others, even though the remainder of the motor has been the subject of exclusive design and production.

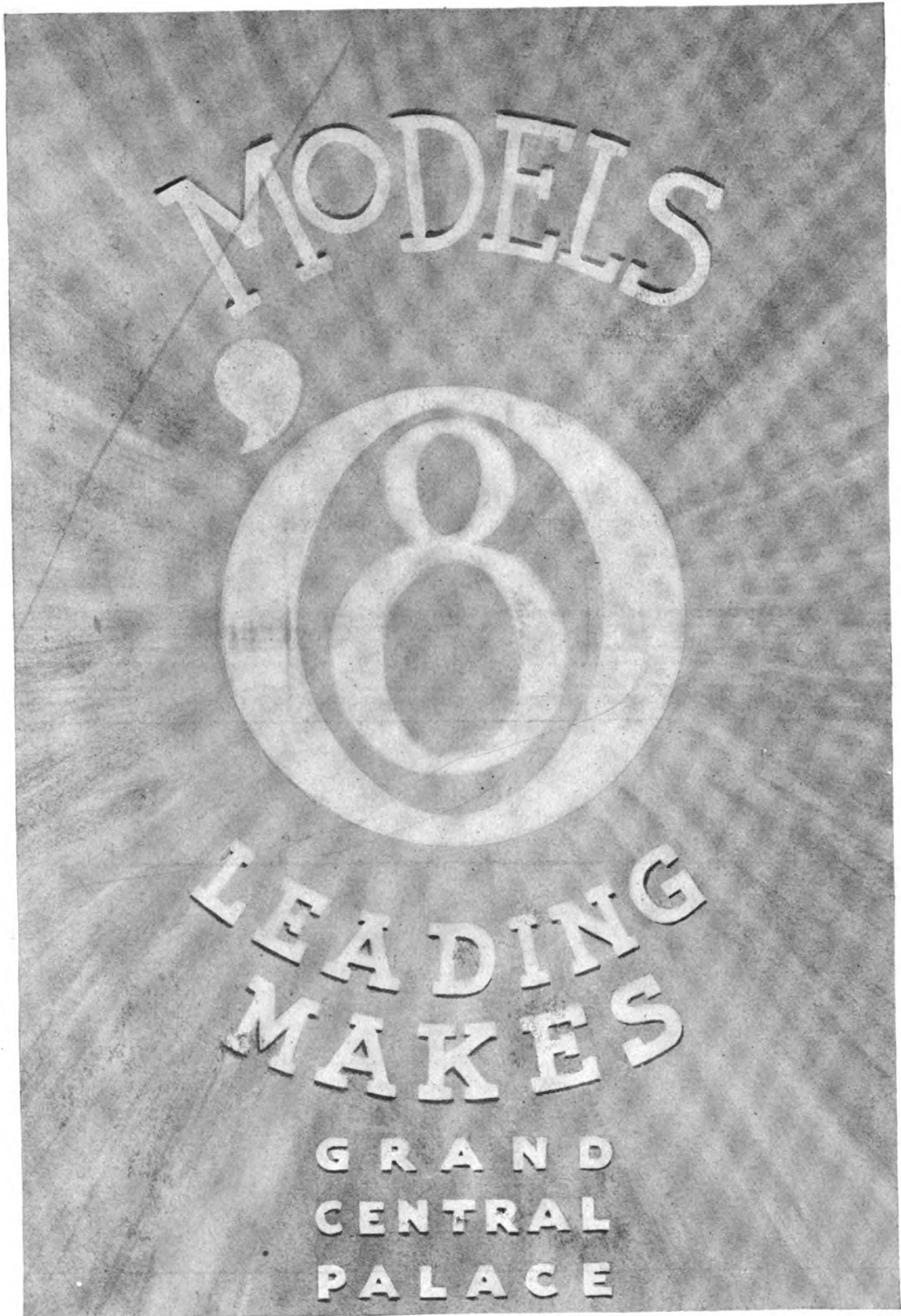
Concerning the carbureter itself, there has been a radical departure in design. This is to be found in the case of the Holley, which is now constructed on the well-known Venturi tube principle, thus eliminating the float chamber with its attendant complications and marking a long step in advance toward the goal of simplicity, which is the object most sought for in this piece of apparatus, long considered as something that could not be otherwise than complicated. To sum up the situation in this field, the average maker has found that the carbureter is an object of special manufacture and has come to the conclusion to drop all further efforts toward evolving special designs of his own.

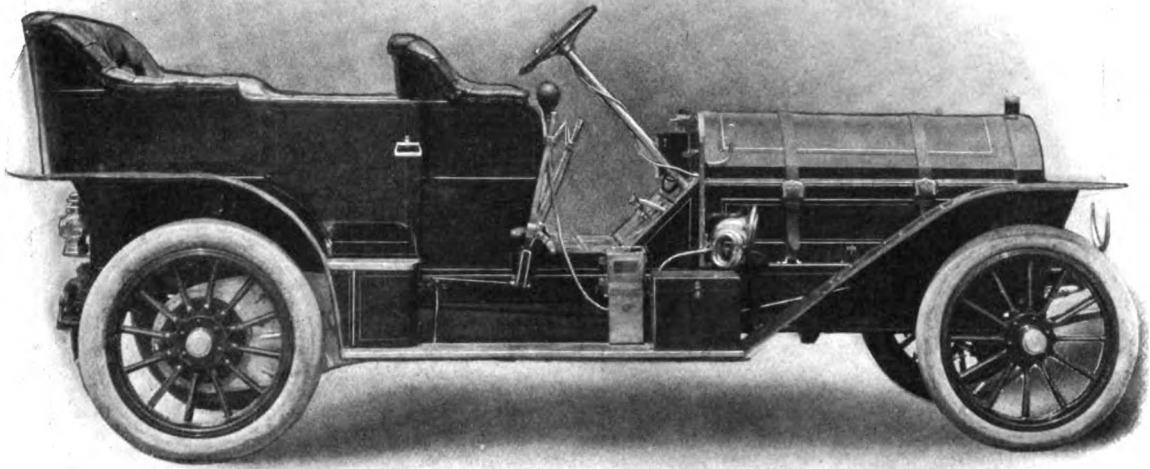
Status of the Air-cooled Car and the Two-cycle.

That there have been no unusual developments where either of these is concerned need occasion no surprise, nor be considered as something to their detriment. The past year has been marked by the defection from the ranks of the advocates of air-cooling, by one or two concerns, but for reasons which were set forth in these columns and editorially commented on at the time. Air-cooling having demonstrated, not alone its feasibility, but its advantages beyond the shadow of a doubt, is hardly to be considered as less well-established where the American industry is concerned, merely because there are not so many makers who are manufacturing cars of this type. The same thing is applicable to the status of the two-cycle motor as well. This has received more or less impetus during the past year by the adoption of this type of motor in some of the small, light cars, otherwise known as buggabouts, which appear in numbers for the first time at this week's show. But there is a genuine surprise awaiting the average show-goer in the shape of the Gearless six-cylinder car having a two-cycle engine. The same car is also made with a four-cylinder engine of the same type, so that it is evident this type of motor has gained a valuable addition to the number of advocates who are building and marketing cars thus equipped. Then there is the expansion of the Atlas line from the single representative in the shape of a small two-cylinder runabout of a year ago to a well-developed line, all of which are equipped with the special type of two-cycle engine used by the Atlas concern on both its commercial as well as its pleasure vehicles, so that it would seem that the passing of 1908 would mark the advent of a great many more two-cycle cars on the road than has ever been the case in previous years.

Progress has not been marked, however, and the advance accomplished is probably not apparent to the casual observer, who takes small account of anything so inconspicuous. The apathy on the part of the industry where both these special types are concerned is readily accounted for by the fact that the four-cycle water-cooled type has had the great advantage of priority and in consequence the greater development that the study of such a large number of makers and users have been able to bring to bear

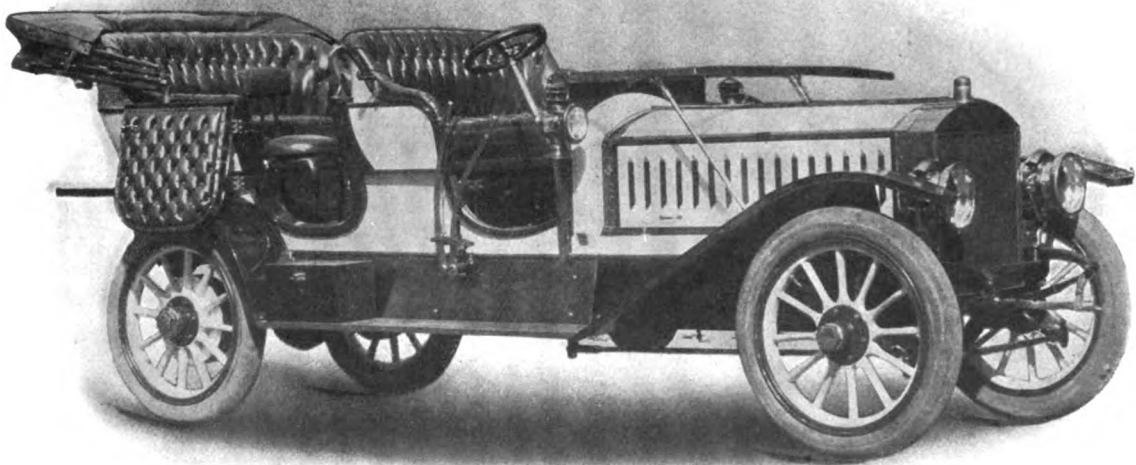
(Continued on page 583.)



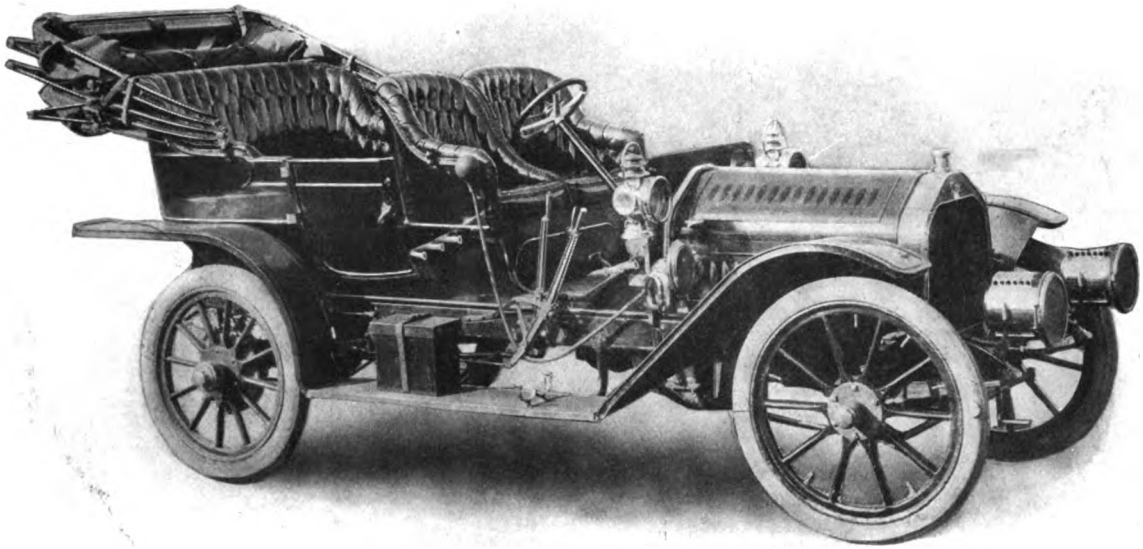


GREAT CHADWICK TOURING CAR, 6 CYLINDERS, 70-75-H.P., PRICE \$5,800.
Chadwick Engineering Works, Philadelphia.

1908

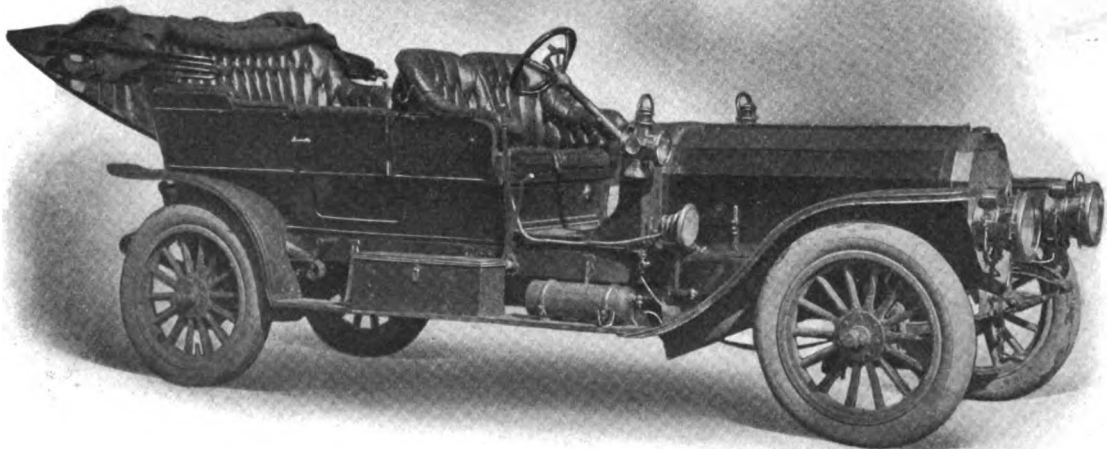


AUSTIN TOURING CAR, 6 CYLINDERS, 90-H.P., PRICE \$6,000.
Austin Automobile Co., Grand Rapids, Mich.

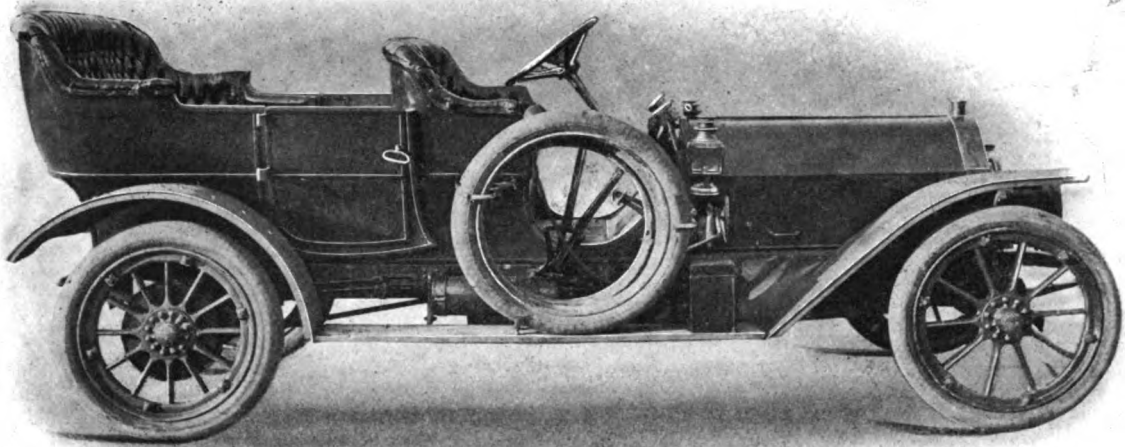


MORA TOURER, 6 CYLINDERS, 42-50-H.P., PRICE \$3,600.
Mora Motor Co., Newark, N. Y.

1908

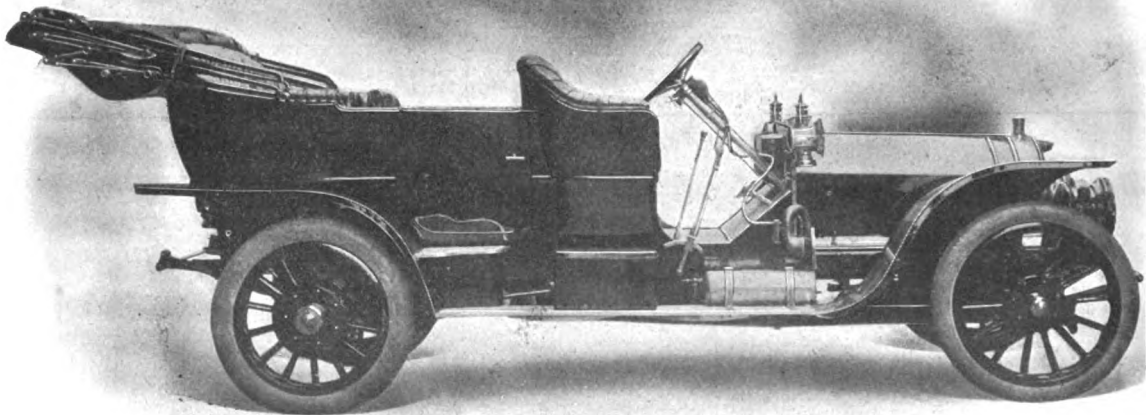


WELCH MODEL 6-L TOURING CAR, 70-H.P., PRICE \$6,000.
Welch Motor Car Co., Pontiac, Mich.

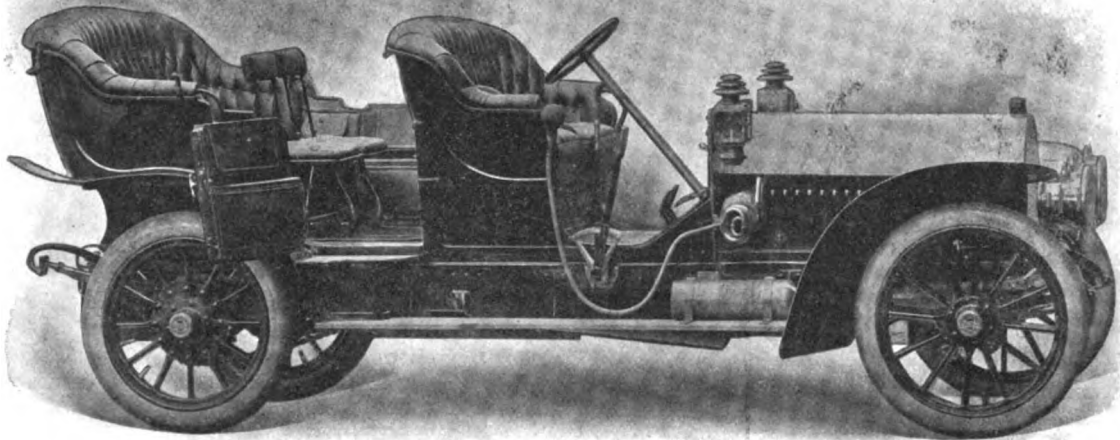


PREMIER TOURING CAR, 6 CYLINDERS, 45-H.P., PRICE \$3,750.
Premier Motor Manufacturing Co., Indianapolis, Ind.

1908

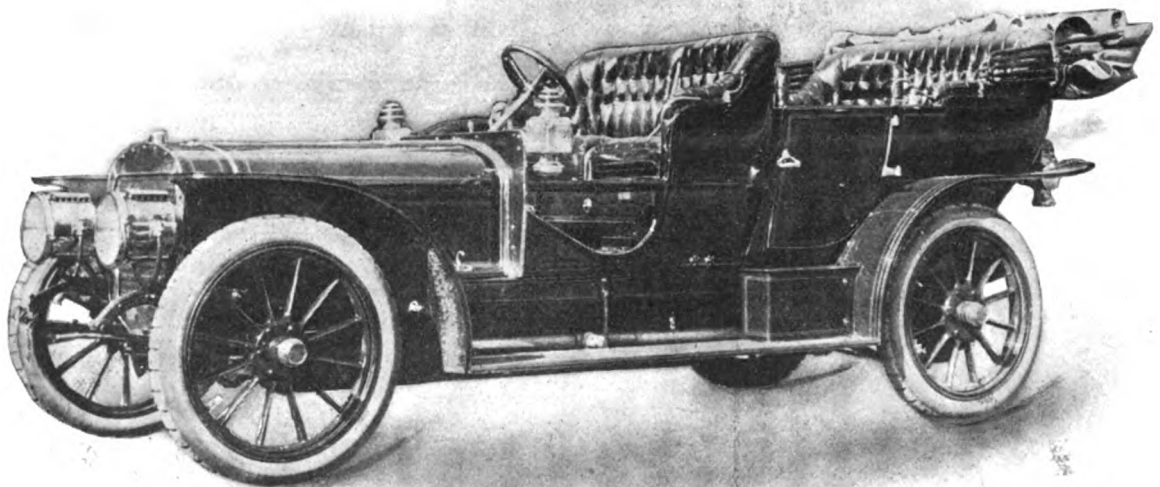


STODDARD-DAYTON MODEL G TOURING CAR, 6 CYLINDERS, 50-H.P., PRICE \$4,500.
Dayton Motor Car Co., Dayton, O.

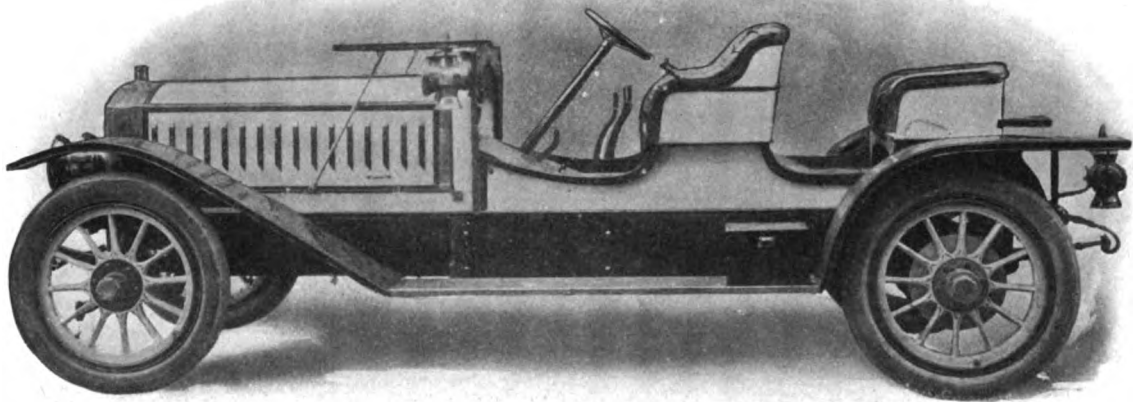


BERLIET TOURING CAR, 6 CYLINDERS, 60-H.P., PRICE \$4,500.
American Locomotive Automobile Co., Providence, R. I.
The Berliet is not exhibited at the Grand Central Palace, but is shown at the manufacturers' special salesrooms at the Waldorf-Astoria.

1908

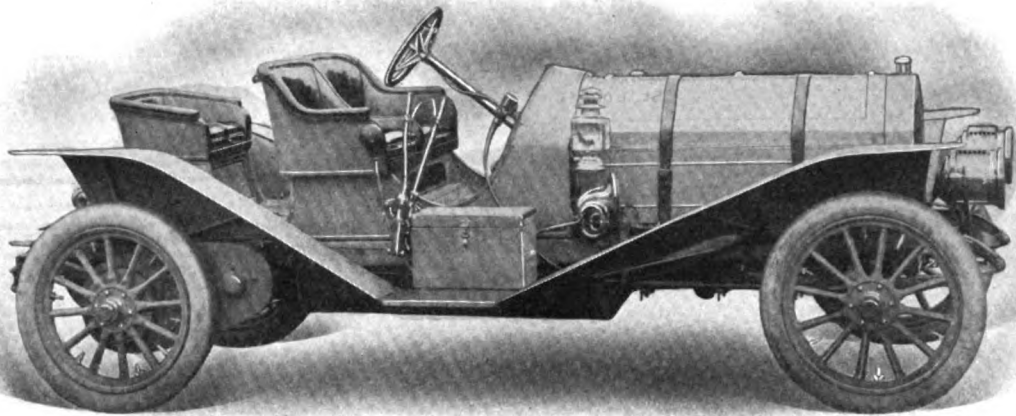


ACME SEXTUPLET TOURING CAR, 6 CYLINDERS, 45-H.P., PRICE \$4,500.
The Acme Motor Car Co., Reading, Pa.

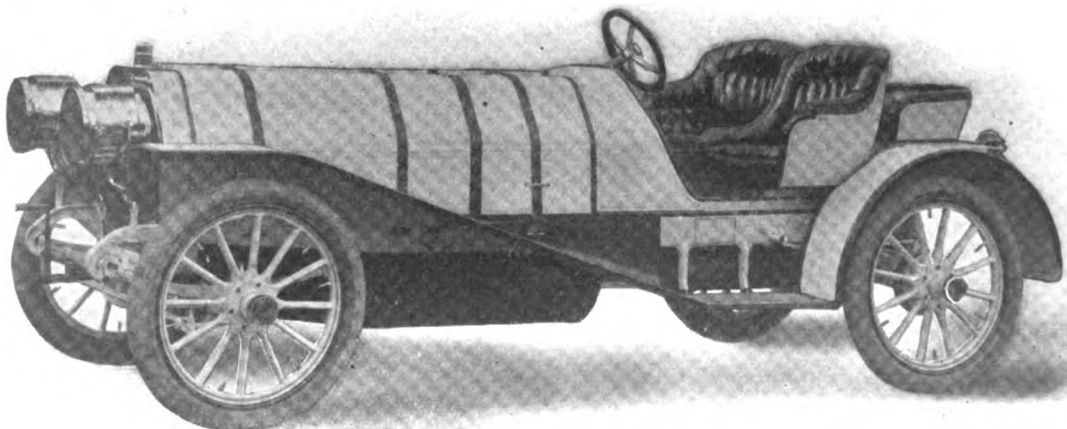


AUSTIN RUNABOUT, MODEL XC-R, COMBINATION BODY, 90-H.P., PRICE \$6,000.
Austin Automobile Co., Grand Rapids, Mich.

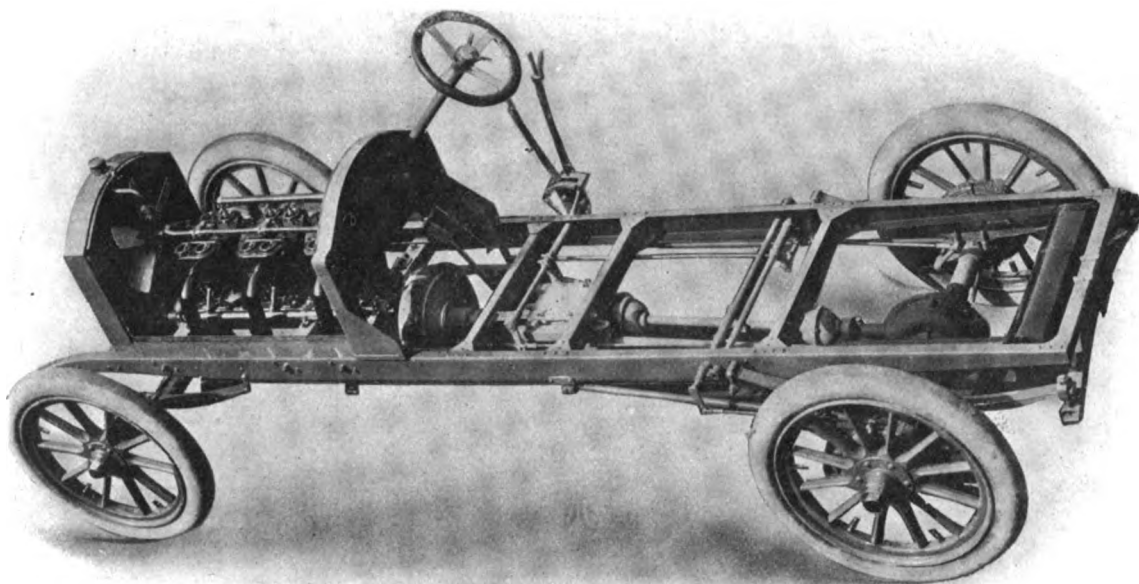
1908



GREAT CHADWICK TOURABOUT, 6 CYLINDERS, 50-H.P., PRICE \$6,500.
Chadwick Engineering Works, Philadelphia, Pa.

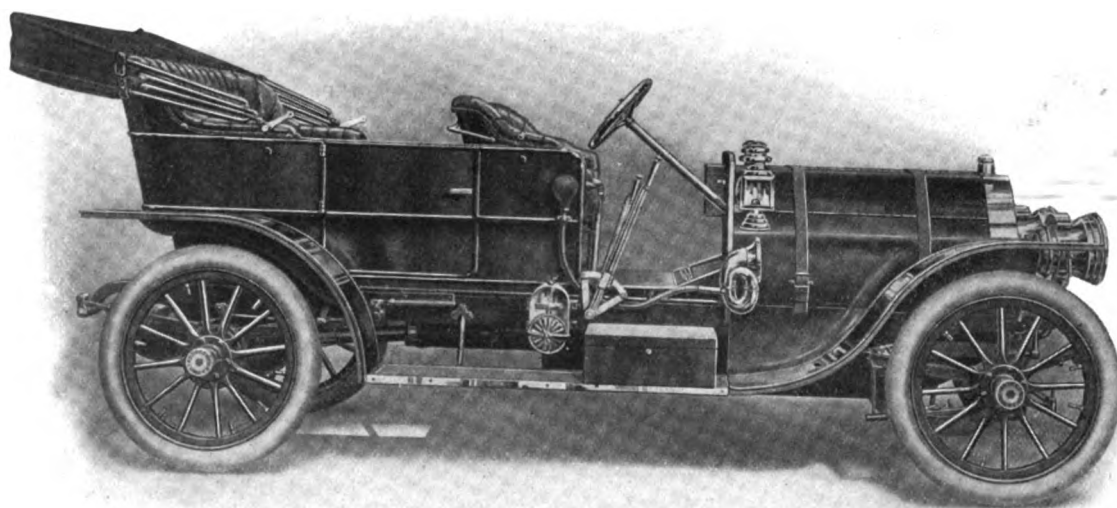


GEARLESS GREYHOUND ROADSTER, 6 CYLINDERS, 75-H.P., PRICE \$4,000.
Gearless Transmission Co., Rochester, N. Y.

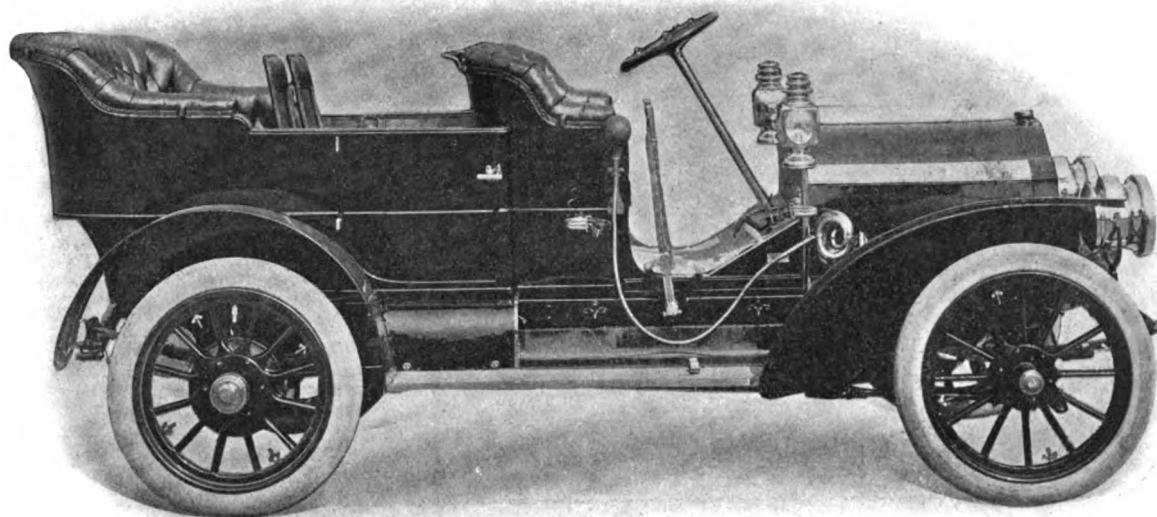


AMERICAN MORS CHASSIS, 6 CYLINDERS, 40-H.P., PRICE, TOURING CAR, \$4,250.
St. Louis Car Company, St. Louis.

1908

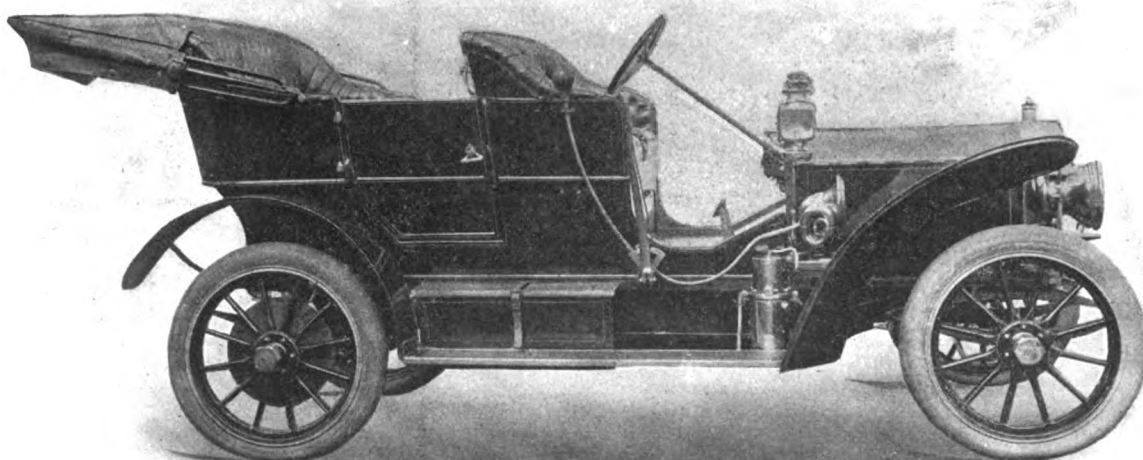


GEARLESS TOURING CAR, 4 CYLINDERS, 60-H.P., PRICE \$3,500.
Gearless Transmission Co., Rochester, N. Y.

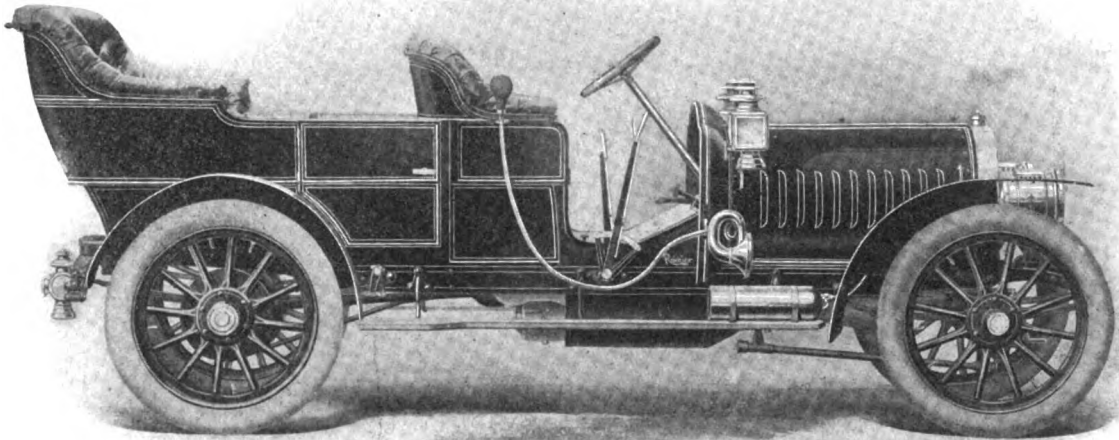


GARFORD TOURING CAR, MODEL B, 4 CYLINDERS, 40-H.P., PRICE \$4,000.
Garford Manufacturing Co., Elyria, O.

1908

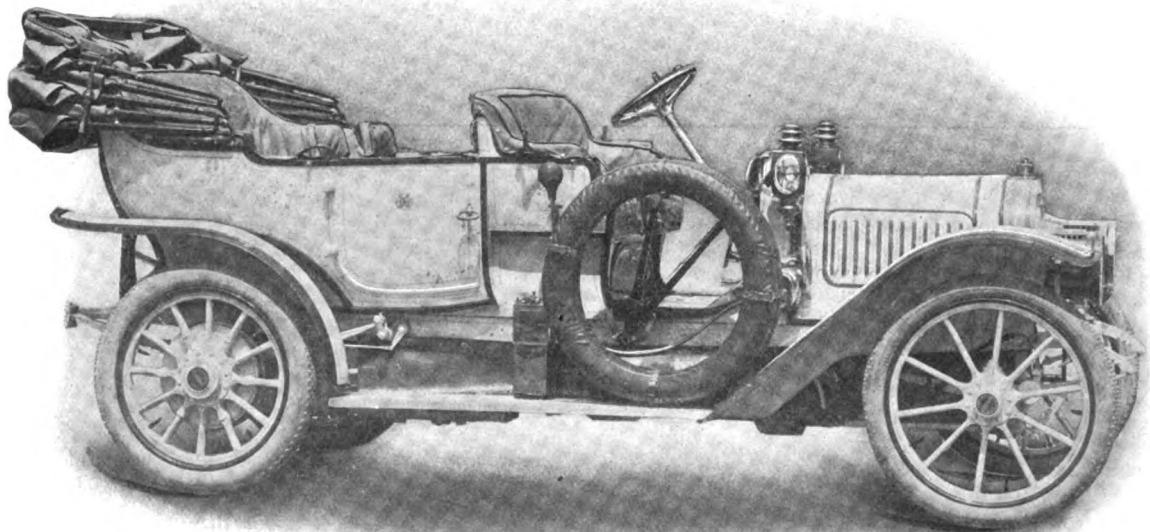


GREAT SMITH TOURING CAR, 4 CYLINDERS, PRICE \$2,500.
Smith Auto Co., Topeka, Kan.

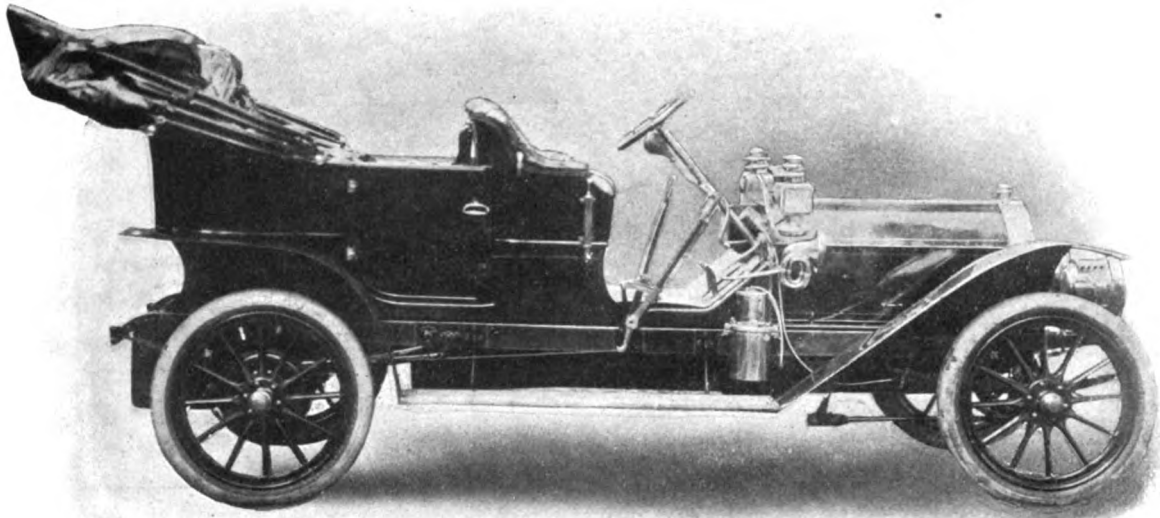


RAINIER TOURING CAR, MODEL D, 4 CYLINDERS, 45-50-H.P., PRICE \$4,500.
Rainier Motor Car Co., Saginaw, Mich.

1908

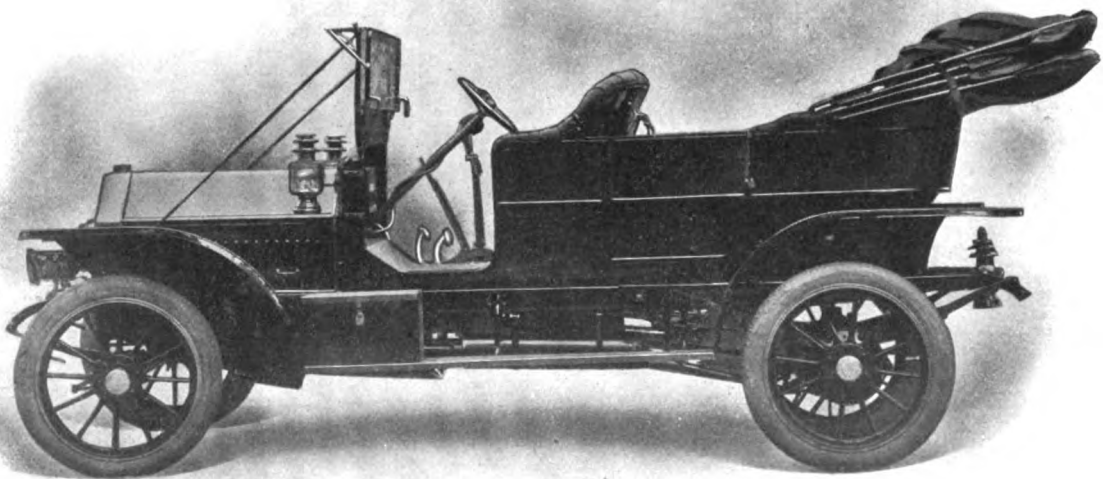


DE LUXE TOURING CAR, 4 CYLINDERS, 40-H.P., PRICE \$5,000.
De Luxe Motor Car Co., Detroit, Mich.

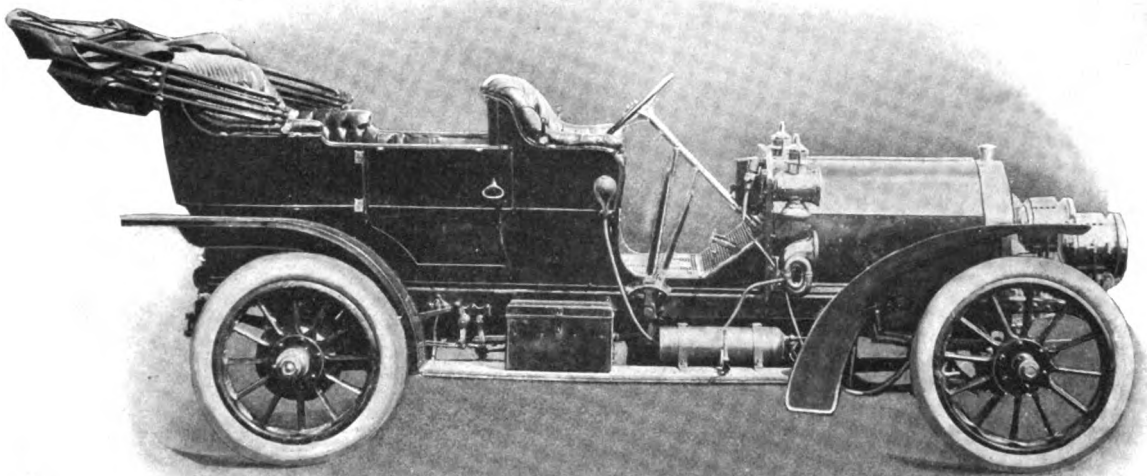


CONTINENTAL TOURING CAR, MODEL C, 4 CYLINDERS, 35-H.P., PRICE \$3,000.
Continental Auto Manufacturing Co., New Haven, Conn.

1908

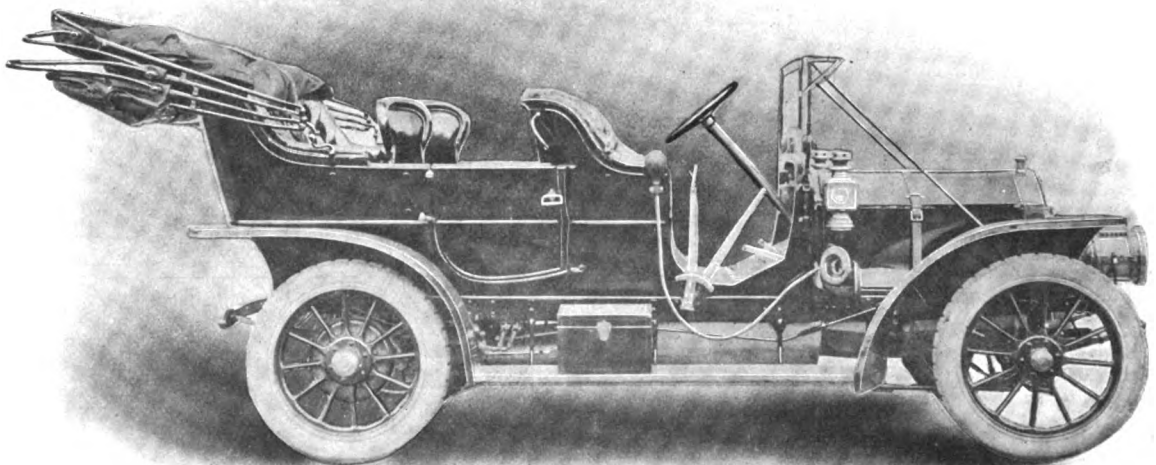


GLIDE TOURING CAR, 4 CYLINDERS, 45-H.P., PRICE \$3,000.
The Bartholomew Company, Peoria, Ill.

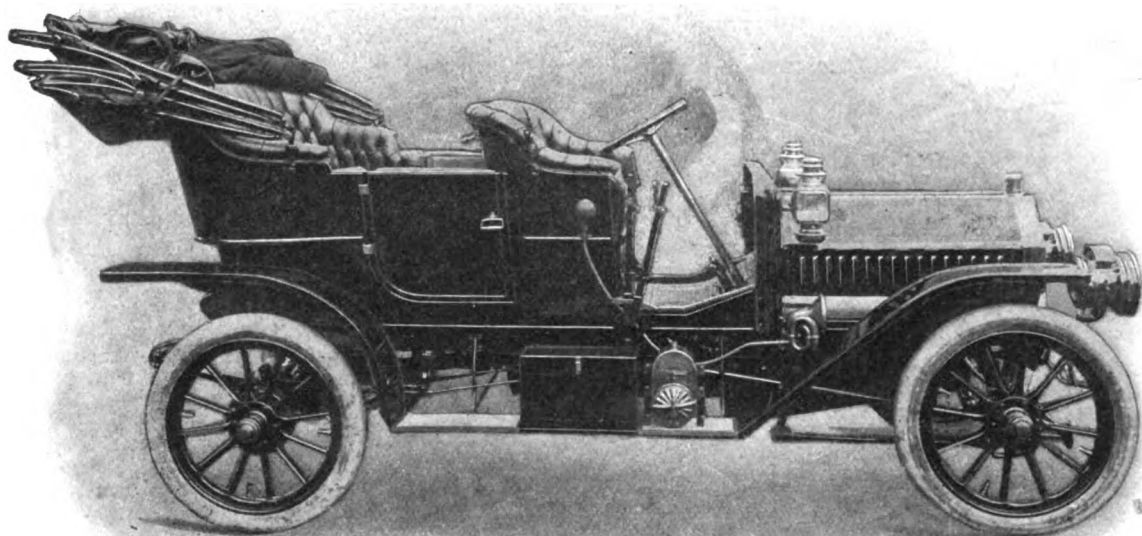


PENNSYLVANIA TOURING CAR, TYPE C, 4 CYLINDERS, 40-H.P., PRICE \$3,000.
Pennsylvania Auto Motor Co., Bryn Mawr, Pa.

1908

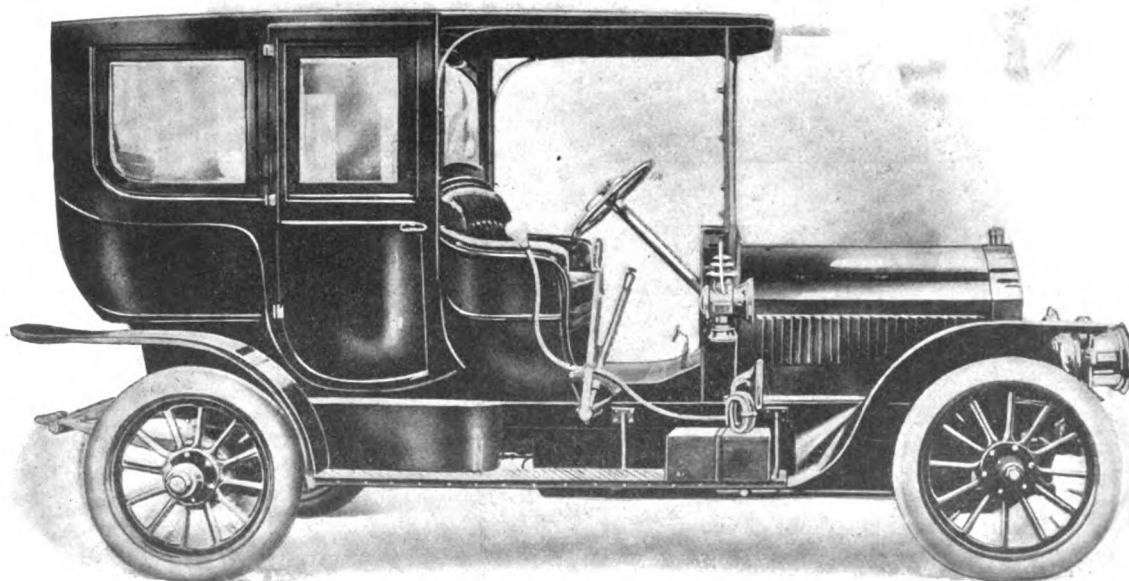


PULLMAN TOURING CAR, MODEL J, 4 CYLINDERS, 40-H.P., PRICE \$3,750.
York Motor Car Co., York, Pa.

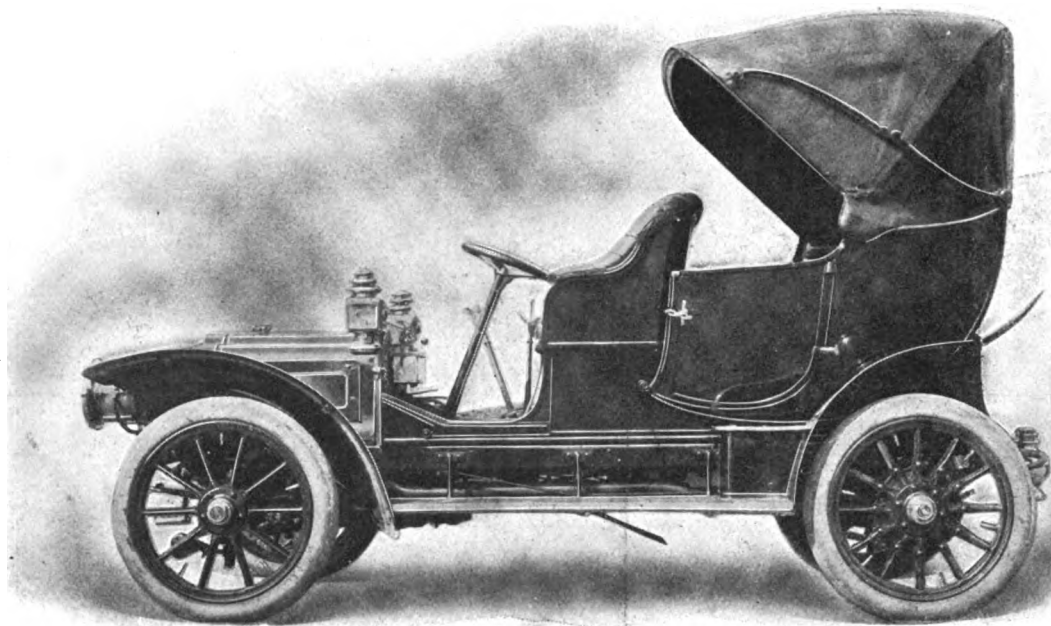


MOLINE TOURING CAR, MODEL A, 4 CYLINDERS, 35-H.P., PRICE \$2,500.
Moline Automobile Co., East Moline, Ill.

1908

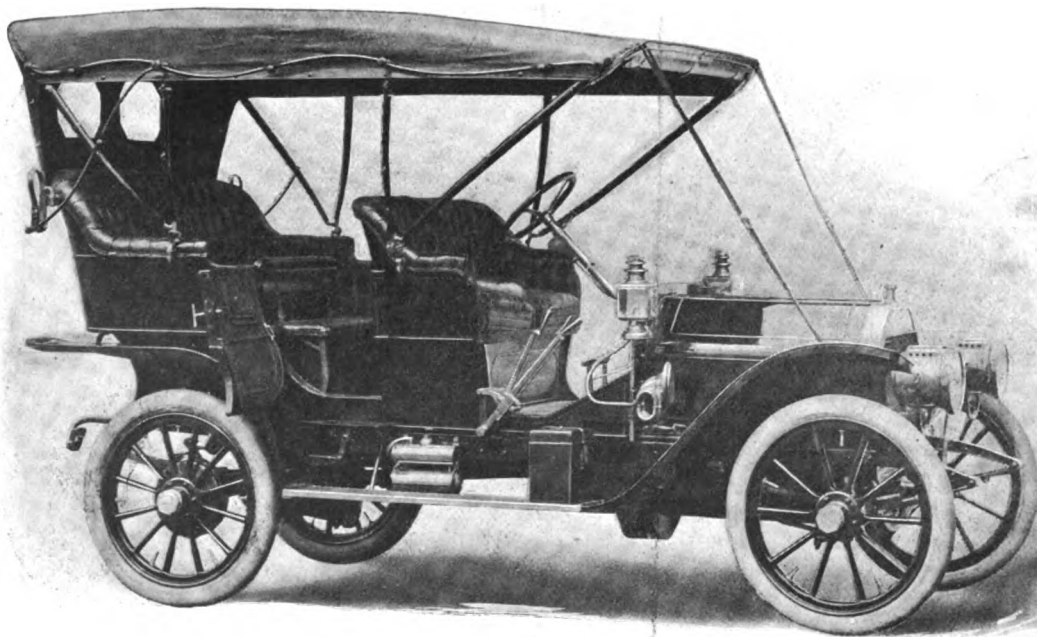


FRONTENAC LIMOUSINE, 4 CYLINDERS, 40-H.P., PRICE \$5,000.
Abendroth & Root Manufacturing Co., Newburgh, N. Y.

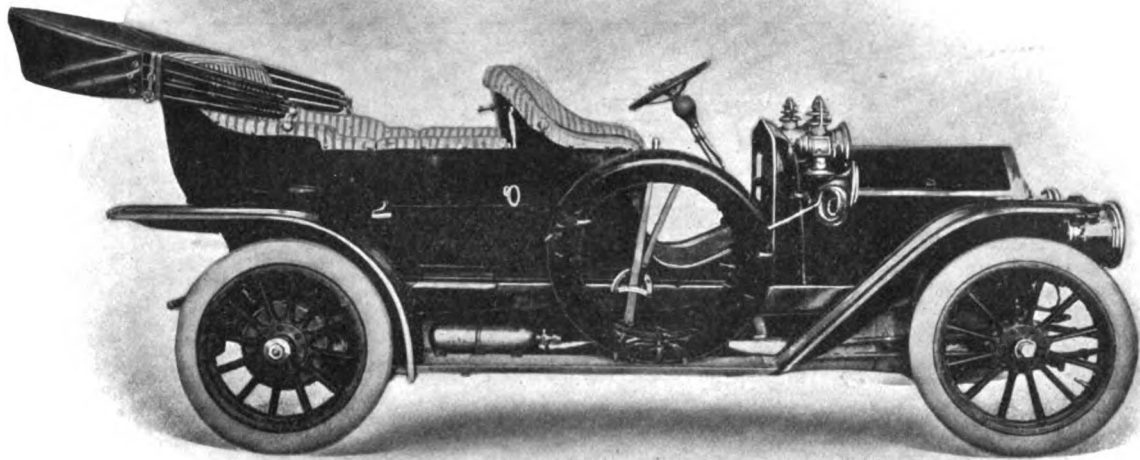


AMERICAN MORS TOURING CAR, 4 CYLINDERS, 14-18-H.P., PRICE \$3,000.
St. Louis Car Co., St. Louis, Mo.

1908

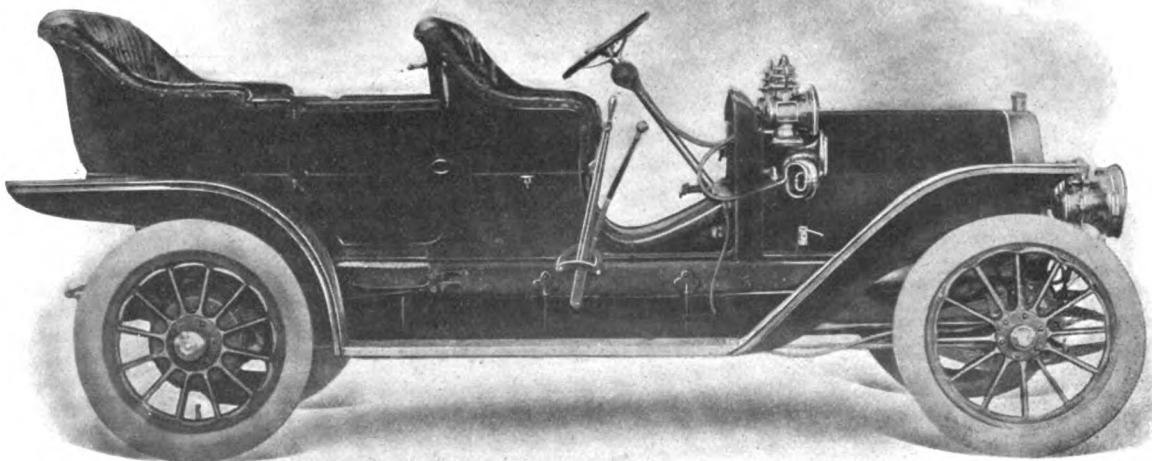


WAYNE TOURING CAR, 4 CYLINDERS, 30-35-H.P., PRICE \$2,500.
Wayne Automobile Co., Detroit, Mich.

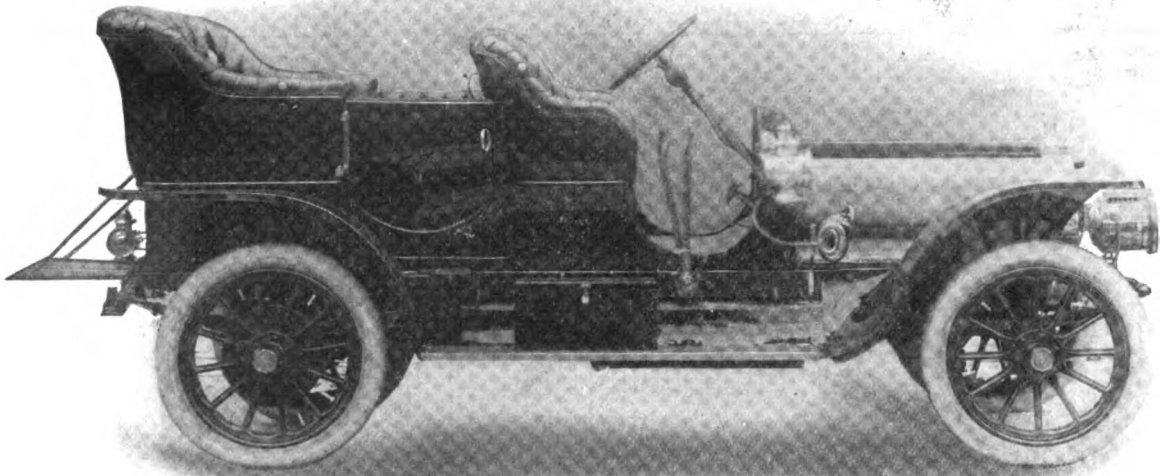


MARMON, MODEL H, 4 CYLINDERS, 35-40-H.P., AIR-COOLED, PRICE \$3,500.
Nurdyke & Marmon Co., Indianapolis, Ind.

1908

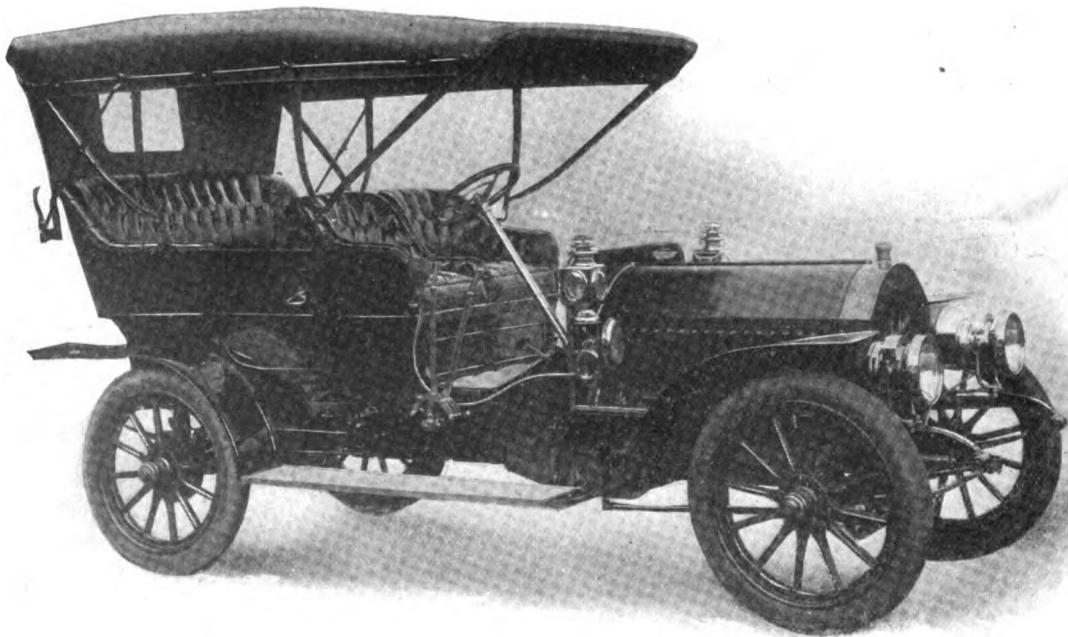


MARMON, MODEL H, 4 CYLINDERS, 40-45-H.P., WATER-COOLED, PRICE \$3,500
Nurdyke & Marmon Co., Indianapolis, Ind.

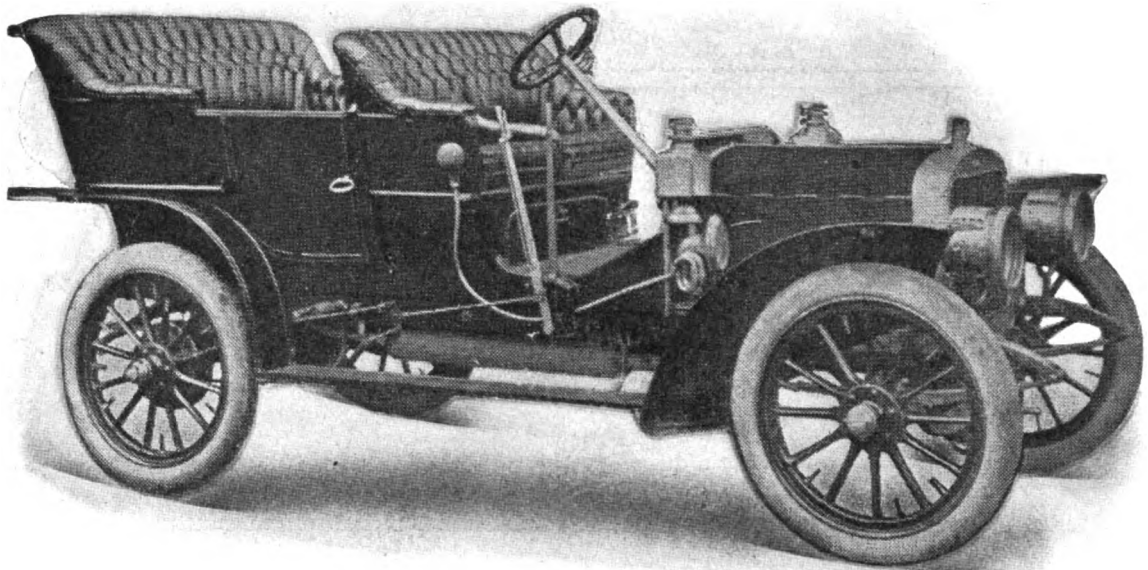


NATIONAL TOURING CAR, MODEL K, 4 CYLINDERS, PRICE \$3,500.
National Motor Vehicle Corporation, Indianapolis, Ind.

1908

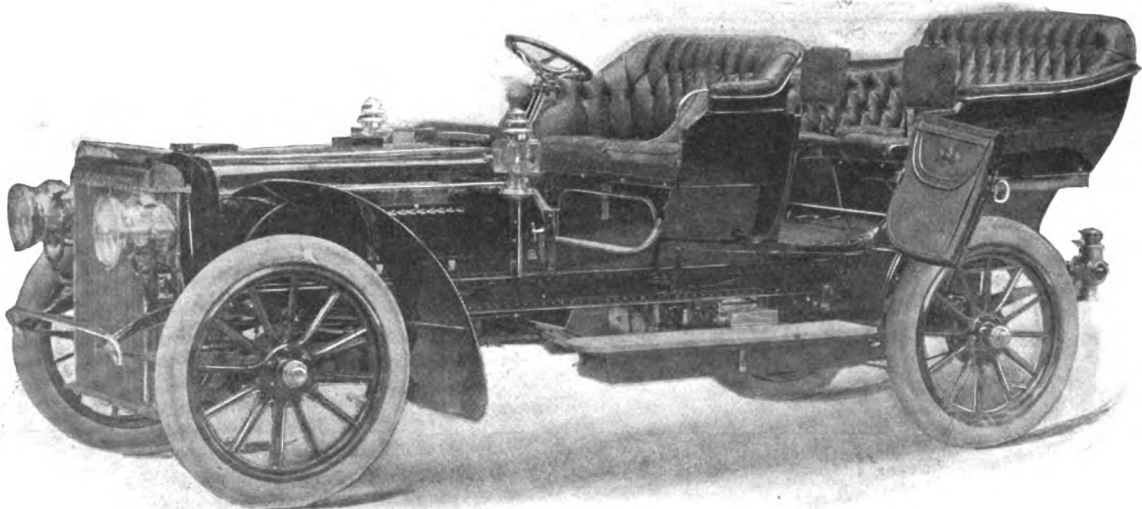


JACKSON TOURING CAR, MODEL E, 4 CYLINDERS, 35-H.P., PRICE \$2,000.
Jackson Automobile Co., Jackson, Mich.

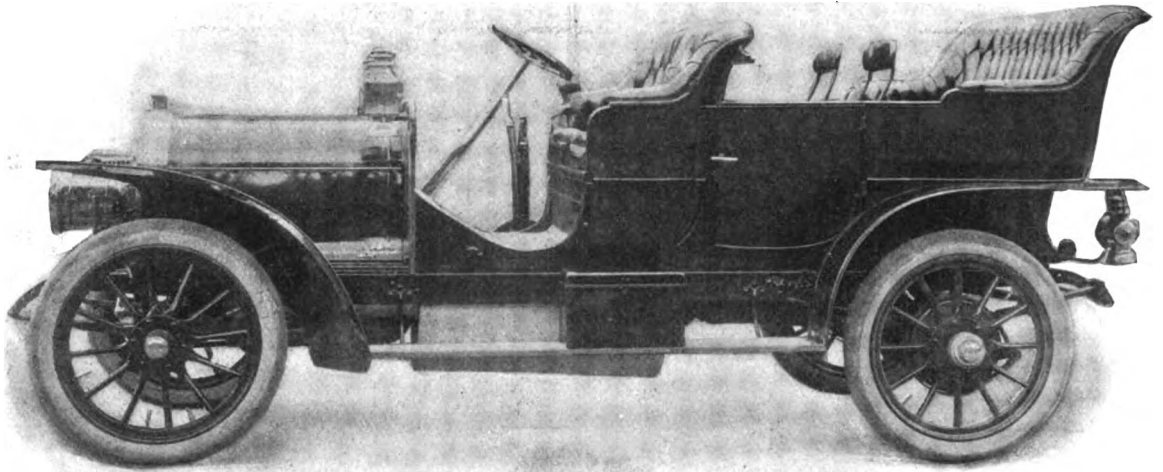


DORRIS TOURING CAR, MODEL C, 4 CYLINDERS, 30-H.P., PRICE \$2,500.
Dorris Motor Car Co., St. Louis, Mo.

1908

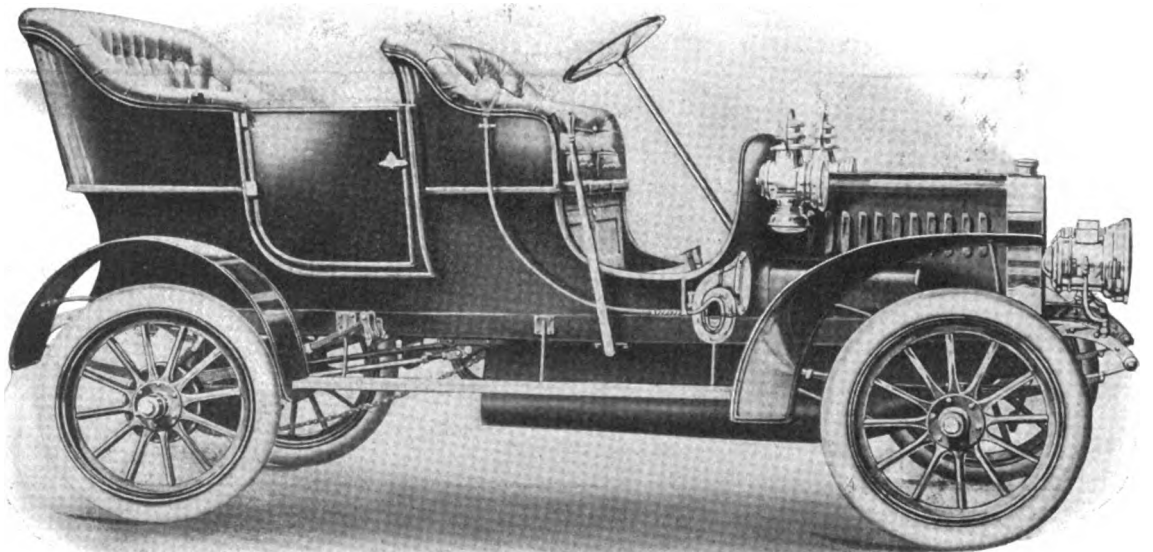


LANE STEAMER TOURING CAR, MODEL 8-7, 30-H.P., PRICE \$3,500.
Lane Motor Vehicle Co., Poughkeepsie, N. Y.

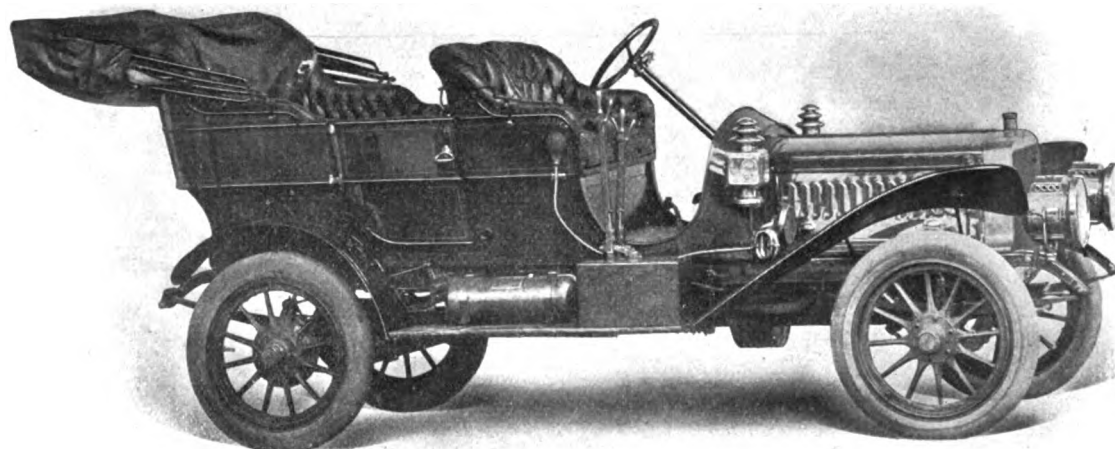


GAETH TOURING CAR, TYPE XV, 4 CYLINDERS, 35-40-H.P., PRICE \$3,500.
Gaeth Automobile Co., Cleveland, O.

1908

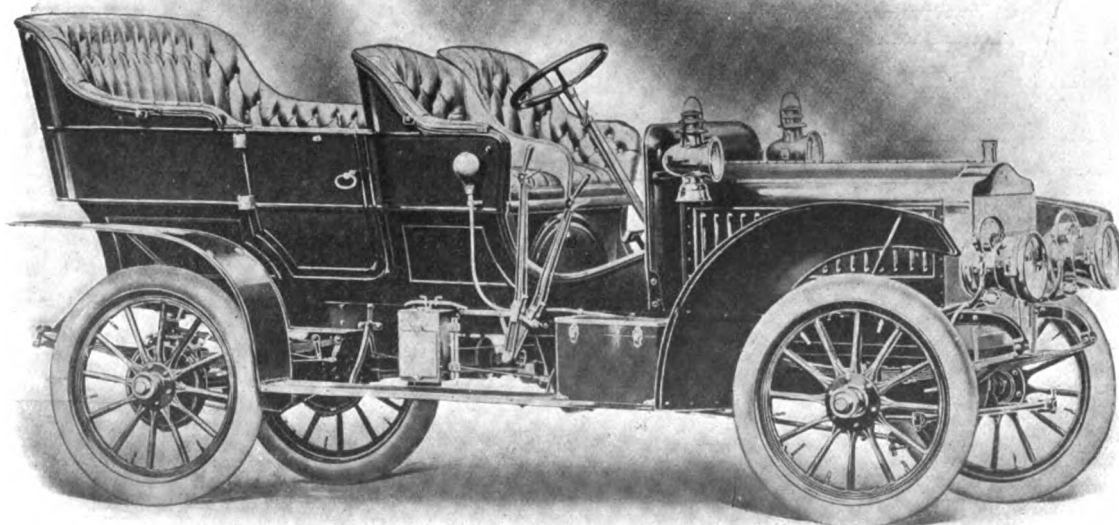


CARTERCAR, MODEL A, 2 CYLINDERS, 22-H.P., PRICE \$1,350.
Motorcar Company, Detroit, Mich.

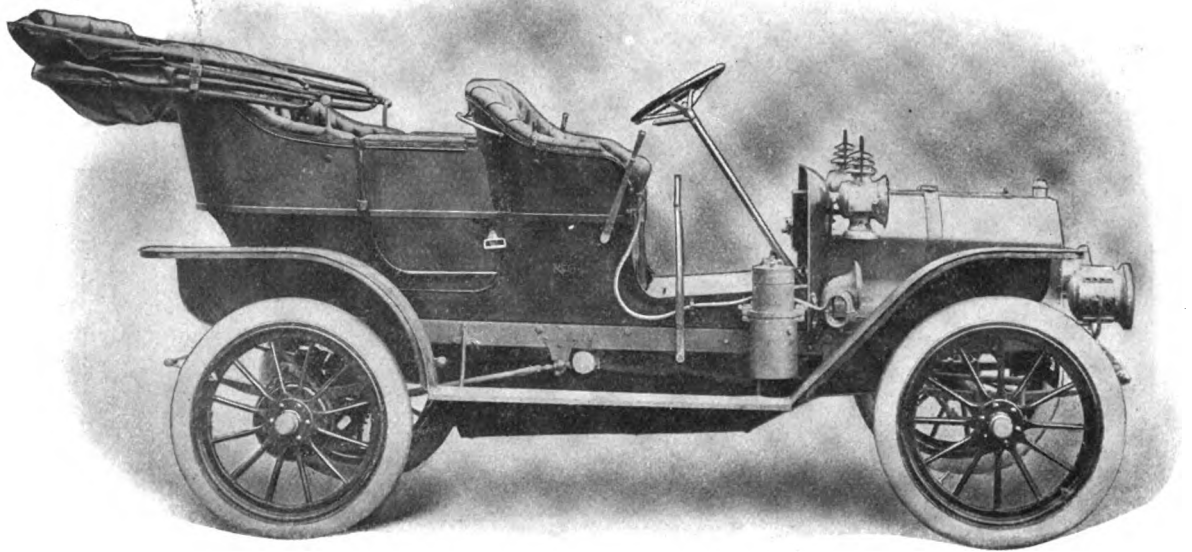


MITCHELL, MODEL I, 4 CYLINDERS, 35-H.P., PRICE \$2,000.
Mitchell Motor Car Co., Racine, Wis.

1908

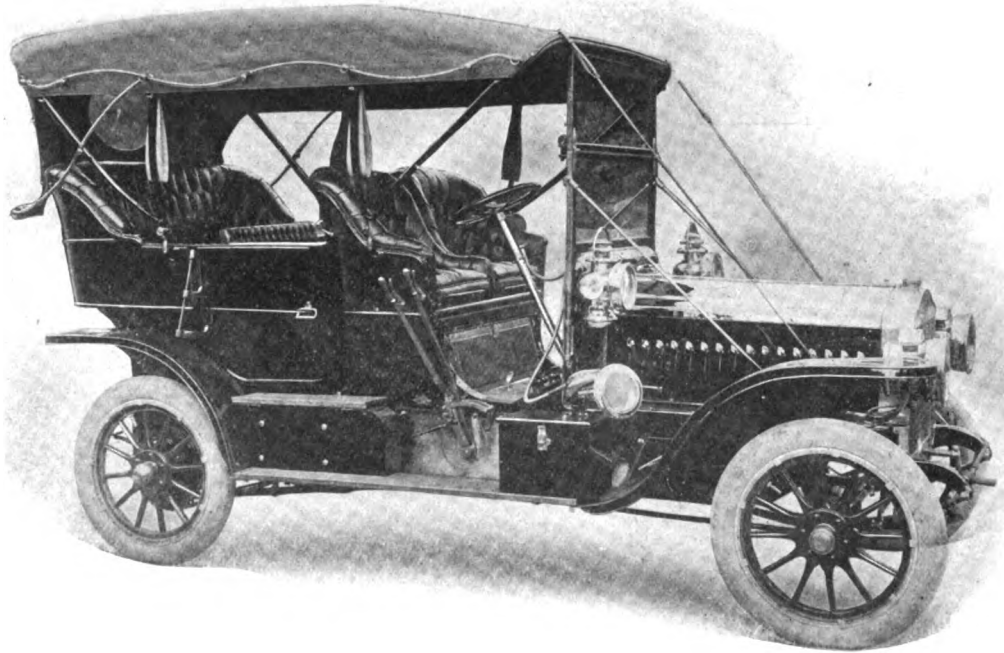


MAXWELL TOURING CAR, MODEL M, 4 CYLINDERS, 40-H.P., PRICE \$3,000.
Maxwell-Briscoe Motor Co., Tarrytown, N. Y.

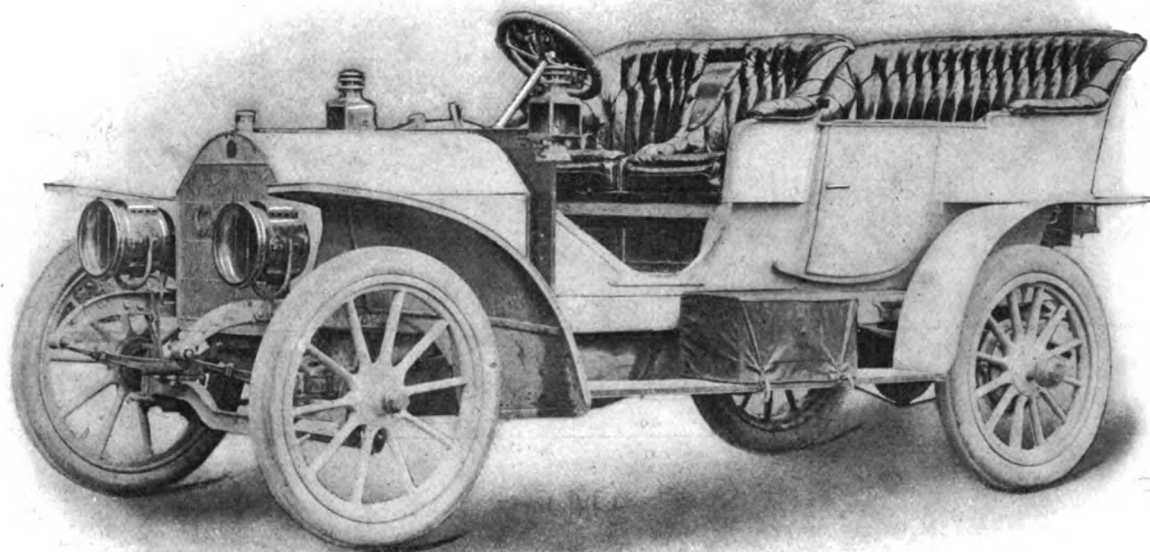


REO TOURING CAR, MODEL A, 2 CYLINDERS, 18-H.P., PRICE \$1,250.
R. M. Owen & Co., 1759 Broadway, New York.

1908

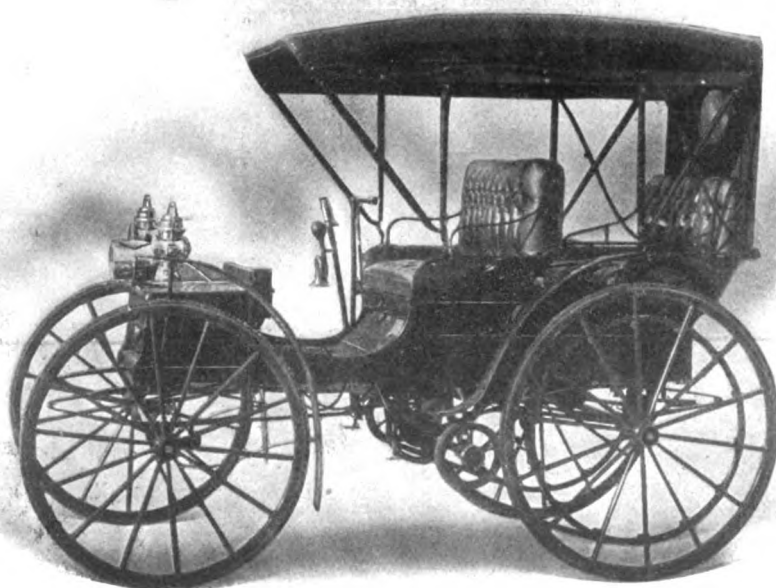


LAMBERT TOURING CAR, 4 CYLINDERS, 35-40-H.P., PRICE \$2,500.
Buckeye Manufacturing Co., Anderson, Ind.

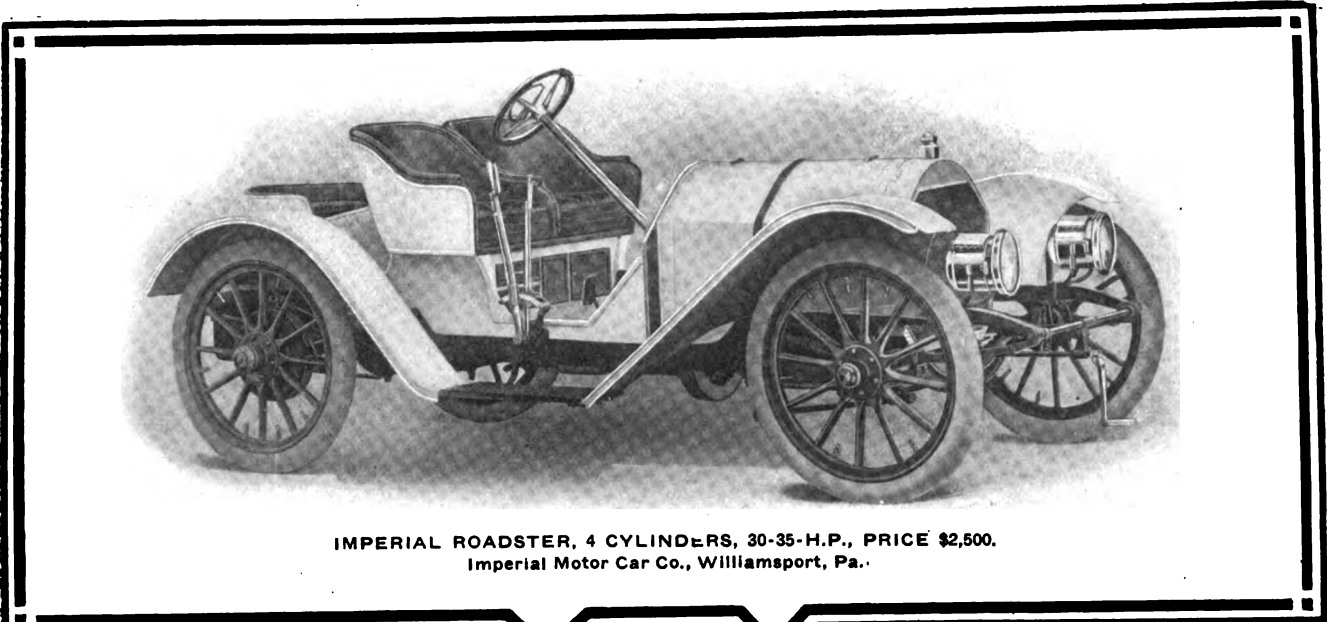


CLEVELAND TOURING CAR, 4 CYLINDERS, 40-45-H.P., PRICE \$3,500.
Cleveland Motor Car Co., 1659 Broadway, New York.

1908

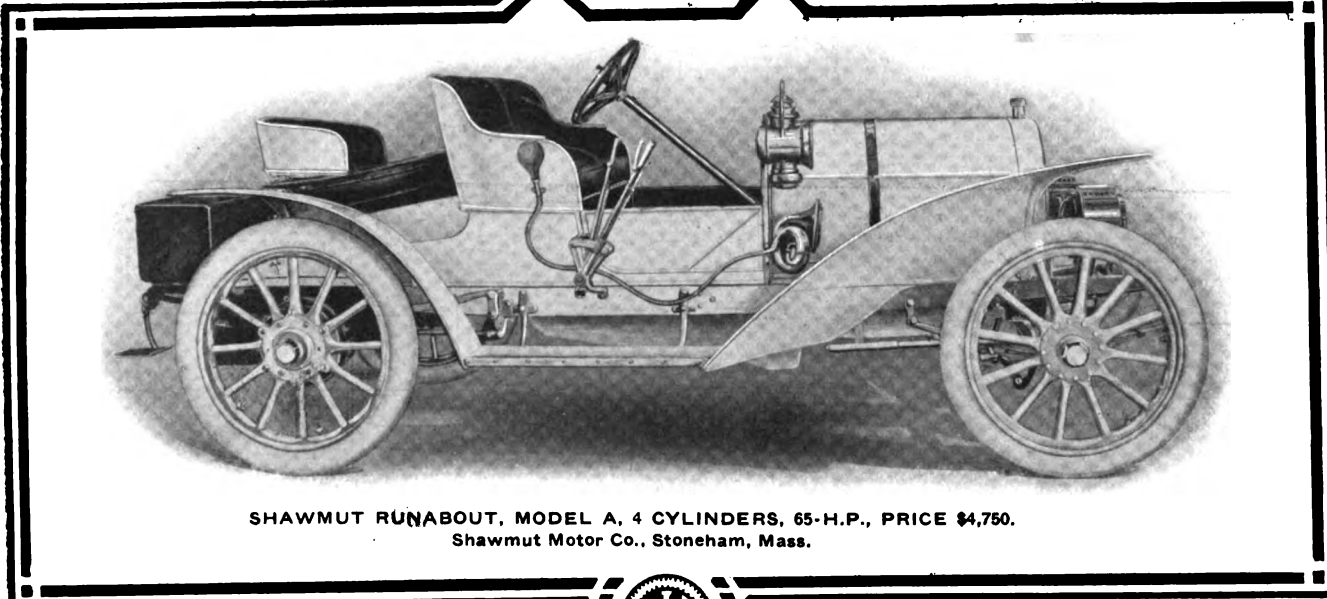


HOLSMAN SURREY, 2 CYLINDERS, 12-H.P., PRICE \$800.
Holsman Automobile Co., Chicago.

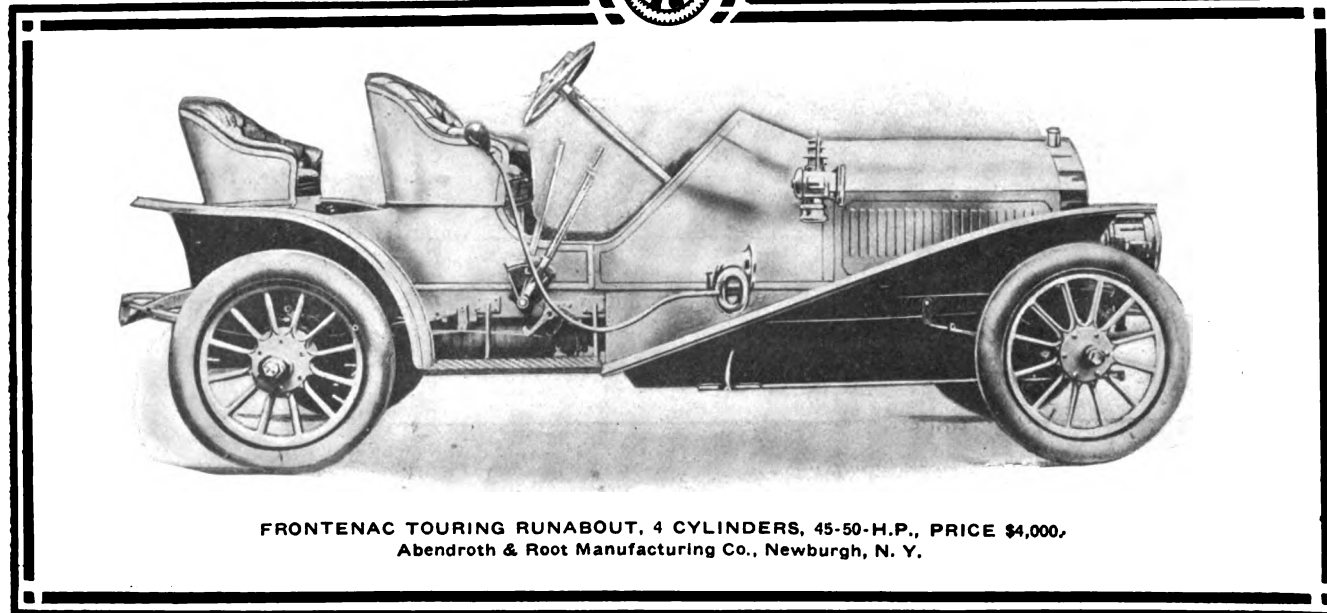


IMPERIAL ROADSTER, 4 CYLINDERS, 30-35-H.P., PRICE \$2,500.
Imperial Motor Car Co., Williamsport, Pa.

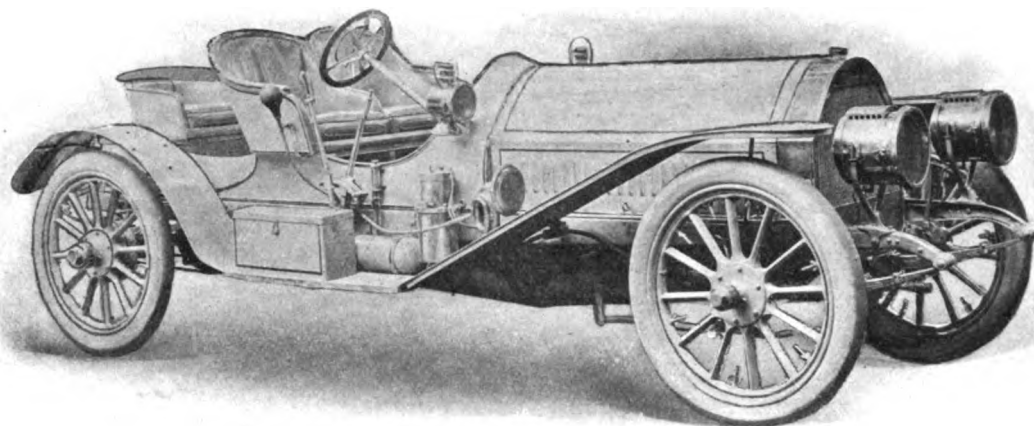
1908



SHAWMUT RUNABOUT, MODEL A, 4 CYLINDERS, 65-H.P., PRICE \$4,750.
Shawmut Motor Co., Stoneham, Mass.

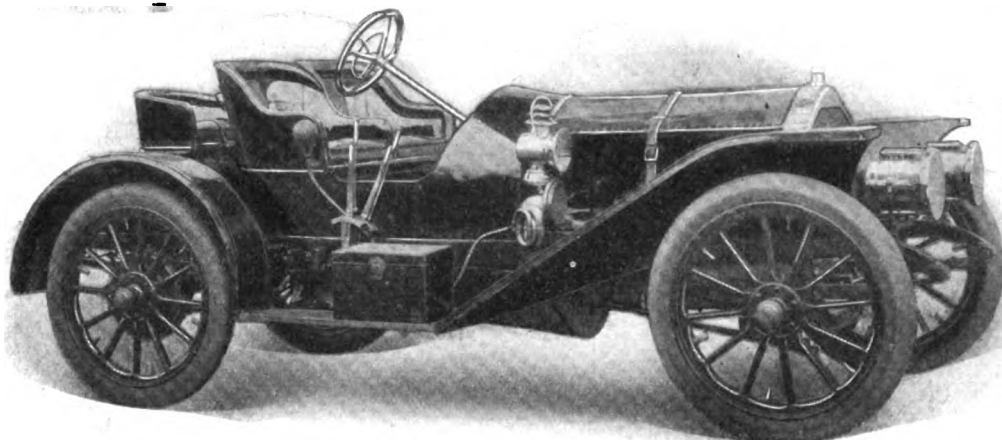


FRONTENAC TOURING RUNABOUT, 4 CYLINDERS, 45-50-H.P., PRICE \$4,000.
Abendroth & Root Manufacturing Co., Newburgh, N. Y.

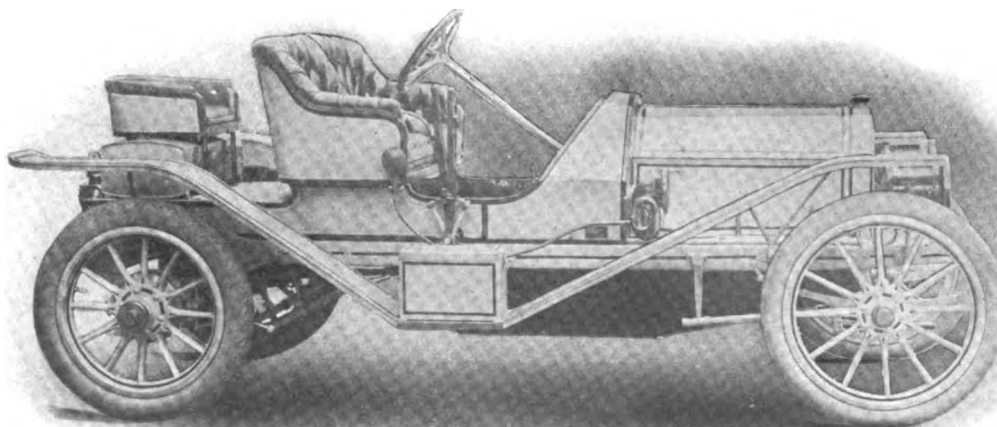


SPEEDWELL ROADSTER, 6 CYLINDERS, 60-H.P., PRICE \$4,250.
Speedwell Motor Car Co., Dayton, O.

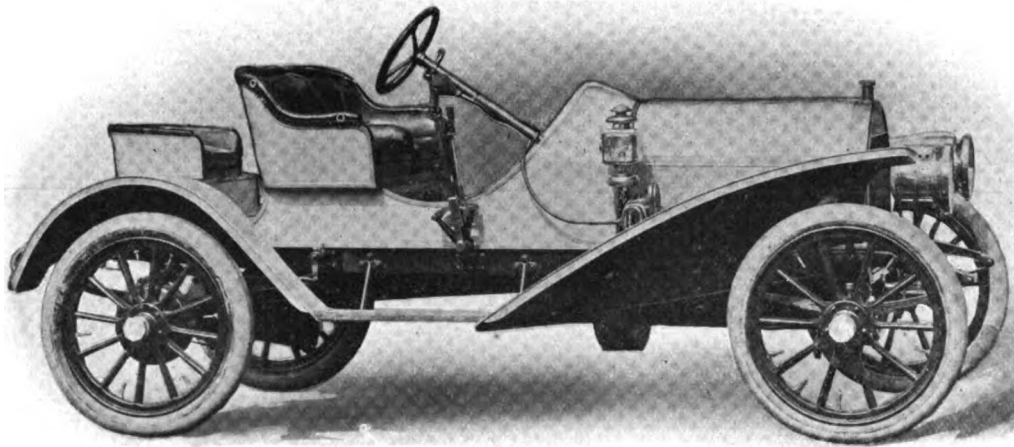
1908



PULLMAN RUNABOUT, MODEL 4-40, 4 CYLINDERS, 40-H.P., PRICE \$3,000.
York Motor Car Co., York, Pa.

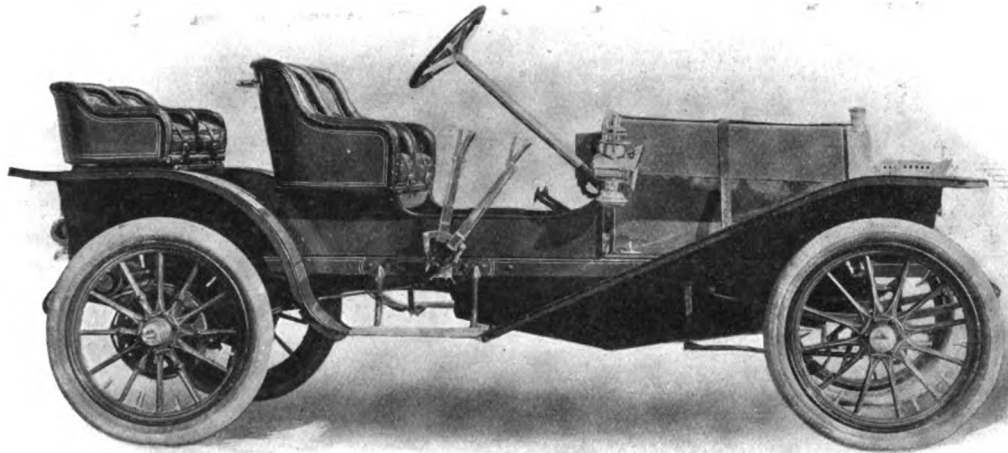


MOON ROADSTER, 4 CYLINDERS, 30-H.P., 3 PASSENGERS, PRICE \$3,250.
Moon Motor Car Co., St. Louis, Mo.

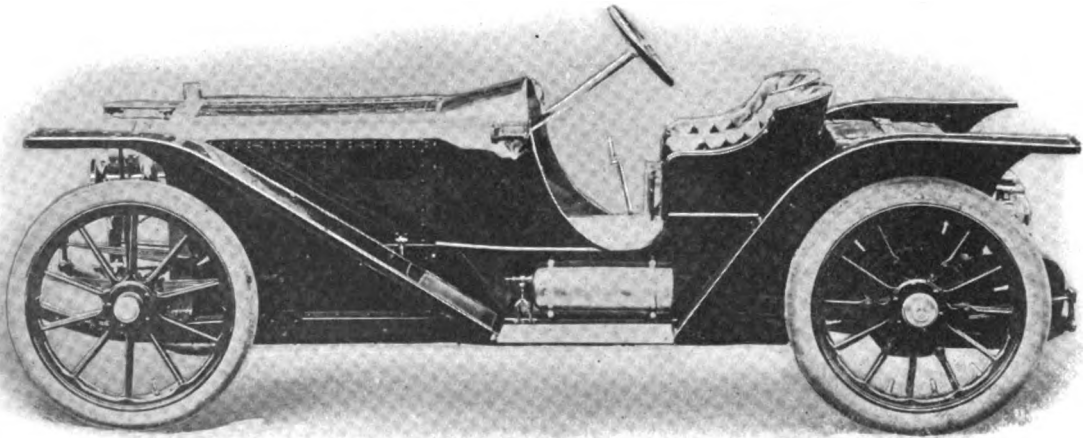


WAYNE RUNABOUT, 4 CYLINDERS, 30-35-H.P., PRICE \$2,500.
Wayne Automobile Co., Detroit, Mich.

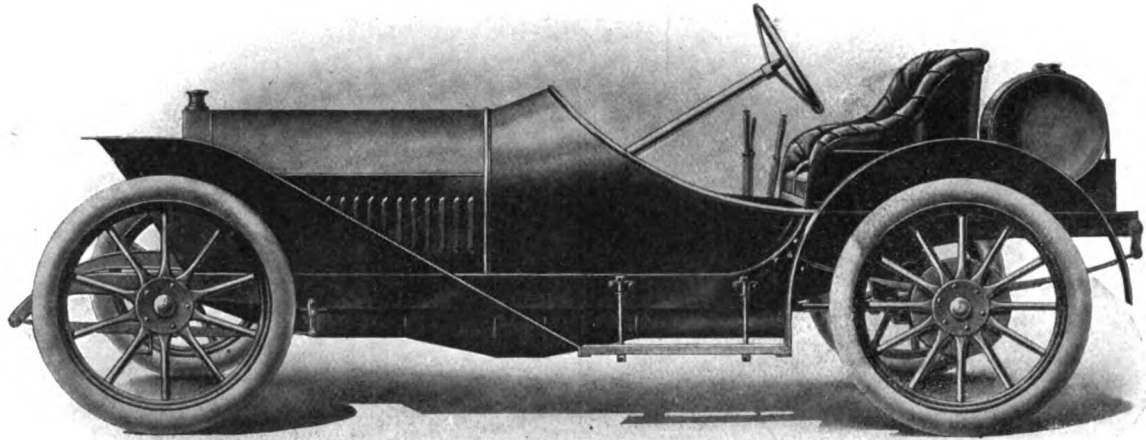
1908



MARION FLYER RUNABOUT, 4 CYLINDERS, 24-H.P., PRICE \$2,250.
Marion Motor Car Co., Indianapolis, Ind.

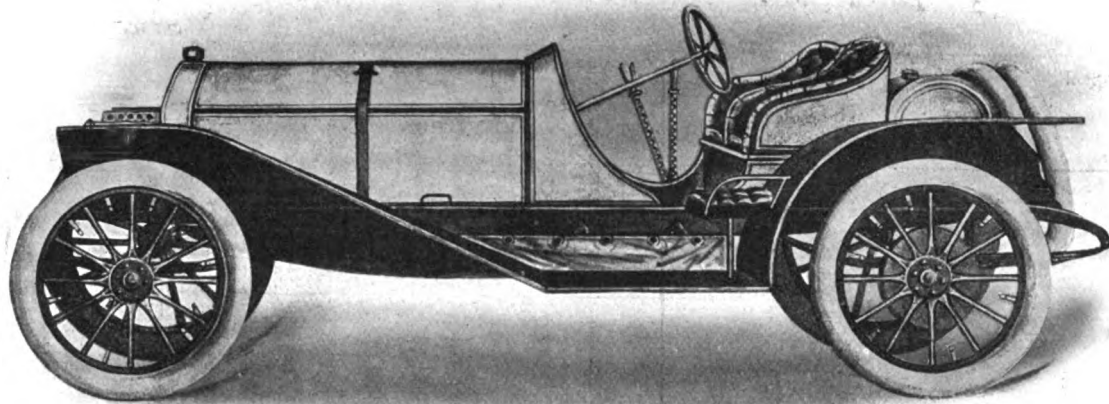


AMERICAN ROADSTER, 4 CYLINDERS, 40-H.P., PRICE \$3,250.
American Motor Car Co., Indianapolis, Ind.

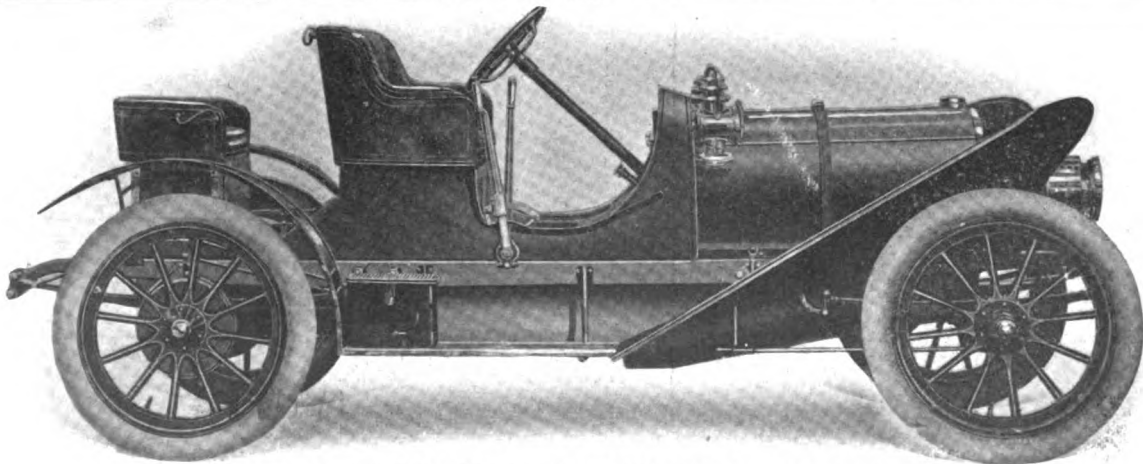


DRAGON ROADSTER, 4 CYLINDERS, 35-H.P., PRICE \$1,850.
Dragon Automobile Co., Philadelphia.

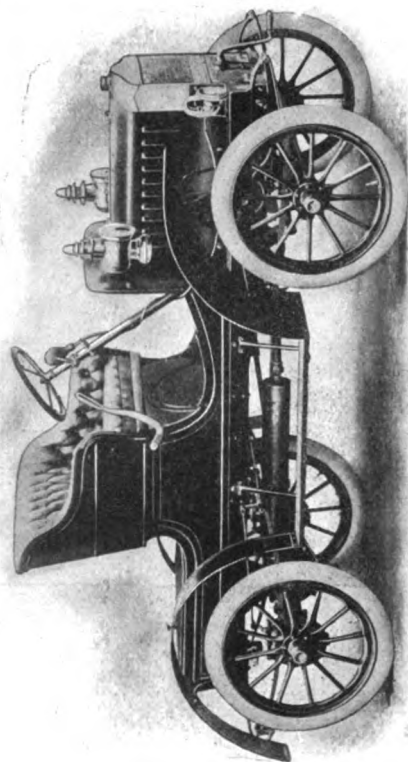
1908



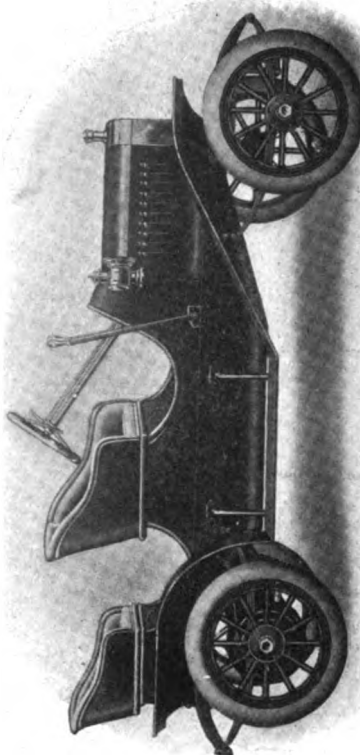
COLT 6-CYLINDER RUNABOUT, 40-H.P., PRICE \$1,500.
Colt Runabout Co., 1876 Broadway, New York.



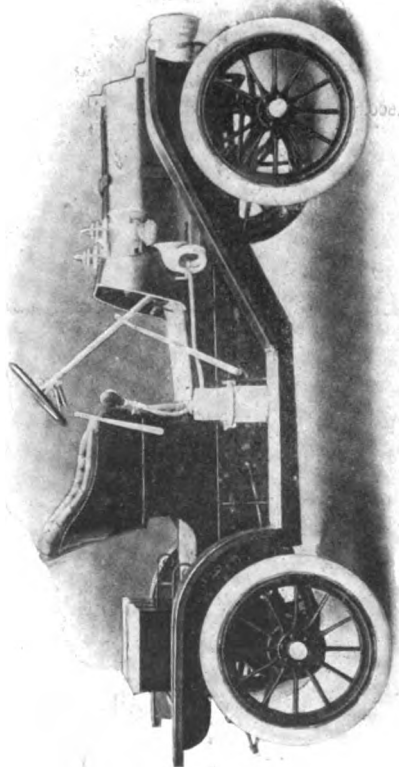
RAMBLER RUNABOUT, 4-CYLINDER, 40-H.P., PRICE \$2,250.
Thomas B. Jeffery Co., Kenosha, Wis.
This car is not exhibited at the Palace Show, but will be shown in Chicago.



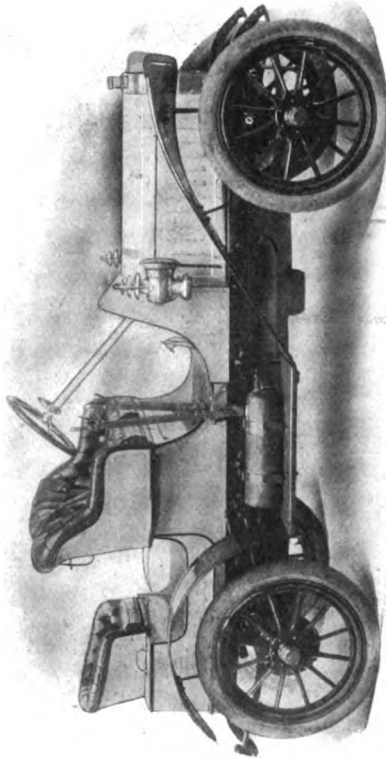
MAXWELL RUNABOUT, 2 CYLINDERS, 12-14-H.P., PRICE \$825.
Maxwell-Briscoe Motor Co., Tarrytown, N. Y.



LAMBERT RUNABOUT, 2 CYLINDERS, 18-H.P., PRICE \$800.
Buckeye Manufacturing Co., Anderson, Ind.

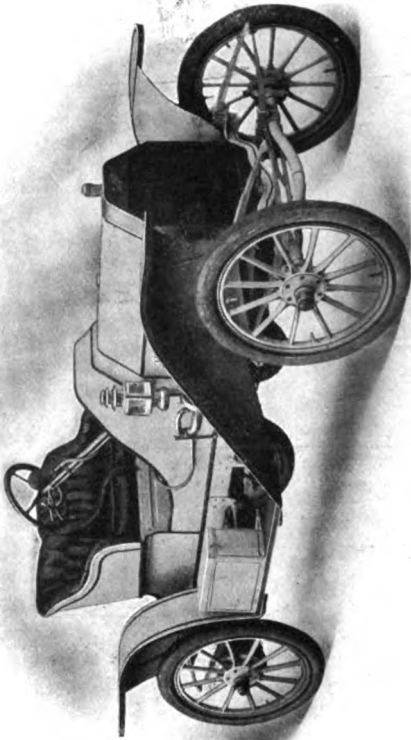


REO ROADSTER, 2 CYLINDERS, 18-20-H.P., PRICE \$1,000.
R. M. Owen & Co., 1759 Broadway, New York.

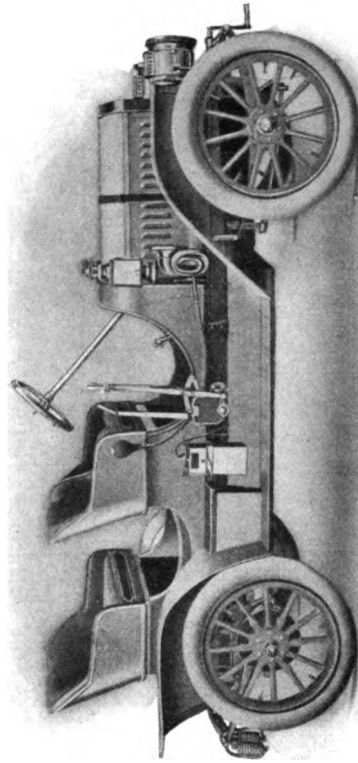


MITCHELL TOURABOUT, 4 CYLINDERS, 20-H.P., PRICE \$1,250.
Mitchell Motor Car Co., Racine, Wis.

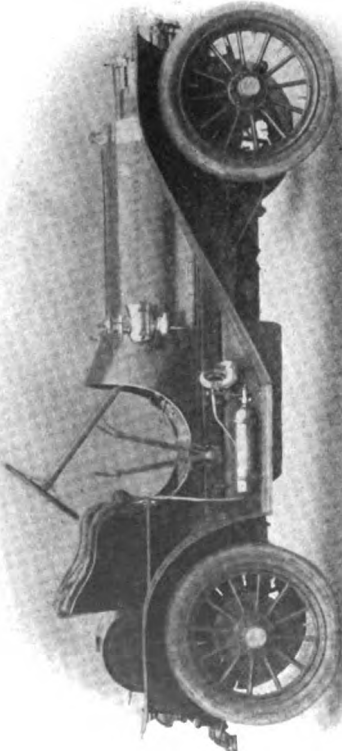
1908



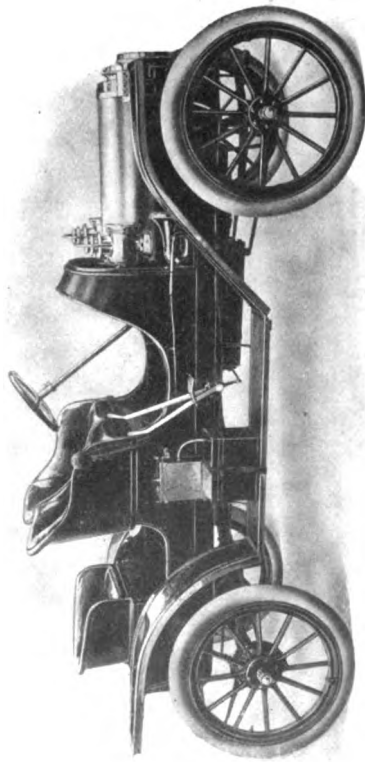
OVERLAND RUNABOUT, 4 CYLINDERS, 18-22-H.P., PRICE \$1,250.
Overland Automobile Co., Indianapolis, Ind.



FRAYER-MILLER COMBINATION RUNABOUT, 24-H.P., PRICE \$2,500.
Oscar Lear Autg Co., Springfield, O.

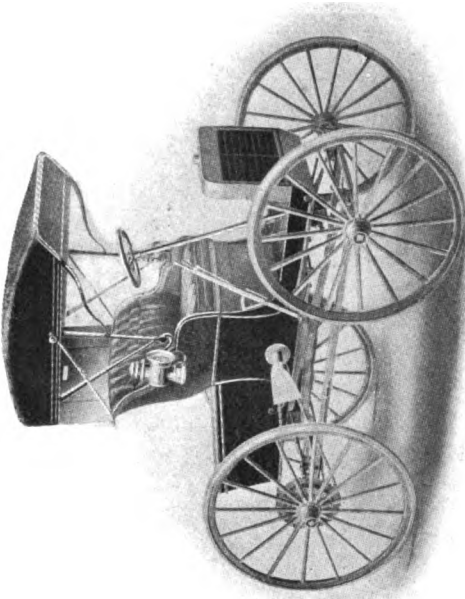


NATIONAL MODEL N ROADSTER, 4 CYLINDERS, 2 PASSENGERS,
PRICE \$3,700.
National Motor Vehicle Co., Indianapolis, Ind.

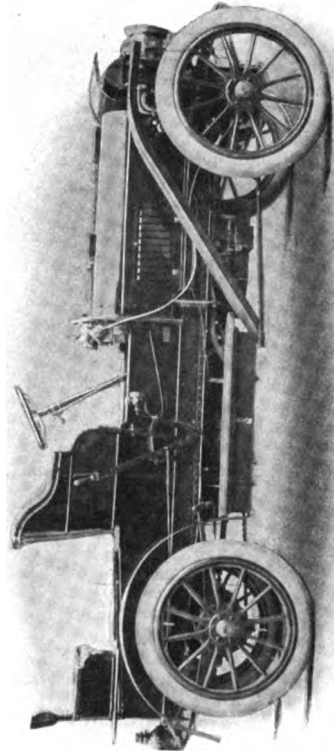


CAMERON MODEL 8 RUNABOUT, 4 CYLINDERS, 16-H.P., PRICE \$1,050.
Cameron Car Co., Brockton, Mass.

1908

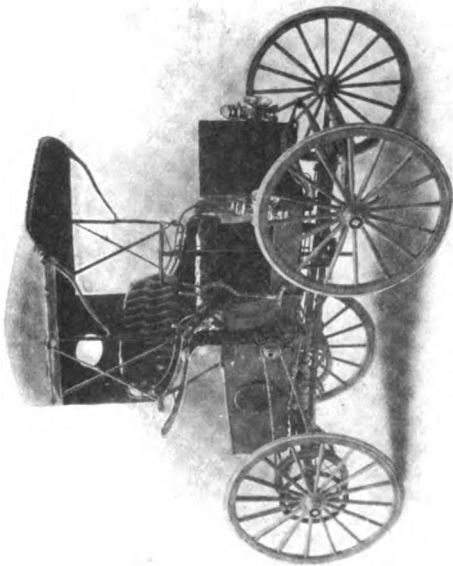


SCHACHT AUTO RUNABOUT, 12-H.P., PRICE \$680.
Schacht Manufacturing Co., Cincinnati, O.

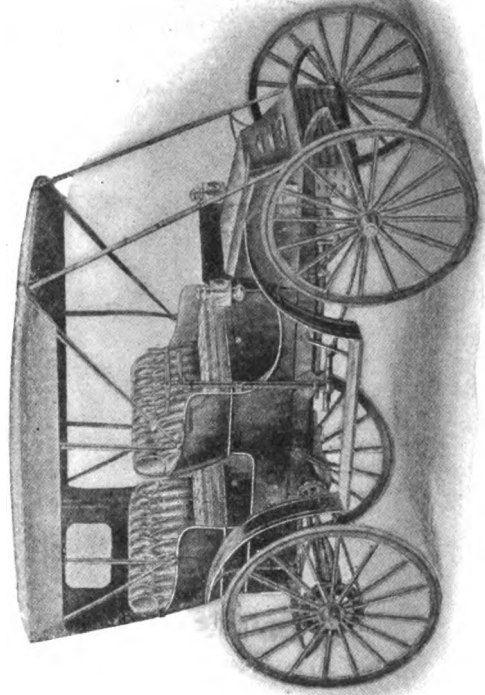


LANE STEAMER RUNABOUT, 30-H.P., PRICE \$3,000.
Lane Motor Vehicle Co., Poughkeepsie, N. Y.

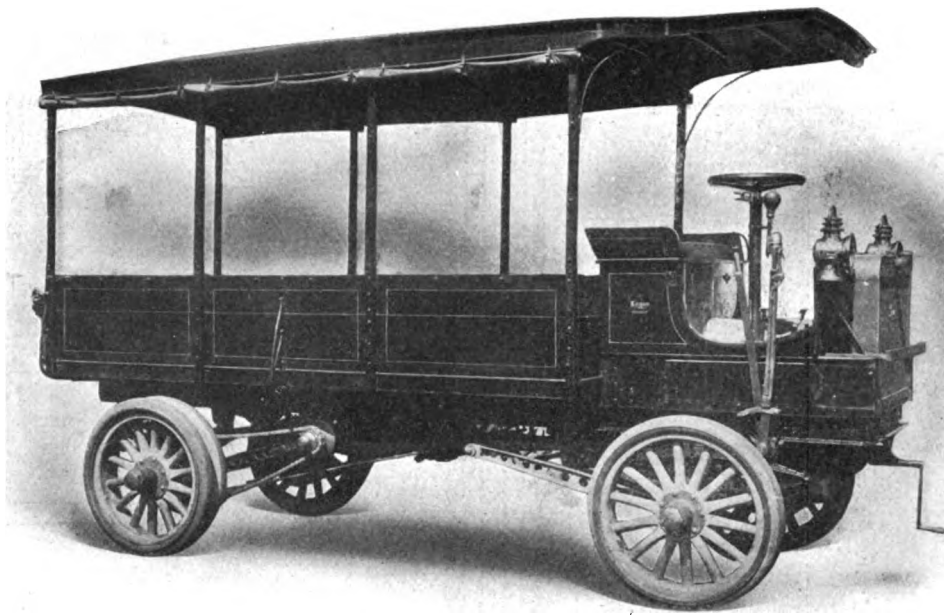
1908



HATFIELD BUGGYABOUT MODEL D.E., 2 CYLINDERS, 12-H.P.,
PRICE \$600.
Hatfield Motor Vehicle Co., Miamisburg, O.

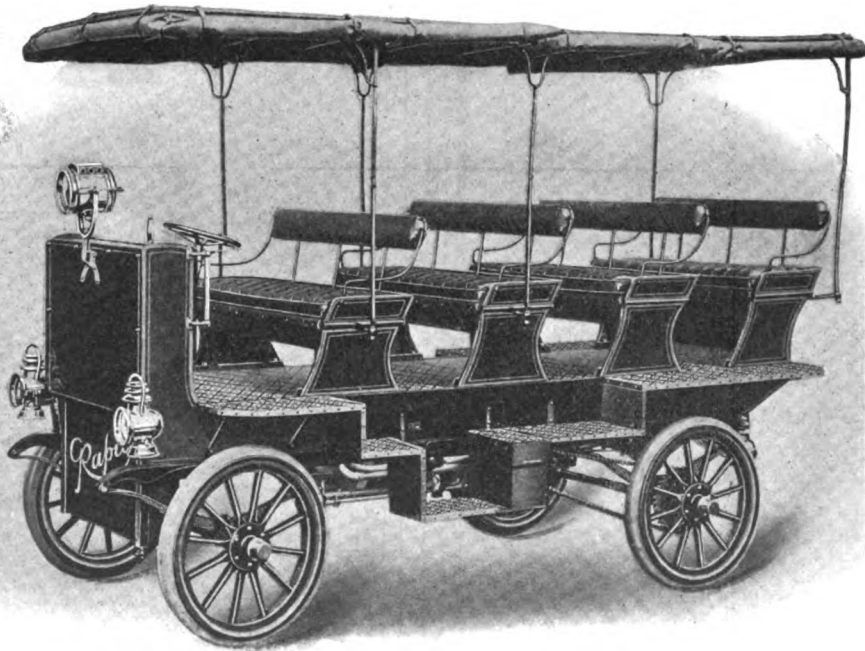


RELIABLE-DAYTON SURREY, 2 CYLINDERS, 15-H.P., PRICE \$925.
Reliable Dayton Motor Car Co., Chicago.

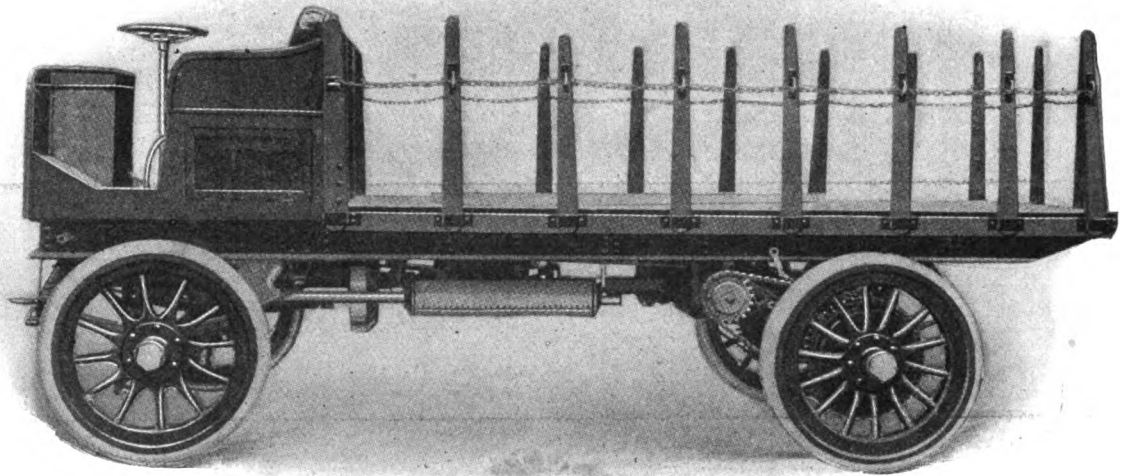


LOGAN THREE-TON TRUCK, MODEL S, WITH OPEN BODY, 4 CYLINDERS, 40-H.P.
Logan Construction Co., Chillicothe, O.

1908

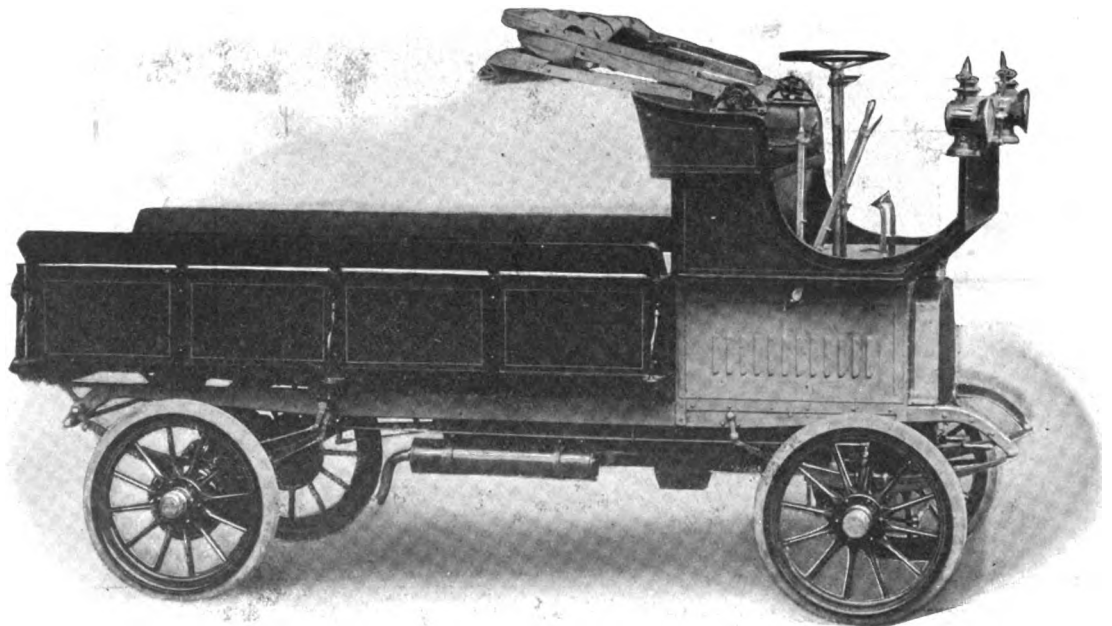


RAPID 12-PASSENGER CAR, MODEL E-132, 24-H.P., PRICE \$2,000.
Rapid Motor Vehicle Co., Pontiac, Mich.

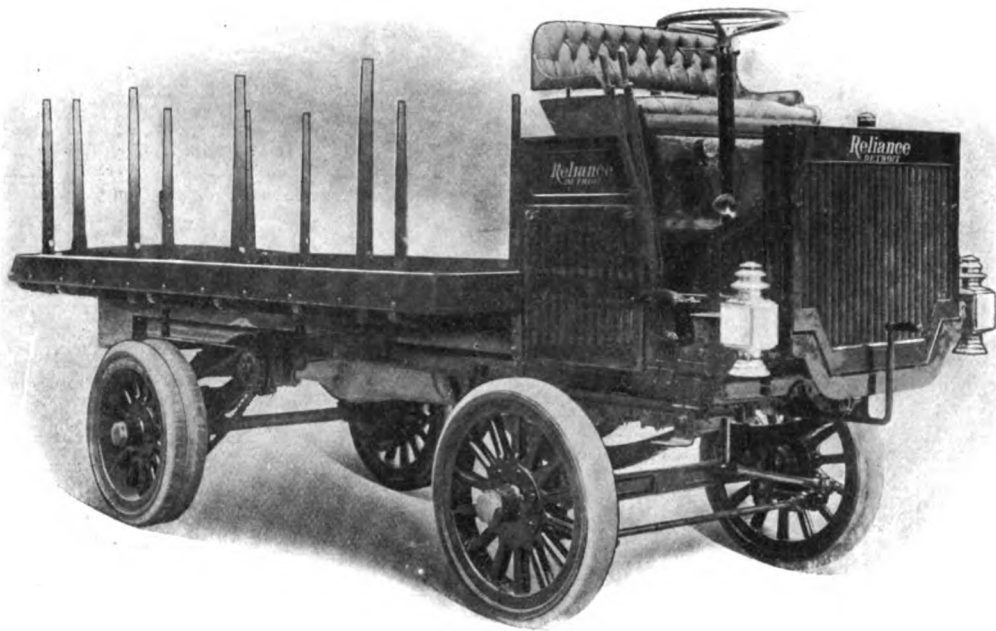


FRAYER-MILLER TRUCK, AIR-COOLED, 4 CYLINDERS, 24-H.P., PRICE \$3,000.
Oscar Lear Automobile Co., Columbus, O.

1908

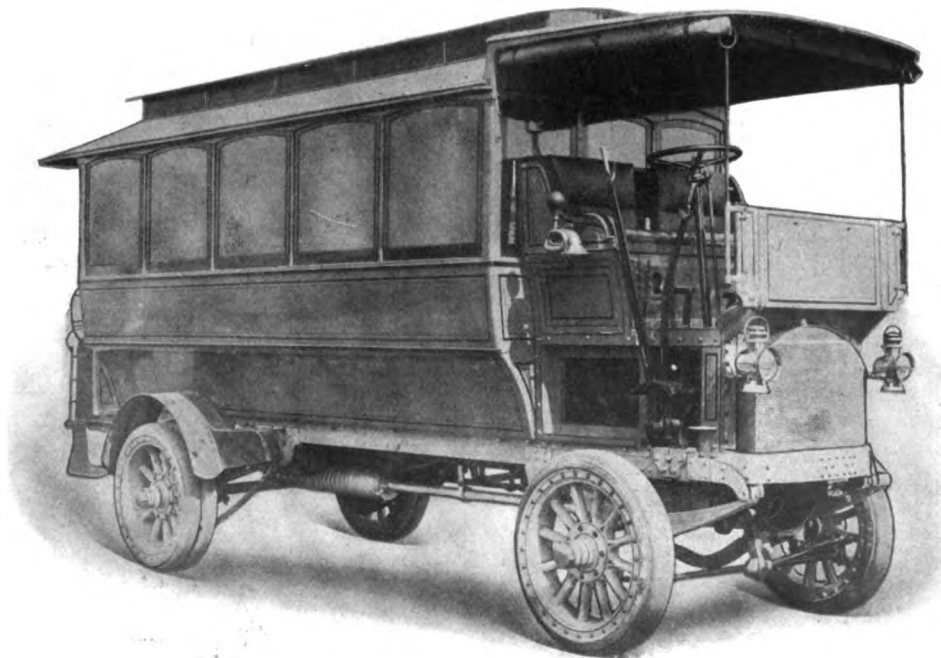


MITCHELL OPEN DELIVERY VEHICLE, 4 CYLINDERS, 20-H.P., PRICE \$2,000.
Mitchell Motor Car Co., Racine, Wis.



RELIANCE OPEN DELIVERY VEHICLE, TWO-CYCLE, 4 CYLINDERS, 60-H.P., PRICE \$4,400.
Reliance Motor Car Co., Detroit, Mich.

1908



MANHATTAN 22-PASSENGER 'BUS, 4 CYLINDERS, 50-H.P., PRICE \$6,500.
Mack Brothers Motor Car Co., Allentown, Pa.

GRAND CENTRAL PALACE 1908 MODELS

COSTING LESS THAN \$1,000

CAR	Price	H.P.	Cylinders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheel-base	W'ght
BRUSH Model 2-A	\$800	12	2	Touring	4	Storage Battery	Cone	Planetary	Side chains	88	1,200
Model 1-B	580	6	1	Piano Box	2	Storage Battery	Cone	Planetary	Side chains	74	900
CAMERON, Model 6	850	10	4	Runabout	2	Storage Battery	Cone	Transmission	Shaft	84	1,000
FORD	800	20	4	Touring	5	Storage Battery		Planetary	Shaft	97	
FORD	600	20	4	Runabout	3	Storage Battery		Planetary	Shaft	97	
HATFIELD, Model D-E	600	12	2	Buggy	2	Storage Battery	Disc	Friction	Side cables	78	900
HOLSMAN, Model 10	750	12	2	Buggy	2	Storage Battery	Disc	Friction	Steel cables	75	940
Model 11	800	12	2	Buggy	4	Storage Battery	Disc	Friction	Steel cables	75	1,055
KIBLINGER, Model A	250	4	1	Buggy	2	Storage Battery	Disc	Planetary	Side chains	65	600
Model B	300	6	1	Buggy	2	Storage Battery	Disc	Planetary	Side chains	65	650
LAMBERT, Model 18	800	18	2	Runabout	3	Storage Battery	Disc	Friction	Single chain	95	1,350
MAXWELL, Model LC	825	12	2	Runabout	2	Storage Battery	Disc	Planetary	Shaft	72	1,500
REO, Model B	650	10	1	Touring	4	Storage Battery	Disc	Planetary	Single chain	78	
RELIABLE DAYTON, Model E	780	15	2	Runabout	2	Storage Battery	External contracting	Progressive	Side chains	84	1,200
Model F	925	15	2	Surrey	4	Storage Battery	External contracting	Progressive	Side chains	98	1,500
SCHACHT, Model H	640	12	2	Buggy	2	Storage Battery	Disc	Friction	Side chains	65	900
Model K	680	12	2	Buggy	2	Storage Battery	Disc	Friction	Side chains	65	900
Model P	800	12	2	Buggy	2	Storage Battery	Disc	Friction	Side chains	65	900

COSTING BETWEEN \$1,000 AND \$1,500

ATLAS, Model R	\$1,400	24	4	Runabout	4	Storage Battery	Disc	Planetary	Shaft	90	1,500
CAMERON, Model 8	1,050	16	4	Runabout	3	Storage Battery	Cone	Shaft	Shaft	98	1,150
CARTERCAR, Model A	1,350	22	2	Touring	5	Storage Battery		Friction	Chain	96	1,800
FORD	1,000	20	4	Cab	5	Storage Battery		Planetary	Shaft	97	1,600
JACKSON, Model C	1,250	20	2	Touring	5	Storage Battery	Disc	Planetary	Chain	96	2,000
LAMBERT, Model S	1,275	24	2	Touring	5	Storage Battery	Disc	Friction	Side chains	94	1,800
MAXWELL, Model NC	1,350	10	2	Runabout	2	Storage Battery	Disc	Progressive	Shaft	90	1,500
Model HC	1,450	10	2	Touring	5	Storage Battery	Disc	Progressive	Shaft	90	1,500
MITCHELL, Model G	1,250	20	4	Runabout	3	Storage Battery	Cone	Progressive	Shaft	92	1,650
Model H	1,000	20	4	Runabout	2	Storage Battery	Cone	Progressive	Shaft	92	1,650
MOLINE, Model H	1,250	18	2	Touring	5	Storage Battery	Disc	Planetary	Chain	92	1,800
OVERLAND, Model 24	1,25	18	4	Runabout	2	Storage Battery	Expanding	Planetary	Shaft	96	1,590
RELIABLE DAYTON, E-special	1,10	15	2	Coupe	2	Storage Battery	External contracting	Progressive	Side chains	84	1,300
REO, Model C	1,20	18	2	Touring	4	Storage Battery	Disc	Planetary	Chain	94	
Model A	1,10	18	2	Touring	5	Storage Battery	Disc	Planetary	Chain	94	

COSTING BETWEEN \$1,500 AND \$1,900

ATLAS, Model D	\$1,900	34	3	Runabout	4	Storage Battery	Cone	Selective	Shaft	106	2,000
COLT	1,500	40	6	Runabout	2	H. T. Magneto	Cone	Selective	Shaft	105	1,800
DRAGON, Roadster	1,850	35	4	Runabout	2	Storage Battery	Cone	Progressive	Shaft	96	1,600
EAGLE, Model O	1,550	20	3	Runabout	2	Storage Battery	Disc	Progressive	Shaft	100	1,750
Model N	1,700	20	3	Fouring	4	Storage Battery	Disc	Progressive	Shaft	100	1,750
Model M	1,900	20	3	Fouring	5	Storage Battery	Disc	Progressive	Shaft	100	1,750
JACKSON, Model D	1,500	20	2	Fouring	5	Storage Battery	Disc	Selective	Shaft	106	2,200
LANE STEAMER, Model 8-2	1,80	20	2	Runabout	2				Chain	97	1,600
MAXWELL, Model D	1,75	24	4	Touring	4	Storage Battery	Disc	Progressive	Shaft	96	2,100
PULLMAN, Model H	1,87	24	4	Touring	5	Storage Battery	Cone	Selective	Shaft	100	1,750
STODDARD-DAYTON, Model 8-B	1,70	18	4	Runabout	4	Storage Battery	Cone	Selective	Shaft	92	1,500
Model HF	1,70	18	4	Coupe	2	Storage Battery	Cone	Selective	Shaft	88	1,500

COSTING BETWEEN \$2,000 AND \$2,500

ATLAS, Model E	2,400	40	4	Touring	5	Storage Battery	Cone	Selective	Shaft	114	2,400
CONTINENTAL, Model A	2,400	20	4	Runabout	3	Storage Battery	Disc	Selective	Shaft	100	2,000
DRAGON TOURING	2,100	24	4	Touring	5	Storage Battery	Cone	Progressive	Shaft	104	1,950
JACKSON, Model E	2,000	35	4	Runabout	4	Storage Battery	Disc	Selective	Shaft	111	2,400
LAMBERT, Model M	2,000	35	4	Touring	5	Storage Battery	Disc	Friction	Shaft	105	1,900
KISSELKAR	2,000	35	4	Touring	7	Storage Battery	Cone	Selective	Shaft	108	2,400
KISSELKAR	2,200	35	4	Limousine	7	Storage Battery	Cone	Selective	Shaft	108	2,800
KLINK—Touring	2,000	30	4	Touring	5	Storage Battery	Cone	Selective	Shaft	110	2,100
LANE STEAMER, Model 8-5	2,000	20	2	Touring	5				Chain	97	2,300
MORA RACY	2,350	24	4	Runabout	3	H. T. Magneto	Cone	Selective	Shaft	98	1,750
MARION, Model 8	2,250	24	4	Roadster	3	H. T. Magneto	Disc	Selective	Shaft	102	1,850
MITCHELL, Model I	2,000	15	4	Touring	5	Storage Battery	Cone	Progressive	Shaft	112	2,505
MOLINE, Model S	2,00	24	4	Touring	5	Storage Battery	Cone	Progressive	Shaft	100	2,050
PREMIER	2,950	24	4	Touring	5	Storage Battery	Disc	Selective	Shaft	108	2,270

COSTING BETWEEN \$2,500 AND \$3,000

CONTINENTAL, Model B	\$2,700	35	4	Runabout	3	Magneto	Disc	Selective	Shaft	110	2,150
CRAWFORD, Model D	2,500	35	4	Runabout	3	Magneto	Disc	Selective	Shaft	112	2,300
Model E	2,050	25	4	Touring	5	Magneto	Disc	Selective	Shaft	106	2,800
DOLSON, Model H	2,500	40	4	Touring	5	Storage Battery	Band	Selective	Shaft	115	2,700
DORRIS, Model C	2,500	30	4	Touring	5	Storage Battery	Disc	Selective	Shaft	106	2,350
EAGLE	2,800	40	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	110	2,400
EAGLE	2,500	40	4	Runabout	3	H. T. Magneto	Disc	Selective	Shaft	100	2,250
FRAYER-MILLER—Phila, R'n'b't	2,500	24	4	Runabout	2	Storage Battery	Cone	Selective	Shaft	100	1,800
Combination	2,500	24	4	Combination	3-4	Storage Battery	Cone	Selective	Shaft	100	2,000
Model B	2,750	24	4	Touring	5	Storage Battery	Internal Expanding	Selective	Shaft	100	2,200
GLIDE, Model G	2,500	36	4	Touring	5	Magneto	Disc	Selective	Shaft	120	2,900
GREAT SMITH	2,500	30	4	Touring	5	Storage Battery	Disc	Selective	Shaft	107	
GROUT	2,500	34	4	Touring	5	Storage Battery	Cone	Progressive	Side chains	115	2,600
JACKSON, Model E	2,500	35	4	Touring	5	Storage Battery	Disc	Selective	Shaft	111	2,450
IMPERIAL	2,250	30	4	Runabout	3	H. T. Magneto	Disc	Selective	Shaft	108	2,400
IMPERIAL	2,050	30	4	Runabout	4	H. T. Magneto	Disc	Selective	Shaft	108	2,525
LAMBERT, Model R	2,500	35	4	Touring	7	Storage Battery	Disc	Friction	Side chains	106	2,700
MARION, Model 6-30	2,500	30	6	Roadster	2	H. T. Magneto	Disc	Selective	Shaft	102	1,900
MORA, Tourer	2,500	24	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	103	1,900
MITCHELL	2,800	35	4	Limousine	5	Storage Battery	Cone	Progressive	Shaft	112	3,000
MOLINE, Model A	2,500	35	4	Touring	5	Storage Battery	Cone	Progressive	Shaft	110	2,650
NAPIER	2,200	20	4	Runabout	2	Storage Battery	Cone	Selective	Shaft	90	2,800
PREMIER	2,650	30	4	Touring	5	L. T. Magneto	Disc	Selective	Shaft	108	
PULLMAN, Model 6-30	2,750	30	6	Runabout	3	Storage Battery	Cone	Selective	Shaft	104	3,400
STODDARD-DAYTON, Model 8-F	2,500	30	4	Touring	5	Storage Battery	Cone	Selective	Shaft	113	2,600
Model 8-K	2,500	30	4	Runabout	3	Storage Battery	Cone	Selective	Shaft	113	2,500
Model 8-N	2,500	18	4	Landalette	5	Storage Battery	Cone	Selective	Shaft	92	2,000
WAYNE	2,500	24	4	Touring	5	Storage Battery	Cone	Selective	Shaft	107	2,400

GRAND CENTRAL PALACE 1908 MODELS

COSTING BETWEEN \$3,000 AND \$3,500

CAR	Price	H. P.	Cyl-inders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheel-base	W'ght
AMERICAN.....	\$3,250	40	4	Touring.....	5	H. T. Magneto...	Cone.....	Progressive.	Shaft.....	106	.....
CONTINENTAL, Model C.....	3,000	35	4	Touring.....	6	Magneto.....	Disc.....	Selective.....	Shaft.....	120	2,500
CRAWFORD, Model C.....	3,150	40	4	Touring.....	5	Magneto.....	Disc.....	Selective.....	Shaft.....	114	2,800
DOLSON, Model F.....	3,250	60	4	Touring.....	7	Storage Battery.	Band.....	Selective.....	Shaft.....	127	3,200
GEARLESS, Model 60.....	3,250	60	4	Runabout.....	3	Magneto.....	Expanding.....	Gearless.....	Shaft.....	126	3,000
GLIDE, Model 45.....	3,000	45	4	Touring.....	5	Magneto.....	Disc.....	Selective.....	Shaft.....	120	3,000
LANE STEAMER, 8-3.....	3,000	30	2	Runabout.....	2	.....	.....	.....	Chain.....	112	2,000
MARMON, Model G.....	3,000	35	4	Touring.....	5	Storage Battery.	Disc.....	Selective.....	Shaft.....	104	.....
MAXWELL, Model M.....	3,000	40	4	Touring.....	5	Storage Battery.	Disc.....	Selective.....	Shaft.....	104	2,750
MOON, Model C.....	3,250	30	4	Roadster.....	3	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	110	2,500
PENNSYLVANIA, Model C.....	3,000	50	4	Touring.....	5	Magneto.....	Cone.....	Selective.....	Shaft.....	114	2,800
PENNSYLVANIA.....	3,000	50	4	Limousine.....	5	Magneto.....	Cone.....	Selective.....	Shaft.....	114	.....
PULLMAN, Model I.....	3,250	40	4	Touring.....	5	Storage Battery.	Cone.....	Selective.....	Shaft.....	118	3,000
Model 4-40.....	3,000	40	4	Runabout.....	3	Storage Battery.	Cone.....	Selective.....	Shaft.....	108	2,200

COSTING BETWEEN \$3,500 AND \$4,500

ACME, Model XVIII.....	\$4,000	30	4	Touring.....	7	H. T. Magneto...	Cone.....	Selective.....	Side chains.	115	3,500
Model XVI.....	3,500	30	4	Touring.....	5	H. T. Magneto...	Cone.....	Selective.....	Side chains.	102	2,750
ALLEN-KINGSTON, Model D.....	3,900	40	4	Runabout.....	4	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	121	3,100
Model C.....	4,000	40	4	Touring.....	7	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	126	3,300
AMERICAN MORS.....	3,500	40	4	Landulette.....	5	L. T. Magneto...	Cone.....	Selective.....	Side chains.	103	3,100
AMERICAN MORS.....	4,000	40	4	Touring.....	7	L. T. Magneto...	Cone.....	Selective.....	Side chains.	120	3,360
AMERICAN MORS.....	4,250	40	6	Touring.....	7	L. T. Magneto...	Cone.....	Selective.....	Shaft.....	127	3,500
AMERICAN SIMPLEX.....	4,000	50	4	Touring.....	7	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	117	2,800
CATER TWO-ENGINE.....	3,500	24-60	8	Touring.....	7	Storage Battery.	Cone.....	Selective.....	Shaft.....	114	3,100
CRAWFORD, Model F.....	3,600	50	4	Touring.....	7	Magneto.....	Disc.....	Selective.....	Shaft.....	118	3,000
CLEVELAND.....	3,500	40	4	Touring.....	7	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	122	.....
FRAYER-MILLER, Model C.....	3,500	50	4	Touring.....	7	H. T. Magneto...	Internal Expanding.	Selective.....	Shaft.....	120	3,000
FRAYER-MILLER.....	4,000	36	6	Touring.....	5	Storage Battery.	Internal Expanding.	Selective.....	Shaft.....	120	2,750
FRONTENAC.....	4,000	40	4	Touring.....	7	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	124	3,300
GAETH, Model XV.....	3,500	35	4	Touring.....	7	L. T. Magneto...	Band.....	Progressive.	Shaft.....	112	2,700
GARFORD, Model A.....	3,500	30	4	Touring.....	5	Storage Battery.	Cone.....	Selective.....	Shaft.....	104	2,750
Model B.....	4,000	40	4	Touring.....	7	Storage Battery.	Cone.....	Selective.....	Shaft.....	114	2,750
GEARLESS.....	4,000	75	6	Touring.....	6	Magneto.....	Expanding.....	Gearless.....	Shaft.....	126	3,450
GEARLESS.....	3,500	60	4	Touring.....	5	Magneto.....	Expanding.....	Gearless.....	Shaft.....	126	3,250
GLIDE, Model H.....	3,500	54	6	Touring.....	5	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	132	4,000
LANE STEAMER, Model 8-7.....	3,500	30	2	Touring.....	7	.....	.....	.....	Chain.....	119	3,500
MOON, Model D.....	3,750	30	4	Touring.....	7	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	121	2,800
MORA, Racetype.....	3,500	42	6	Runabout.....	3	H. T. Magneto...	Cone.....	Selective.....	Shaft.....	105	2,250
Tourer.....	3,600	42	6	Touring.....	5	H. T. Magneto...	Cone.....	Selective.....	Shaft.....	114	2,500
MARMON, Model H.....	3,500	35	4	Touring.....	5	Storage Battery.	Disc.....	Selective.....	Shaft.....	114	.....
Model H.....	3,500	40	4	Touring.....	5	Magneto.....	Disc.....	Selective.....	Shaft.....	114	.....
NATIONAL, Model K.....	3,500	.....	4	Touring.....	7	Magneto.....	Cone.....	Selective.....	Shaft.....	112	.....
Model N.....	3,700	.....	4	Roadster.....	2	Magneto.....	Cone.....	Selective.....	Shaft.....	102	.....
Model R.....	4,200	.....	6	Touring.....	7	Magneto.....	Cone.....	Selective.....	Shaft.....	116	.....
PREMIER.....	3,750	45	6	Touring.....	7	L. T. Magneto...	Disc.....	Selective.....	Shaft.....	124	3,000
PULLMAN, Model J.....	3,750	40	4	Touring.....	7	Storage Battery.	Cone.....	Selective.....	Shaft.....	118	3,200
STODDARD-DAYTON, Model 8-F.....	3,750	30	4	Limousine.....	5	Storage Battery.	Cone.....	Selective.....	Shaft.....	113	3,000

COSTING BETWEEN \$4,500 AND \$5,500

AUSTIN, Model L X-T.....	\$4,500	60	4	Touring.....	7	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	124	3,600
ACME, Model XX.....	4,500	45	6	Touring.....	5	H. T. Magneto...	Cone.....	Selective.....	Side chains.	126	3,500
ALLEN-KINGSTON, Model E.....	5,000	40	4	Limousine.....	5	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	126	.....
CLEVELAND.....	4,500	40	4	Limousine.....	7	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	129	.....
CRAWFORD, Model F.....	4,500	50	4	Limousine.....	7	Magneto.....	Disc.....	Selective.....	Shaft.....	118	3,400
DE LUXE.....	5,000	40	4	Touring.....	7	H. T. Magneto...	Cone.....	Selective.....	Shaft.....	121	.....
ELLSWORTH.....	5,000	40	4	Touring.....	7	H. T. Magneto...	Band.....	Selective.....	Shaft.....	119	.....
FRONTENAC.....	5,000	40	4	Limousine.....	7	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	124	3,600
NATIONAL, Model N.....	4,800	.....	4	Limousine.....	7	Magneto.....	Cone.....	Selective.....	Shaft.....	112	.....
Model T.....	5,000	.....	6	Touring.....	7	Magneto.....	Cone.....	Selective.....	Shaft.....	127	.....
RAINIER, Model D.....	4,500	45	4	Touring.....	7	L. T. Magneto...	Disc.....	Selective.....	Shaft.....	110	2,850
SHAWMUT, Model A.....	4,750	40	4	Roadster.....	3	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	108	2,675
Model B.....	5,000	40	4	Touring.....	5	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	112	3,000
STODDARD-DAYTON, Model 8-G.....	4,500	50	6	Touring.....	5	Magneto.....	Cone.....	Selective.....	Shaft.....	128	3,500
WELCH, Model 4-L.....	4,500	50	4	Touring.....	5	Magneto.....	Individual	Selective.....	Shaft.....	128	3,150

COSTING \$5,500 AND ABOVE

AUSTIN, Model L X-R.....	\$5,500	60	4	Combination.....	4	Magneto.....	Disc.....	Selective.....	Shaft.....	124	3,400
Model L X-L.....	5,500	60	3	Limousine.....	7	Magneto.....	Disc.....	Selective.....	Shaft.....	124	3,800
Model X C-R.....	6,000	90	6	Combination.....	4	Magneto.....	Disc.....	Selective.....	Shaft.....	134	3,600
Model X C-T.....	6,000	90	6	Touring.....	7	Magneto.....	Disc.....	Selective.....	Shaft.....	134	3,800
Model X C-L.....	7,000	90	6	Limousine.....	7	Magneto.....	Disc.....	Selective.....	Shaft.....	134	4,000
ALLEN-KINGSTON, Model F.....	5,500	40	4	Limousine.....	5	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	126	.....
CHADWICK.....	5,500	50	6	Touring.....	7	H. T. Magneto...	Cone.....	Selective.....	Side chains.	124	3,000
NAPIER.....	6,500	60	6	Touring.....	7	H. T. Magneto...	Cone.....	Selective.....	Shaft.....	126	3,400
RAINIER.....	5,500	45	4	Limousine.....	7	L. T. Magneto...	Disc.....	Selective.....	Shaft.....	110	.....
SHAWMUT, Model B.....	5,750	40	4	Tour'g Lim'se.....	7	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	108	.....
Model D.....	6,500	40	4	Limousine.....	7	H. T. Magneto...	Disc.....	Selective.....	Shaft.....	126	.....
WELCH, Model 4-I.....	5,500	50	4	Limousine.....	5	Magneto.....	Individual	Selective.....	Shaft.....	128	3,400
Model 6-L.....	6,000	70	6	Touring.....	5	Magneto.....	Individual	Selective.....	Shaft.....	138	3,450
Model 6-I.....	7,000	70	6	Limousine.....	5	Magneto.....	Individual	Selective.....	Shaft.....	138	3,750

NOTE.—To simplify the table, the multiple disc type of clutch has been designated "disc," this designation being used also for light runabouts having planetary change speed gear with which a single disc is usually employed. On several machines a double ignition system is employed; in such cases "magneto" only is specified.

Where touring and runabout bodies or limousine and landaulet bodies are fitted on the same chassis without change in price, only touring and limousine are given in each case.

COMMERCIAL VEHICLES AT THE GRAND CENTRAL PALACE

COSTING FROM \$800 TO \$6,500

CAR	Price	H.P.	Cyl- in- ders	Body	Ignition	Clutch	Transmission	Drive	Wheel- base	W'ght
BRUSH, Model 2-B	\$800	12	2	Delivery	Storage Battery	Cone	Planetary	Side chains	88	1,300
CARTERCAR, Model C	1,350	22	2	Delivery	Storage Battery	Disc	Planetary	Chain	90	1,900
FRAYER-MILLER	3,000	24	4	Truck	Storage Battery	Cone	Selective	Shaft		
GAETH, Model K	1,500	12	1	Delivery	Storage Battery	Band	Planetary	Side chains	103	2,000
LOGAN, Model S		40	4	3-ton truck	Storage Battery	Disc	Selective	Side chains	120	4,100
Model T		20	4	1½-ton truck	Storage Battery	Ring	Selective	Side chains	06	2,100
Model R		20	4	1,500-lb. truck	Storage Battery	Ring	Selective	Single chain	108	1,700
Model N		8	2	500-lb. truck	Storage Battery	Ring	Selective	Single chain	85	1,350
MANHATTAN	6,500	50	4	22-passenger bus	H. T. Magneto	Cone	Selective	Side chain	168	
MANHATTAN	5,500	50	4	20-passenger bus	H. T. Magneto	Cone	Selective	Side chain	156	
MANHATTAN	5,100	50	4	5-ton truck	H. T. Magneto	Cone	Selective	Side chain	168	
MITCHELL	2,000	20	4	Truck	Storage Battery	Cone	Selective	Worm	108	2,200
RELIABLE DAYTON, Model G	1,975	18	2	Delivery	Storage Battery	Band	Progressive	Side chain	92	1,800
RAPID, Model E-62	1,600	24	2	Truck	Storage Battery	Disc	Planetary	Side chains	90	2,680
Model E-11	1,650	24	2	Delivery	Storage Battery	Disc	Planetary	Side chains	86	
Model E-132	1,800	24	2		Storage Battery	Disc	Planetary	Side chains	90	3,050
Model E-152	2,000	24	2	16-passenger bus	Storage Battery	Disc	Planetary	Side chains	90	
Model 222	2,400	24	2	1-ton truck	Storage Battery	Disc	Planetary	Side chains	90	
RELIANCE, Model G	2,750	30	2	3-ton truck	Storage Battery	Cone	Selective	Side chains	108	3,800
Model H	3,500	45	3	4-ton truck	Storage Battery	Cone	Selective	Side chains	108	3,800
Model K	4,400	60	4	Truck	Magneto	Cone	Progressive	Side chains	136	5,500

NOTE.—To simplify the table, the multiple disc type of clutch has been designated "disc," this designation being used also for light runabouts having planetary change speed gear with which a single disc is usually employed. On several machines a double ignition system is employed; in such cases "magneto" only is specified.

TREND OF MOTOR DESIGN.

(Continued from page 550.)

upon it. As a result, it has become the fashion, with the important difference, however, that it is one difficult to change. Just so long as it is easier to sell cars of this type so much easier just that long will makers work along the line of least resistance.

Both Extremes Reached in Powers.

Where motor powers are concerned, it may be said that these are higher and lower than ever before, a statement that may appear enigmatic at first sight. In other words, makers have reached forth to both extremes. Some have realized that the day of the overpowered car is on the wane and are taking advantage of this knowledge to be first to place on the market a more rational type of vehicle, as well as one that will appeal to a greater class of buyers. Others have continued along the same course that they have been following for the past two or three years, that of making their motors constantly larger, and these examples find their extreme in the numerous six-cylinder models to be unveiled. The latter being in the majority of cases merely a 50 per cent. increase in motor size, without other alterations, and not a special design, it follows that these cars represent a corresponding increase in power.

But it is also true that the four-cylinder types have continued to increase in size so that dimensions of 5-inch bore and stroke, or, in excess of that figure, are far more common than those of 4 inches, though nominally powers are no greater in many instances than they were two or three years ago. Cylinder dimensions and compression have been increased more or less during that time, the first-named to the greatest extent of course, but ratings have not gone up correspondingly. The "30" of a few years ago was frequently not even a good "25," but the "30" of to-day is more often a "50" or better. Increasing other factors has made possible a reduction in speed, so that 800 to 1,000 r. p. m. is now an almost universal standard instead of the 1,000 to 1,200 r. p. m. of a few years ago, though the present-day motors are capable of greater flexibility and will consequently speed up to as high a maximum as their predecessors and with better results.

Current Tendencies in Transmission Practice.

Experience having thus far proven the sliding type of change-speed gear to be able to hold its own despite its disadvantages and the claims of superiority of other systems, its use may be said to be practically universal. There have been further improvements in materials conducing to durability, while the adoption of the selective type of operation has to a very great extent

reduced the chance of damage in use. Other factors that have played a very important part in this field have been the anti-friction bearing and the use of some form of simple interlocking device, preventing shifting before the disengagement of the clutch, as well as obviating the possibility of simultaneously engaging two different speeds or reversing unintentionally.

At present its strongest competitor would appear to be the friction type, which has several representatives among the cars shown at the Palace. One of the chief advocates of this system is the Lambert, and its success on the various types of cars turned out by the makers of this line during several years past would appear to substantiate some of the claims made for it. The Cartercar is another upholder of the friction type of change-speed gear, while quite a proportion of the makers of the popular buggyabout also favor it for reasons that are obvious. It represents the maximum of simplicity as well as being fool-proof and enduring to the greatest degree, so that its development on the light car would appear to be a foregone conclusion. There has been at least one strikingly unusual development where the friction type of change-speed gear is concerned, and that is to be found in the advent of the Gearless four and six-cylinder cars which are equipped with an essential of this type, but which operates on the planetary method of speed-changing, in which respect it bears no resemblance to any other form of friction apparatus as used on the car. In fact, it is little more or less than a friction type of planetary transmission, the idea being extremely cleverly worked out with the minimum of parts, all of which are of substantial size and durable nature.

The question of chain or shaft drive seems to have been finally settled in favor of the latter by tacit consent. Except in the lightest types using a single chain drive, the propeller shaft has been developed to a degree of simplicity and reliability where its use is practically universal on cars of light, medium and heavy types, only the smallest and largest being exceptions to the rule.

Development of the Commercial Vehicle.

Although it was with no unusual heralding or advance blowing of horns that it was brought about, a review of the list of exhibitors suffices to show that there are more commercial vehicles at the present show—and more of the heavy type than have ever been brought together before. For instance, there are the Atlas and Reliance using two-cycle motors, the Rapid, Logan, Manhattan, Mitchell and Frayer-Miller, the first two showing heavy trucks, the Rapid and Manhattan sight-seeing cars, while the others build trucks of varying capacities. The Brush Runabout Company and the Motor Car Company, Inc., list a delivery wagon.

SOME DETAILS OF THE PALACE SHOW CARS

GASOLINE PLEASURE VEHICLES.

ACME: Acme Motor Car Company, Reading, Pa....	Main Floor 39
ALLEN-KINGSTON: Allen-Kingston Motor Car Co., Kingston, N. Y.....	Main Floor 2
AMERICAN: American Motor Car Co., Indianapolis, Ind.....	Main Floor 6
AMERICAN MORRIS: St. Louis Car Co., Auto Dept., St. Louis, Mo.....	Main Floor 10
ATLAS: Atlas Motor Car Co., Springfield, Mass.....	Main Floor 30
AUSTIN: Austin Automobile Co., Grand Rapids, Mich.....	Main Floor 5
BRUSH: Brush Runabout Co., Detroit, Mich.....	1st Gallery 210
CAMERON: Cameron Car Co., Brockton, Mass.....	1st Gallery 223
CARTERCAR: Motor Car Co., Inc., Detroit, Mich.....	Main Floor 7
CARTER TWO-ENGINE CAR: Carter Motor Car Corporation, Washington, D. C.....	1st Gallery 228
CHADWICK: Chadwick Engineering Works, Philadelphia, Pa.....	Main Floor 25
CLEVELAND: Cleveland Motor Car Co., 1659 Broadway, New York.....	Main Floor 47
COLT RUNABOUT: Colt Runabout Co., 1787 Broadway, New York.....	Main Floor 43
CONTINENTAL: Continental Auto Mfg. Co., New Haven, Conn.....	Main Floor 3
CRAWFORD: Crawford Automobile Co., Hagerstown, Md.....	Main Floor 38
DE LUXE: De Luxe Motor Car Co., Detroit, Mich.....	Main Floor 49
DORRIS: Dorris Motor Car Co., St. Louis, Mo.....	Main Floor 23
DRAGON: Dragon Automobile Co., Philadelphia, Pa.....	Main Floor 34
EAGLE: Eagle Motor Car Co., Middletown, Conn.....	Main Floor 50
ELLSWORTH: J. H. Ellsworth, 518 W. Twenty-second street, New York.....	1st Gallery 222
FORD: Ford Motor Co., Detroit, Mich.....	Main Floor 15
FRAYER-MILLER: Oscar Lear Auto Co., Springfield, O.....	Main Floor 51
FRONTENAC: Abendroth & Root Mfg. Co., Newburgh, N. Y.....	Main Floor 24
GAETH: Gaeth Automobile Works, Cleveland, O.....	Main Floor 29
GARFORD: Garford Motor Car Co. of N. Y., 1840 Broadway, New York.....	Main Floor 46
GEARLESS: Gearless Transmission Co., Rochester, N. Y.....	Main Floor 28
GLIDE: Bartholomew Co., Peoria, Ill.....	Main Floor 9
GREAT SMITH: Smith Automobile Co., Topeka, Kan.....	Main Floor 44
GROUT: Grout Brothers, Orange, Mass.....	1st Gallery 229
HATFIELD BUGGYABOUT: Hatfield Motor Vehicle Co., Miamiburg, O.....	1st Gallery 221
HOLSMAN: Holman Automobile Co., 602 Monadnock Bldg., Chicago.....	1st Gallery 226
IMPERIAL: Imperial Motor Car Co., Williamsport, Pa.....	Main Floor 37
JACKSON: Jackson Automobile Co., Jackson, Mich.....	Main Floor 22
KIBLINGER: W. H. Kiblinger Co., Auburn, Ind.....	1st Gallery 214
KISSELKAR: Kissell Motor Car Co., Hartford, Wis.....	Main Floor 41
KLINK: Klink Motor Car Mfg. Co., Danville, N. Y.....	Main Floor 45
LAMBERT: Buckeye Mfg. Co., Anderson, Ind.....	Main Floor 27

LOGAN: Logan Construction Co., Chillicothe, O.....	1st Gallery 208
MARION: Marion Motor Car Co., Indianapolis, Ind.....	Main Floor 31
MARMON: Nurdyke & Marmon Co., Indianapolis, Ind.....	Main Floor 20
MAXWELL: Maxwell-Briscoe Motor Co., Tarrytown, N. Y.....	Main Floor 12
MITCHELL: Mitchell Motor Car Co., Racine, Wis.....	Main Floor 13
MOLINE: Moline Automobile Co., East Moline, Ill.....	Main Floor 19
MOON: Moon Motor Car Co., St. Louis, Mo.....	Main Floor 26
MORA: Mora Motor Car Co., Rochester, N. Y.....	Main Floor 21
NAPIER: Napier M. C. Co. of America, Jamaica Plain, Mass.....	Main Floor 33
NATIONAL: National Motor Vehicle Co., Indianapolis, Ind.....	Main Floor 18
OVERLAND: Overland Automobile Co., Indianapolis, Ind.....	Main Floor 1
PENNSYLVANIA: Pennsylvania Auto Motor Co., Bryn Mawr, Pa.....	Main Floor 4
PREMIER: Premier Motor Mfg. Co., Indianapolis, Ind.....	Main Floor 17
PULLMAN: York Motor Car Co., York, Pa.....	Main Floor 32
RAINIER: Rainier Motor Car Co., B'way, New York.....	Main Floor 48
RELIABLE DAYTON: Reliable Dayton Motor Car Co., Chicago.....	1st Gallery 220
REO: Reo Motor Car Co., Lansing, Mich.....	Main Floor 16
SCHACHT: Schacht Mfg. Co., Cincinnati, O.....	1st Gallery 225
SPEEDWELL: Speedwell Motor Car Co., Dayton, O.....	Main Floor
STODDARD-DAYTON: Dayton Motor Car Co., Dayton, O.....	Main Floor 14
WAYNE: Wayne Automobile Co., Detroit, Mich.....	Main Floor 11
WAYNE: Wayne Works, Richmond, Wayne Co., Ind.....	1st Gallery 224
WELCH: Welch Motor Car Co., Pontiac, Mich.....	Main Floor 36

STEAM PLEASURE VEHICLES.

LANE: Lane Motor Vehicle Co., Poughkeepsie, N. Y.....	Main Floor 40
---	---------------

ELECTRIC PLEASURE VEHICLES.

ANDERSON: Anderson Carriage Co., Detroit, Mich.....	1st Gallery 136
LANSDEN: Lansden Co., Newark, N. J.....	1st Gallery 212

GASOLINE COMMERCIAL VEHICLES.

ATLAS: Atlas Motor Car Co., Springfield, Mass.....	Main Floor 30
CARTERCAR: Motor Car Co., Inc., Detroit, Mich.....	Main Floor 7
FRAYER-MILLER: Oscar Lear Auto Co., Springfield, O.....	Main Floor 51
LOGAN: Logan Construction Co., Chillicothe, O.....	1st Gallery 208
MANHATTAN: Mack Bros. Motor Car Co., Allentown, Pa.....	1st Gallery 206
MITCHELL: Mitchell Motor Car Co., Racine, Wis.....	Main Floor 13
RAPID: Rapid Motor Vehicle Co., Pontiac, Mich.....	1st Gallery 209
RELIANCE: Reliance Motor Car Co., Detroit, Mich.....	1st Gallery 207

ELECTRIC COMMERCIAL VEHICLES.

LANSDEN: Lansden Co., Newark, N. J.....	1st Gallery 212
---	-----------------



ACME.—There will be two Acme cars for 1908, the Acme Motor Car Company, Reading, Pa., having decided to enter the ranks of the six-cylinder advocates. A car of this type, officially known as Type XX, and familiarly as the "Acme Sextuplet," will constitute their new offering. The cylinders measure 4 1-2 by 5 inches and are cast separately, the motor being rated at 45 horsepower at 1,000 r. p. m. Double ignition, with both systems entirely independent of one another, is employed, the Eisemann high-tension magneto having been adopted to fill one of these rôles, while the standard form of accumulator and coil system is used for the other. A four-speed selective change-speed gear is used, running on Hess-Bright ball bearings. The front axle is of Cramp's manganese bronze of I-beam section, and the rear is of nickel-steel of square section.

The other Acme is known as Type XVIII, and is a four-cylinder, 30-horsepower, seven-passenger car, embodying the majority of the features which distinguish the six-cylinder model such as the double ignition with Eisemann magneto, liberal use of ball bearings, and similar commendable features.

Allen-Kingston.—This is a new car claiming Kingston, N. Y., as its home and which made its debut with considerable credit to itself at some of the 24-hour races during the present season. It is made by the Allen-Kingston Motor Car Co., and several types will be marketed, though the same standard chassis will be employed in every case. Model C will be a 40-45-horsepower touring car, with a seating capacity of seven. Its power plant consists of a four-cylinder, vertical, water-cooled engine, closely conforming to well-established engineering standards throughout, as is also true of the remainder of the car, no radical deviations from current practice or ideas of a revolutionary nature being embodied in its design or construction. Ignition is by high-tension magneto with an independent single vibrating coil and set of accumulators acting through a distributor as a standby, or to facilitate starting. The clutch is of three-disk type, with cork inserts in the faces of the friction surfaces. A four-speed selec-

tive type of change-speed gear comprises the next essential of the transmission, while final drive is by shaft. The wheelbase of the touring car is 126 inches and its weight 3,300 pounds.

American.—This car, made by the American Motor Car Company, Indianapolis, Ind., is distinguished, in the special roadster type, by a unique form of suspension which permits of bringing the center of gravity of the car very low, without at the same time impairing its clearance. The latter is something of great importance in touring American roads, and though this car appears to be extremely low owing to its unusual suspension, this essential has been amply provided for. It has been designed solely as a roadster capable of high speed and long endurance, and its seating capacity is limited to two persons, the seats being placed quite well to the rear. Ignition is by high-tension magneto and a cone clutch in connection with a progressive type of sliding gear and shaft drive to a floating rear axle completes the transmission. The wheelbase is 106 inches and its weight is 2,200 pounds, which is unusually low for its power. A 40-horsepower standard touring car completes the line, and with the exception of the special suspension and other features peculiar to the runabout, it is of the same design throughout.

American Mors.—One of the surprises that the St. Louis Car Company, St. Louis, builders of the Mors car under license from the French factory, reveals is a six-cylinder, shaft-driven car which embodies numerous features of merit from an engineering point of view, as well as a number of points of considerable interest to the experienced autoist. This is a seven-passenger car with a 127-inch wheelbase and tips the scales at 3,600 pounds. Three other models will be shown, all of the four-cylinder type, the one to first catch the eye doubtless being the specially designed 14-horsepower town car, which is destined to prove a large factor in the near future. It has a landaulet body seating five, and represents an interesting example of what can be done in the shape of a car built for this service, as nothing that could possibly conduce to its efficiency or the comfort of the passengers has been omitted. The remaining members of the line are a standard 40-horsepower touring car and a 24-horsepower car of the same type, both being seven-passenger cars of the side-chain driven type, as is also the case with the town car, the six-cylinder being the only shaft-driven car listed.

Atlas.—The Atlas Motor Car Company, Springfield, Mass., formerly the Knox Motor Truck Company, is the only concern exhibiting at the show which makes a specialty of turning out both pleasure and commercial vehicles of the two-cycle type. The former was confined to a two-cylinder runabout during the present year, but for the coming season there will be listed a three-cylinder, double folding-seat runabout holding two or four passengers, and in a four-cylinder model in the shape of a five-passenger touring car, the powers being 22, 36, and 46-horsepower respectively. The two new models make their debut at the show and their specifications are of interest. The cylinder dimensions are 4 1-2 by 4 1-2 inches, thermo-syphon cooling is used and high-tension ignition from batteries. The clutch is of the conical type, with a three-speed selective change-speed gear and shaft drive in each case, Hess-Bright ball bearings being used in the gear-set and Timken roller bearings in the wheels. The latter are 34 by 3 1-2 in the case of the smaller car and 34 by 4 inches on the larger. Three quarter elliptic springs are used on the former and semi-elliptic on the latter.

Austin.—As in former years, the Austin as revealed at the show will be distinguished by the high power of the various models staged. The Austin Automobile Company, Grand Rapids, Mich., will this year turn out a new six-cylinder roadster with combination body, permitting its use either as a runabout or as a touring car. They also show a four-cylinder 60-horsepower limousine with detachable top, and a 90-horsepower, six-cylinder touring car. These cars are distinguished by numerous exclusive features of design and construction that have been evolved by their builders, and, having proved unusually successful during the several years that this line has been on the market, have been per-

petuated from season to season in improved and modified form, so that they may well be said to now represent an Austin standard of construction which has been reached by successive stages of improvement as experience has dictated the necessity.

Brush Runabout.—While much has been said and written about this novel little car since the date of its introduction by the Brush Runabout Company, Detroit, Mich., this will be the first occasion of its public exhibition, and it is naturally expected to form a center of attraction, owing to the numerous features of design and construction which characterize it, and which are so different from current standards. Five models are listed, three of them for pleasure use and two for commercial service. Model 1A is a six-horsepower, single-cylinder runabout, with piano box body, seating two people, and Model 1B is the same chassis with a few extras. Model 2A is a two-cylinder touring car rated at 12 horsepower and seating four people, while Model 2B is a delivery wagon on the same chassis, and Model 1C is a package delivery on the single-cylinder chassis. High-tension ignition, with accumulators, cone clutch, planetary change-speed gear, and side-chain drive are characteristics common to all the models. The wheelbase of the single-cylinder chassis is 74 inches and the twin-cylinder 88 inches.

Cameron.—These cars, made by the Cameron Car Company, Brockton, Mass., are distinguished by the use of an air-cooled motor and a special form of rear-axle transmission. Three types are made, known as Models 6, 8, and 9, the first being a two-seated, non-convertible runabout; the second, a larger car of the runabout type with rumble seat, and the third a four-seated surrey on the same chassis as Model 8. The motor is a four-cylinder, air-cooled type, on which the use of two exhaust pipes is taken advantage of for cooling purposes, in addition to the specially cast radiating ribs. The valves are placed directly opposite one another in the side of the cylinder head, and are mechanically operated by rocker arms. The valves are in cages and are readily removable for inspection and repairs. Another notable feature about the Cameron car is the special ball-bearing rear-axle transmission, which is incased in the same housing as the bevel-gear drive and differential as a unit, and is extremely compact and simple.

Cartercar.—"No gears to strip—no clutch to slip," is the slogan of the Motorcar Company, Detroit, Mich., builders of the Cartercar, which is distinguished by the use of a friction type of change-speed gear and transmission combined, and to which this firm has devoted its energies for some time past. Both pleasure cars and commercial vehicles are built, the former in runabout, roadster, and touring types, and the latter principally in the shape of delivery wagons, the chassis being of the same design and construction throughout in both cases. The power plant consists of a twin-cylinder, horizontal-opposed type of motor, placed transversely across the forward part of the frame, and directly behind it, making its location about the center of the chassis, is placed the friction disk, directly attached to an extension of the motor crankshaft. Back of this is the countershaft, carrying the friction wheel and sprocket, from which the single-chain drive to the rear axle is taken.

Carter Two-engine Car.—As their title indicates, the chief feature of these cars is the employment of two motors, which are placed side by side in the same position as the single engine is usually located. They are made with either air or water-cooled motors of equal power, which are so arranged that either may be used separately or both together. This gives the car the rather anomalous rating of 24-60-horsepower. It will be the only eight-cylinder car staged at the show. A touring car type is listed, having either a five or seven-passenger body. The transmission is by cone clutch through a sliding gear of the selective type, with final drive by shaft. The wheelbase is 114 inches and the weight 3,500 pounds, all on. A smaller car with a five-passenger body is also listed. It has a 103-inch wheelbase and weighs 2,400 pounds. These cars are manufactured by the Carter Motor Car Corporation, Washington, D. C., and Detroit, Mich.

Chadwick.—The Chadwick Engineering Works, Philadelphia, Pa., is one of the few firms who will devote its entire attention to the production of a six-cylinder car during the season of 1908. It will probably be the largest car of its kind at the show, the six-cylinder motor measuring 5 by 6 inches and being rated at 75 horsepower, while it is geared in the ratio of 1.9 to 1, so that its 36-inch driving wheels will make one revolution for less than two turns of the motor crankshaft. Every feature of its design and construction reflects the result of long study and experience in automobile building, and it has many to attract the eye and hold the attention of the auto designer as well as the autoist. As its motor turns over at the rate of 1,100 r. p. m. when developing its normal rating, it will have a speed of a little better than a mile a minute. Doubtless the first thing to strike the eye is the dual unit, copper water jacket made to surround each pair of cylinders, which has long been a feature of the Chadwick cars, while another to hold the attention is the ingenious chaincase, though to tell the truth there are so many special features of interest about the car that it would be useless to attempt to enumerate them here.

Cleveland.—In keeping with the policy adopted by so many makers of high-grade cars, the manufacturers of the Cleveland, the Cleveland Motor Car Company, New York, will concentrate their efforts on one chassis for the season of 1908. Its power plant consists of a four-cylinder, vertical, 5 by 5-inch motor, with the cylinders cast in pairs. Ignition is of the high-tension type with a Bosch magneto, an auxiliary system using an independent coil and set of accumulators also being fitted. Lubrication is taken care of by a positive-feed mechanical oiler, self-contained in the motor, while a water-jacketed, 1 1-2-inch Schebler carbureter provides the fuel supply. A Mayo radiator of special shape and a gear-driven pump comprise the cooling system. The transmission consists of a multiple disk clutch and a four-speed selective type of gear-set, final drive being by shaft. In both the latter essentials F. & S. annular ball bearings are employed. The running gear consists of 36 by 4-inch front and 4 1-2-inch rear on the touring car, and 36 by 3 1-2 and 4 on the roadster, the wheelbases being 122 and 110 inches, respectively.

Colt Runabout.—The exhibit of the Colt Runabout Company, Yonkers, N. Y., is of interest in that this concern confines its attention solely to the production of a runabout type of car, whereas in the majority of instances the runabouts listed by other makers are merely bodies of that type mounted on standard touring car chassis, with a few modifications to suit the purpose of the two-seated roadster. The Colt is unusual in other respects as well. It forms one of the numerous contingent of six-cylinder advocates, but is of conservative size, its motor only being rated at 40 horsepower, which, however, is unusually high when it is considered that the complete car, with all on, only tips the scales at 1,800 pounds, making its proportion of power to weight one of the most noticeable at the show. A Bosch high-tension magneto supplies the ignition, while the remaining features of the motor are of exclusive design. The transmission consists of a conical type of clutch, together with a selective form of change-speed gear and shaft drive. The wheelbase is 105 inches and the body fitted is a special racing type.

Continental.—This is a new car from the college town of New Haven, Conn., and though it has gone through its baptism of fire in the chief events of the past season, this will be its first show. It is the work of C. S. Johnston, who lays no claim to originality or to the use of radically different ideas, but takes pride in the fact that it is patterned throughout after the most approved standards of automobile engineering construction. It is being turned out in a model factory established by the Continental Automobile Manufacturing Company, New Haven, Conn., and will be shown in several models. The Model C is a standard, four-cylinder touring car with a 120-inch wheelbase, while Model B is the same chassis with motor further back and equipped with a body of the semi-racing type having three seats. Model D is a four-cylinder, 50-horsepower car along the same standard lines

and with Model E, a 40-horsepower, six-cylinder car, completes the line. A magneto of the company's own special design and make will be fitted as an extra. All the motors are equipped with a special compression relief, making them very easy to start.

Crawford.—Every phase of the demand for high-grade cars at a medium price has been catered to by the Crawford Automobile Company, Hagerstown, Md., in making its plans for the season of 1908, and as a result its line will consist of five models, ranging from 35 to 50 horsepower. Model D is a three-passenger runabout rated at 35 horsepower and having a 112-inch wheelbase, while Model E is the same chassis fitted with a touring body, the wheelbase being 106 inches. Model C is a 40-horsepower touring car seating five, while Model F is a 50-horsepower machine which is listed in both touring and limousine types, and has a capacity of seven passengers in either form. The specifications of all these models are practically uniform where the chassis design and construction is concerned. All are equipped with magneto ignition, multiple disk clutch, selective type of change-speed gear and shaft drive, the wheelbases ranging from 106 inches, in the case of the 35-horsepower touring car, to 118 inches in the Model F 50-horsepower car, while the weights range from 2,300 to 3,400 pounds.

De Luxe.—As has been the case during the past season, the makers of the De Luxe, the De Luxe Motor Car Company, Detroit, Mich., will confine their attention to the production of a high-powered touring car in one model. The power plant of this car is of a special design, having oppositely disposed valves, mechanically operated through walking-beams actuated by a single camshaft. The motor dimensions are 5-inch bore by 5 1-4-inch stroke, and it is designed to produce its rated power output at a moderate normal speed. Dual ignition, comprising two entirely independent systems, using an Eisemann high-tension magneto on one side and a set of coils and accumulators on the other, has been made a feature. The carbureter is an exclusive design. A conical metal-to-metal clutch with cork inserts is fitted with four-speed selective change-speed gear and shaft drive, in combination with a solid one-piece I-beam rear axle. Chrome-nickel steel is employed for making all forgings, and annular ball bearings are used wherever available, no less than 33 ball bearings being employed on the car. The wheelbase is 121 inches and 36 by 4 and 5-inch tires, front and rear, are used.

Dorris.—The exhibit of the Dorris Motor Car Company, of St. Louis, Mo., is one that causes the technical expert as well as the autoist interested in fine design and construction to linger somewhat longer than is usually accorded the average exhibit, for the many novel features of the car's power plant and chassis cannot fail to attract favorable attention. The motor is of the overhead valve type, the valves being actuated by rocker arms and rods of special design, and the whole arrangement being unusually well worked out. The same compactness of design that characterizes the motor and that is at once evident in the lack of superfluous details or amount of metal, is also apparent in every feature of the chassis. A four-cylinder motor is employed, the power being transmitted through a clutch of the multiple disk type and of extremely compact and simple construction, a gear-set of the sliding type with selective operation and a shaft drive completing the remaining essentials of the transmission. The chassis is fitted with either a runabout or touring body, seating three or five.

Dragon.—High proportion of power to weight, which is achieved only by the use of high-grade materials and skilled design and construction, are characteristics of the Dragon car, of which the Dragon Automobile Company, Philadelphia, will list a touring car and a special roadster. This is evident from the fact that the 24-26-horsepower touring car with a 104-inch wheelbase tips the scales at only 1,050 pounds, while the 35-horsepower runabout with its 96-inch wheelbase weighs only 1,600 pounds. A wood body is fitted to the former and special metal body with a capacity of two persons is fitted to the latter. In other respects the chassis specifications of both cars are very similar through-

out. The motor accessories are of a standard high-grade type, and the power plant as a whole is extremely simple, compact, and accessible. The transmission consists of a conical, leather-faced type of clutch, in connection with a sliding pinion type of change-speed gear using progressive operation, final drive being by shaft.

Eagle.—This car is of interest in that its power plant reveals the further possibilities of the internal combustion motor that have yet to be developed. Its power plant consists of a three-cylinder compound gasoline motor, two of which are high pressure and the third low pressure, this last being placed between the other two. Each of the high-pressure cylinders exhausts into the intermediate or low-pressure, the dimensions of which are about twice those of the high-pressure cylinders, instead of being permitted to escape into a muffler or the air, as is the common practice. In this large cylinder the pressure of the exhaust gases, which in the average motor are allowed to escape while still holding considerable energy, is further expanded until a point but little above that of atmospheric pressure is reached, so that when the burnt charge is finally exhausted from the low-pressure cylinder it is no longer necessary to employ a muffler. It is manufactured by the Eagle Motor Car Company, Middletown, Conn.

Ellsworth.—This is an entirely new comer which will make its debut in chassis form at the Palace show. It has been designed throughout by Thomas J. Fay, who has incorporated in it many features of merit, learned as the result of experience in building and repairing the best-known cars of both American and foreign makes, during the past several years. It is being built by J. M. Ellsworth, 520-522 West Twenty-second street, New York City, and has been christened the "chrome-nickel-steel car," as that material enters almost entirely into its make-up. It might have been named ball-bearing with equal justice, as anti-friction bearings of this type have been employed wherever possible. But it is not so much these features as those of the design of the various parts and the fine points involved in their method of construction that will be of chief interest to the engineering fraternity, as this is something of which Mr. Fay has made a special study, carefully avoiding those errors of machine-shop practice common in the building of other machinery, and which have been found so dangerous when transplanted to automobile making.

Ford.—In accordance with the Ford policy of keeping a good thing dark until it is ready not alone to be announced to all the world, but to be marketed as called for, the Ford exhibit does not display any of the novelties that the makers of this popular car have up their sleeves for the coming year. Their showing is confined to chassis of the present year's models, with some improvements in body design that will be current on this make next season. The most prominent of these is a taxicab on the runabout chassis. But it is known at the present writing that all the Ford 1907 models will be continued, and an addition of three or four new members made to the family. Also that the plans of this house looking to production on a vast scale will be further carried into practice during the coming year, as materials are being contracted for and arrangements made to produce no less than 25,000 Fords of all types in 1908. Just what the characteristics of these promised new models will be is something that has been kept as dark as a Japanese plan of campaign, and it will continue to be kept under cover until the makers see fit to announce it publicly. This concerns chassis details alone and will not be forthcoming until later.

Frayer-Miller.—This car will be shown in three distinct types of chassis, all equipped with motors of the special air-cooled type that has been evolved and developed by the Oscar Lear Automobile Company, Springfield, O. The smallest will be of 24 horsepower and will be made in three types, the first being known as the Frayer-Miller "Philadelphia" car, although the signification of this title appears somewhat ambiguous. It is a two-passenger runabout. As a touring car it will have a seating capacity of five, and instead of the cone clutch used on the runabout, it is equipped with an internal-expanding type. Between

these two is a runabout combination car having a seating capacity of two, three, or four passengers, at will. All three models have a 100-inch wheelbase and shaft drive, but the first is fitted with a three-speed change-speed gear, while the other two are provided with four forward speeds. The other members of the line are the six-cylinder, 36-horsepower touring car and the 56-horsepower, four-cylinder touring car, this last-named machine being the only one to be fitted with magneto ignition.

Frontenac.—The builders of the Frontenac, the Abendroth & Root Manufacturing Company, Newburgh, N. Y., while numbered among those who will exhibit a center of attraction for the auto-buying public in the shape of a six-cylinder model, will devote the greater part of their attention to their four-cylinder model, which is the result of three years' study and experiment, having first made its appearance last year and but a limited number being built. The designer is finally satisfied that there is absolutely nothing left to be desired where either the design or construction of the car is concerned, and they will be turned out in numbers during the coming season. The motor is of the standard, four-cycle, four-cylinder type, measuring 4.3-4 inches bore by 5 inches stroke, and is rated at 40-45 horsepower. The clutch is of the multiple disk type, self-contained in the flywheel and consisting of alternate plates of malleable iron and bronze, the former of which are provided with cork inserts. A three-speed gear-set is fitted, operated on the selective plan, and final drive is by shaft. Tire equipment is 4-inch front and 4 1-2-inch rear, on 34-inch wheels, the wheelbase being 124 inches.

Gaeth.—The Gaeth Automobile Company, Cleveland, O., is one of the comparatively small number of firms that are showing both pleasure and commercial vehicles in their exhibit. The former consists of four-cylinder, 35-40-horsepower standard type of touring car, with a seven-passenger tulip type of body. This car is distinguished by several features of design and construction to be found only in scattering instances in American practice, such as the use of the low-tension make-and-break type of ignition, constricting band clutch, and the like. The change-speed gear is of the sliding-gear type, with progressive method of shifting. Final drive is by shaft, and the car's wheelbase is 112 inches. This car is officially known as Type XV., while the commercial vehicle is known as Type K. It is equipped with a single-cylinder, 12-15-horsepower motor, placed horizontally under the body, and represents a form of construction which has been developed by this firm for several years past. It is fitted with a planetary type of change-speed gear and double side-chain drive.

Garford.—Probably the most numerous line of cars to be staged at the show is that of the Garford Manufacturing Company, Elyria, O., whose product is marketed through the Garford Motor Car Company of New York, the latter's headquarters being at 1540-1542 Broadway, New York City. While these cars are new to the public under this name, their makers are doubtless the largest manufacturers of parts in the country, and as such have been supplying many firms who did assembling for several years past. The line comprises a 30-horsepower touring car and roadster, 40-horsepower ditto, a 30-horsepower limousine and landaulet, and a 40-horsepower limousine, known as Model A or B, according to the power of the motor. Both chassis are characterized by those features of design and construction with which the product of this concern has long been identified, chief among which are the low-tension type of ignition, cone clutch and shaft drive, a progressive type of change-speed gear being employed on the 30-horsepower car and selective type on the larger car.

Gearless.—It is safe to say that there will be few exhibits in the entire show that will be of such absorbing interest to the engineer and autoist alike as that of the Gearless Transmission Company, Rochester, N. Y. This firm is not alone placing on the market a six-cylinder, two-cycle motor—the first of its kind ever placed on an automobile—but as its name indicates, has devised a form of change-speed gear that is minus the chief distinguishing characteristic of this part of the car—that is, the gears or pinions. It is also marketing a four-cylinder, two-cycle car, and as such,

represents a notable addition to the list of manufacturers who are devoting their attention to this type of motor. The change-speed gear, which is naturally of greatest interest, is essentially of the planetary type of operation, but depends upon the friction of the engaging surfaces rather than teeth, to transmit the power. The six-cylinder motor is rated at 75 horsepower and the four-cylinder at 60 horsepower, both being shown in touring and runabout types, the latter being known as the Gearless Greyhound.

Glide.—Early in the present season the Bartholomew Company, Peoria, Ill., decided to cast its lot with the advocates of the six-cylinder type, and its efforts in this direction will be revealed for the first time at the show. The newcomer is known as Model H, and is a 60-horsepower car of seven-passenger capacity. Its weight is 4,000 pounds and it has a 132-inch wheelbase, its remaining features being similar to those which have long been adhered to by the builders of the Glide in the design and construction of their cars. The other members of the line are the Model G and the Glide 45, the first-named being a 40-horsepower, five-passenger car, and the second being a 50-horsepower machine of the same capacity, although this may be easily increased to seven in either case. The ignition on the Model G is by means of coils and accumulators, dual ignition, using a high-tension magneto for general service, being installed on the two larger models. A selective type of change-speed gear is employed on all three and all are shaft-driven, the two smaller cars having a 120-inch wheelbase.

Great Smith.—These cars claim Topeka, Kan., as their home and the Smith Automobile Company, of that city, as their makers, though the latter's product is now distributed entirely through the Smith Motor Car Company, also of Topeka, Kan. A touring car and roadster are listed, the chassis being equipped with a 4 1-2 by 5-inch, four-cylinder, water-cooled, vertical motor, nominally rated at 24 horsepower, though actually developing almost twice that, or 45 horsepower. The design throughout is original in many ways, though conforming closely to the highest standard practice, and a number of the accessories of the power plant are of exclusive manufacture, such as the Smith carbureter and the Smith vertical tubular radiator. The clutch is the Stafford patent, multiple disk, the gear-set being of the three-speed sliding type, operating with a single lever, which automatically disengages the clutch, shifts the gear and re-engages the clutch without recourse to the pedal. The wheelbase is 110 inches and 36 by 4-inch tires are used. Either as a touring car or roadster, the list price is \$2,650.

Grout.—For the coming season Grout Brothers Automobile Company, Orange, Mass., will devote their entire attention to the production of a 35-horsepower, four-cylinder chassis which will be listed both as a five-passenger touring car and as a three-seated roadster. The chassis specifications are, with few exceptions in the shape of detailed improvements here and there, practically the same as those of this year's car. The motor-cylinders are cast in pairs, high-tension ignition, using a standard four-unit coil and set of accumulators, automatic lubrication and carburetion, gear-driven circulating pump, and other features of motor design and construction have all been continued with little alteration. The clutch is of the conical type, while the gear-set is sliding with progressive changing, final drive being by double side-chains. The weight of the touring car is 2,600 pounds all on, and that of the roadster 2,350 pounds, both cars listing uniformly at \$2,500 with the usual equipment.

Hatfield Buggyabout.—"An automobile without an expense account" is the characterization given the Hatfield buggyabout by its makers, the Hatfield Motor Vehicle Company, Miamisburg, O., and a review of the simplicity of its specifications would seem to bear this out fully. To quote further, it is "gearless and clutchless." Its power plant consists of a two-cylinder, opposed, air-cooled motor, which is mounted well to the rear, thus concentrating the weight over the drivers. It is placed transversely with the flywheel facing forward, the latter being utilized as a member of the friction transmission, the remaining essentials of

this consisting of a substantial countershaft, on the central portion of which there is a movable friction wheel, arranged to be pressed into contact with the friction facing on the flywheel, while on its ends it carries sprockets for the double-chain drive to the rear wheels. These sprockets are of the differentially-acting reverse ratchet type; they are extremely simple and positively are exclusive on this car. Another special feature is a patented shock absorber, which is part of the regular equipment of the car.

Holsman.—As the predecessor of all the buggyabouts, the Holsman can look down upon the many that have since sprung into existence, as it has now been manufactured continuously over a period of seven years, and there are hundreds of this make of cars on the road. The makers—the Holsman Automobile Company, Chicago—show two types, namely, a runabout and a surrey, both of which, however, are built on the same chassis. The motor is of the twin-cylinder, horizontal, air-cooled type, placed beneath the body, and is somewhat anomalously rated as having an output of 12.4-5 horsepower, by the makers. Jump-spark ignition is employed, using dry cells, and both the lubrication and fuel supply are automatic. The clutch is of a special type devised by this house, as is also true of the transmission, which is by means of steel cables running from sprockets on a countershaft to the rear wheels, the tension on these cables being adjustable by means of a hand side lever, serving to move the countershaft backward and forward, the reverse also being obtained in this manner. The wheelbase in both models is 75 inches and the weight of the runabout is 940 pounds and that of the surrey 1,050 pounds. The running gear is of the high-wheeled type, using solid rubber tires.

Imperial.—Under this title a new car which hails from western Pennsylvania makes its debut at the present show. It is the product of the Imperial Motor Car Company, Williamsport, Pa., and though 1908 marks the second year of its career, the coming season will be the first in which it will be turned out in numbers. It has a 4 1-2 by 5 1-4-inch four-cylinder motor, conservatively rated at 35 horsepower, the design and construction of which closely follow the highest standard practice in every respect. The clutch is of the metal-to-metal, floating ring type, equipped with cork inserts, the second member of the transmission consisting of a sliding type of change-speed gear providing three forward speeds and operating on the selective plan. An I-beam, forged front axle is employed, with a full floating type rear. Dual ignition is employed, using an Eisemann high-tension magneto on the running side, while lubrication is of the circulating type, using a reservoir in the crankcase. The wheelbase is 108 inches and the tire equipment 36 by 3 1-2 all round.

Jackson.—As during past seasons, the Jackson line for 1908 will comprise a number of types, ranging from the low-powered, two-cylinder car which made such a name for itself in this year's contests, up to a 35-horsepower touring car. They are listed as Jackson Models C, D, and E, and the makers, the Jackson Automobile Company, Jackson, Mich., have made plans to greatly increase their output for the coming year. Model C is a 20-24-horsepower, two-cylinder car, with a seating capacity of five. It has a multiple disk clutch, planetary type of change-speed gear, and single-chain drive. The wheelbase is 96 inches and it tips the scales at 2,000 pounds. Model D is of the same power and the same type of motor, but is fitted with a sliding type of change-speed gear, using the selective method of operation, and has a final shaft-drive. Its wheelbase is 106 inches and it weighs 200 pounds more. Model E is a standard type of four-cylinder car rated at 35 horsepower, and is made either with a five-passenger touring body or a runabout body seating three or four. The wheelbase is 111 inches and the weight 2,450 and 2,400 pounds.

Kiblinger.—This is without doubt the lowest-priced car exhibited in the show, as the models listed by the W. H. Kiblinger Company, Auburn, Ind., range from \$250 to \$500. They are of the popular buggyabout type, and no less than six models are listed. The motor is of the horizontal, double-opposed type, and is conservatively rated at 8-10 horsepower. It runs quietly and has an abundance of power, giving the car a speed range of from

4 to 25 miles an hour, with good hill-climbing capacity, while some idea of its economy in operation may be gained from the fact that the makers claim it will cover 35 miles on a gallon of gasoline. The smaller types, such as Models A and B, are fitted with single-cylinder motors of 4 and 6 horsepower. Ignition is of the high-tension type, using accumulators as the source of current. A disk clutch and planetary form of change-speed gear are employed, with final drive by side chains. The wheelbase is 65 inches, and the weights range from 600 pounds upward, according to the model.

Kisselkar.—This is a car from the West which makes its first appearance in the East at this show. It is made in Hartford, Wis., by the Kissel Motor Car Company, and was only brought out during the past season. Three models are listed, all of them being placed on a 35-40-horsepower, four-cylinder chassis. The mainstay of the line, of course, is the touring car, which is fitted with five to seven-passenger body. Ignition is of the high-tension type, using both accumulators and dry cells, while the motor accessories throughout are of the types favored by standard practice, and are of high-grade construction, although the cars are built to list at a low price, considering their size and equipment. A conical type of clutch is fitted in connection with a sliding type of change-speed gear, operating on the selective plan, final drive being by shaft and bevel gear to a rear live axle. The roadster is fitted with a specially designed three-seated body, and its specifications are much the same as those of the touring car, which is also true of the limousine. The wheelbase in each case is 107 inches, and the weights range from 2,100 to 2,800 pounds. Both roadster and touring car list at \$2,000, and the latter at \$2,200 with full equipment, including top and glass front.

Klink.—Dansville, N. Y., is the home of the new Klink car, and it is the boast of its makers that there is no more strenuous testing ground to be found anywhere in this country than is afforded by the hilly country of up-State New York that is to be found around Dansville, and on which all the Klink cars undergo their final try-out. The motor is of the standard four-cylinder, vertical type rated at 30 horsepower, and the touring car is fitted with a five-passenger body of the King of the Belgians type. Ignition is of the high-tension type, using the standard form of unit dash coils with accumulators as the source of current supply. A conical type of clutch is fitted, together with a selective form of sliding gear, providing three forward speeds and reverse, final drive being by bevel gear and shaft. The wheelbase is 110 inches and the weight of the touring car 2,100 pounds. The runabout has a seating capacity of four passengers, as the rumble accommodates two. Other details are the same, including the wheelbase, while the weight is 1,900 pounds.

Lambert.—As exponents of the friction type of power transmission, the makers of the Lambert cars, the Buckeye Manufacturing Company, Anderson, Ind., have developed this system with unusual success, and their consistent adherence to it ever since they entered the automobile industry, is ample evidence of their faith in its superiority as well as what they have been able to accomplish with it, as both their heavy commercial vehicles as well as their pleasure cars are fitted in this manner. Four types of pleasure cars are listed for the coming season and all will be seen at the show. They are, in the order of their importance, the Lambert "18," a two-cylinder, 18-horsepower car of the single-chain driven type, seating three people; the Lambert S, also a two-cylinder car of 24 horsepower, with double-chain drive, seating five people, and the Lambert Models R and M, both of which are 35-40 horsepower, seven and five-passenger touring cars of the standard type. Model R is side-chain driven and Model M has a shaft drive, the wheelbases being 106 and 105 inches, respectively.

Logan.—Interest in the Logan line will be divided between pleasure and commercial vehicles, as the Logan Construction Company, Chillicothe, O., has long devoted a considerable part of its attention to the latter, with no little success. The Logan Blue-Streak semi-racer met with an unusually favorable reception during the past year, and on more than one occasion was given an

opportunity to show what it could do in the way of speed and endurance over the worse than indifferent roads of the Middle West. In fact, so successful has this model proved itself that the makers have added a somewhat similar car of 20-24 horsepower, designed especially for the use of professional men, physicians, and the like. Its power plant consists of a four-cylinder, air-cooled motor, sliding gear transmission and shaft drive, while its features in the main are those of the Blue-Streak. All on, it tips the scales at only 1,587 pounds and is intended to be an easy car on tires. One of the chief models of the Logan truck line for 1908 will be a three-ton vehicle designed in accordance with the standards evolved by this firm in its several years' experience in the commercial line.

Marion.—In the Marion, made by the Marion Motor Car Company, Indianapolis, Ind., is to be found another of the numerous advocates of the six-cylinder type. Its representative in this field will be known as the Marion "Six-Thirty," which is expressive of its type of engine as well as its power. It is shown with a two-seated roadster body and has dual ignition, using a high-tension magneto on the running side with accumulators and coils in reserve. The clutch is of the multiple disk type and the change-speed gear sliding, final drive being by bevel gear and shaft to a live rear axle. The wheelbase is 102 inches and the weight, all on, 1,900 pounds. The other car, known as Marion Model 8, is fitted with a roadster body, but is capable of carrying two, three, or four passengers. It is equipped with a standard, vertical, four-cylinder, water-cooled motor, conservatively rated at 24-horsepower, and, with the exception of not being fitted with a magneto, its specifications are very similar to those of the six-cylinder roadster, the wheelbase being the same, with the weight 50 pounds less.

Marmon.—The features characteristic and prominent heretofore in Marmon construction, viz.: the 90-degree air-cooled motor, Marmon system of automatic force-feed lubrication through the hollow chankshaft, and the double three-point suspension in which the power-plant is on one frame and the body on another, each having three-point suspension, have all been retained in the line put out by the Nordyke & Marmon Company, Indianapolis, Ind., for the season of 1908. There are two touring cars known as Models G and H, the former being a five-passenger car of 104-inch wheelbase and 34 by 4-1-2-inch tires on quick detachable rims, some of its other features being a multiple-disk clutch, selective type of sliding-gear transmission, shaft drive and roller-bearing steering column. Model H is also a five-passenger car, but has sufficient room in the tonneau for two extra seats. Its wheelbase is 114 inches and it has the same tire equipment. A radical change has been made in the motor by casting the heads separately, this construction having many advantages. This firm will also list a water-cooled car.

Maxwell.—Quite in keeping with the ambitious plans the Maxwell-Briscoe Motor Company, Tarrytown, N. Y., has been making during the past season for its 1908 product, it now uncovers at the show one of the biggest things to be found there in the shape of a four-cylinder car of standard design and construction. This is a new 26-horsepower four-cylinder model, built along the same lines as the car that distinguished itself so ably in the A. A. A. tour last summer. It is listed at \$1,750 and has the same type of unit power-plant and transmission that have always been identified with the Maxwell design. The gear-set is of the sliding type, providing three forward speeds, and operates on the progressive style, an efficient interlocking device preventing any damage to the gears. Final drive is by propeller shaft, the Maxwell type of rear-axle driving unit being employed with its tubular steel housing. The other members of the line are the Model LC, 1-14-horsepower runabout, the 16-20-horsepower five-passenger touring car with double-opposed motor, and the Model M, 40-horsepower four-cylinder touring car, which is the highest-powered Maxwell representative.

Mitchell.—There will be no less than five Mitchells for 1908, including the Mitchell truck, which has proved so success-

ful during the past two years. In short, the Mitchell Motor Car Company, Racine, Wis., will market a 20-horsepower four-cylinder tourabout, known as Model G, with a three-seated body; a 20-horsepower two-seated runabout, known as Model H, and a 35-horsepower four-cylinder touring car with a five-seated body, known as Model I. This last car will also be made as a limousine. The wheelbase of the two smaller cars is 92 inches and that of the larger ones 112 inches, while the weights are 1,650, 2,500, and 3,000 pounds, respectively. The chassis specifications of all four are similar, high-tension ignition being used, cone clutch, sliding gear with progressive operation, and shaft drive, while the details of the commercial car are the same as those of the 20-horsepower chassis, the body being of either the open or enclosed type and fitted to order. The pleasure cars are equipped with a bevel gear drive, while the commercial car is fitted with a special form of worm-drive evolved by this firm.

Moline.—As has been its policy in the past, the Moline Automobile Company, East Moline, Ill., will continue to cater to a wide range of auto buyers by showing three different models. The smallest of these is the two-cylinder 18-horsepower Model H, Moline, which has proved so successful that scarcely any change has been found necessary to make it fulfill the rôle for which its manufacturers designed it—that of supplying the needs of the autoist who wishes a light, medium-powered car of low first cost and reasonable upkeep expense. The other Moline cars are the Model A and Model S. The former is equipped with a 4 1-2 by 5-inch bore and stroke, four-cylinder motor rated at 35-horsepower, while the latter—the smaller of the two—has a 3 7-8 by 4 1-2-inch motor conservatively rated at 24 horsepower. This car has a 100-inch wheelbase and is equipped with 32 by 3 1-2-inch tires, while the larger car has a 110-inch wheelbase and its rolling gear is shod with 34 by 4-inch tires all round. A three-speed sliding gear is employed on both, together with shaft drive.

Moon.—A new addition to the Moon line this year consists of a seven-passenger car having a 121-inch wheelbase, and equipped with 36 by 3 1-2 and 36 by 4 1-2 tires front and rear, the quick detachable type being specified on this as well as on the other model, which is a five-passenger car having 110-inch wheelbase and listed either with touring or roadster body. The motor is of the same design as that used in 1907, having the valves in the head, the chief difference in the power-plant consisting of the adoption of the Eisemann high-tension magneto. Both chassis will be equipped with selective type of sliding change speed gear, giving four speeds and reverse, the smaller cars being fitted with 34 by 3 1-2-inch tires front and 34 by 4 1-2-inch rear. The same multiple disk clutch and the same honeycomb type of cooler which proved so efficient on the present year's model have both been retained without change. All the timing gears on the motor as well as the pinions driving the magneto and circulating pump have been enclosed in an oil-tight and dust-proof housing.

Mora.—As the shining light of the Mora line, made by the Mora Motor Car Company, Newark, N. Y., there is a brand-new six-cylinder model which is unveiled for the benefit of the show visitors, as its specifications had not been made public heretofore. The cylinders are of the same size and type as the fours, but the crankshaft is mounted on annular ball bearings, this also being true of the camshaft. The selective type of change speed gear is also similarly equipped, while the front axle is of the I-beam type and the rear axle of the full floating type. The four-cylinder cars are of the same general type and construction as during the present season, with the addition of a number of detailed improvements. The motor is still built with marine type bearings, but malleable iron boxes and nickel habbitt bearings have been substituted for the former bronze boxes. The timer is now placed vertically and located forward instead of at the side, while the carbureter has been shifted over to the left-hand side. The lines of the body of the Mora-Tourer have been slightly changed, but the general dimensions are the same.

Napier.—Although the English-built Napier is now confined to a six-cylinder model, its American counterpart is exhibited in a four and a six. The former is a small car of 20-horsepower and is fitted as a runabout, with a seating capacity of two, and is a type of car that the Napier Motor Car Company of America, Boston, Mass., has always devoted its attention to. It has cone type of clutch, with selective change speed gear and shaft drive, a 90-inch wheelbase, and weighs 1,800 pounds. The six-cylinder car is rated as 60-75-horsepower and is fitted with a seven-passenger touring body. It has high-tension magneto ignition and in other respects it is similar in design and construction, not only to the smaller car but to the well-defined characteristics of Napier construction that have long been distinguishing features of this make of car. The six-cylinder model has a 126-inch wheelbase and weighs 3,400 pounds. The finish is also that made familiar by these cars in the past.

National.—Having already served in its initiation in the building of six-cylinder models, the National Motor Vehicle Company, Indianapolis, Ind., will go in stronger for this type in 1908 than previously, and accordingly shows six-cylinder cars in two sizes. The smaller car of this type is known as Model R and is equipped with 4 1-2 by 4 3-4-inch engine with twin-cast cylinders which is a model of compactness, as it has been the designer's object to keep the wheelbase down as much as possible to make the car handle easier, this dimension being 116 inches. Four large Hess-Bright bearings are used on the crankshafts, with similar bearings on the camshafts, extra large nickel-steel valves being employed to reduce the lift to a minimum, so that the motor as a whole has been made as quiet-running as possible. The large six-cylinder car has a 5 by 5-inch engine, and a four-cylinder type is also put out with the same size engine, while a smaller four has a 4 1-2 by 4 3-4 motor, making four distinctive models in all which will be listed by the National factory for 1908. Probably the most striking change where the casual observer is concerned will be the option offered by the makers of either a rectangular radiator, or the circular type that has been a distinguishing characteristic of the National cars ever since the latter have been on the market.

Overland.—This is a new car which is shown in the East for the first time at the Palace Show, and is made by the Overland Automobile Company, Indianapolis, Ind. The firm will devote its attention chiefly to the production of runabouts which will be fitted with an 18-22-horsepower four-cylinder motor, an expanding ring clutch, planetary type of change speed gear and a bevel gear and shaft drive to the live rear axle. The wheelbase is 96 inches and the weight, all on, 1,590 pounds, giving the car an excellent proportion of power to weight. High-tension ignition is employed, and the remaining motor accessories are of the best standard type favored by up-to-date practice. A two-passenger special runabout type of body is fitted. The car lists at \$1,250 in complete running order and with the usual equipment of lamps, horn, tools, etc.

Pennsylvania.—The Pennsylvania "50," officially known as the Pennsylvania Type C, will be the 1908 model of this firm of builders, the Pennsylvania Motor Car Company, Bryn Mawr, Pa. It is a car of numerous distinctive features, the motor being of the overhead valve type, but with the valves oppositely disposed and independently operated by two separate camshafts. The valves with their housings, springs, and other small parts are made in the shape of an easily removable unit and their withdrawal from the cylinder head exposes practically the entire interior of the combustion, thus permitting access to the latter for cleaning without going through the tedious process of dismantling the entire motor. The crankshaft is also worthy of note. It is a hollow drop-forging supported on liberal-sized die-cast bearings and it is employed to facilitate lubrication, which is taken care of by a Kinwood pressure feed oiler. The clutch is of the conical type of improved design, while the gear-set is located on the rear axle, this essential and the bevel drive and differential all being incorporated in a unit.

Pullman.—The makers of the York Pullman cars, more commonly known by the latter half of their designation, are numbered among those who believe in catering to as wide a range of buyers and taste as possible, and, in consequence, their line for 1908 will comprise no less than four models. As a matter of fact, the York Motor Car Company, York, Pa., is planning to market no less than five models during 1908, of which three will be distinctive types. These will be the Models I and J touring cars, a low-powered touring car, the details of which are not yet ready to make public, and the models 4-40 and 6-30 runabouts, the last-named being a six-cylinder car. The standard followed throughout is embodied in the construction of the Model I, five-passenger, 40-horsepower touring car, with its motor having independently cast cylinders, special type of water-jacketing and cylinder coupling and simplified water-circulation piping. The valves are oppositely disposed and mechanically operated, while the crankshaft is offset from the cylinder centers. Ignition is through a single coil, and combined timer and distributor and lubrication are taken care of by a six-feed oiler.

Premier.—Another addition to the list of converts to the six-cylinder idea is the Premier Manufacturing Company, Indianapolis, Ind., and, in consequence, their line for 1908 numbers a car of this type. This company's experiments with six-cylinder motors dates back to two years ago, their first trials being made with a 4 1-4 by 4 1-2-inch motor, cylinders paired, and with a triple Y manifold for the intake. The results obtained were very satisfactory, and the design as modified by experience and study in the interim is now making its debut at the show. The chief departure from the standards formerly adhered to by this firm, is the adoption of the Bosch low-tension magneto, a second system of the high-tension type using a single coil with distributor and accumulators as current supply also being installed. The low-tension igniters are driven from the intake camshaft by spiral gears and are advanced by moving the camshaft longitudinally. A departure is also to be noted in the use of a pressed steel oil pan under the crankcase in place of aluminum, as well as in the use of compression grease cups on the spring shackles, beside which the car has numerous other features of merit.

Rainier.—Except for the increase in the power which has been made to comply with the current demand, the single model which will be turned out by the Rainier Motor Car Company, at its new factory in Saginaw, Mich., will be practically identical with its predecessors, and the cars of this model will be marketed under the company's established policy of guaranteeing them free of repairs for a year. The car will be known as Model D and will be a 45-50 horsepower machine weighing 2800 pounds. Simplicity and accessibility throughout have been the aims of designer James G. Heaslett, who has been responsible for the Rainier for the past three years and who is now chief engineer at the new plant. The magneto can be removed and replaced in a few moments without disturbing the ignition timing, the clutch can be removed by taking out six cap screws and removing the pin from the universal, and the same is true of practically every part of the car. Drop forgings are used exclusively and all nickel-steel parts are specially heat-treated.

Reliable Dayton.—This is one of the popular type of buggyabouts for which the Middle West is becoming justly famous and which are exhibited for the first time in the East in any numbers. These cars are made by the Reliable Dayton Motor Car Company, 15-21 N. May street, Chicago, and are shown in two types, known as Models E and F, the former being a buggy and the latter a surrey. The power-plant consists of a horizontal, double-opposed type of motor, water-cooled, and with the jackets cast integral. The engine is placed under a sloping bonnet forward, with the radiator dropped from the forward cross-piece of the frame, a gear-driven pump being employed for circulation. The change-speed gear is of the sliding type, providing two speeds forward and reverse, final drive being by side chain of the Diamond roller pattern with Timken roller-bearing axles. The wheels are 40 inches front and 44 inches rear, shod with

1 1-4-inch Firestone side-wire solid tires. The wheelbase is 84 inches and the steering by T-bar side lever, the steering column also carrying the control and gear-shifting lever.

Reo.—Model C, 18-20 horsepower roadster, forms the star attraction of the Reo line for 1908, and on it the makers, the Reo Motor Car Company, Lansing, Mich., have spared no pains to make it represent the last word in the design and construction of a two-cylinder car to sell at a popular price. It is on practically the same chassis as the touring car of the same power which has been the leader of the Reo line since the latter has been on the market, and is fitted with an attractive type of runabout body with third seat on the tool box in the rear. In spite of this, it is listed at \$1,000 and is one of the biggest things in the show. Numerous improvements have been made on the other models, the wheels of the Model A, five-passenger touring car having been increased from 30 to 32 inches, 3 1-2-inch Michelin tires on Goodyear detachable rims being specified as the regular equipment. The braking system also has been improved by the addition of an emergency rear wheel brake with an improved braking lever, fitted in an outside quadrant ratchet with hand release.

Schacht.—Under the title of the "Auto Runabout," the Schacht Manufacturing Company, Cincinnati, O., brought out a light car patterned somewhat along the lines of the now familiar buggyabout, though of somewhat more ambitious pretensions, and showed it for the first time at the last Chicago show. For 1908 the line has been expanded and no less than three models are staged at the Palace show. These are the Model H, listing at \$640; Model K, listing at \$680, and the Model P, listing at \$800. The specifications of the chassis are the same in each instance, a 12-horsepower two-cylinder horizontal-opposed motor comprising the power-plant, while the transmission is of the friction type. Ignition is of the high-tension order, using dry cells as the source of current, while the motor accessories, such as the carbureter, lubricating system and the like, are all of standard pattern and high-grade make. The wheelbase is 65 inches and the weight 900 pounds in each case.

Speedwell.—This is another new advocate of the six-cylinder type which is the product of the Speedwell Motor Car Company, Dayton, O., a concern that entered the ranks of the industry last spring and has since built a limited number of cars which have been thoroughly tested out in the interim. The six-cylinder car is a 60-horsepower machine with a 132-inch wheelbase. Its power-plant consists of a standard six-cylinder Rutenber motor, transmission being through a cone clutch to a selective gear-set and shaft drive to a floating rear axle, two sets of rear-hub internal expanding and external constricting brakes being fitted. The use of full-elliptic springs seated on saddles rotatably carried on the axle casting and supporting the frame side pieces through large metal pieces riveted to the frame at the rear permits of hanging the body very low, which gives the car a very speedy look.

Stoddard-Dayton.—In preparation for the demand for its cars during the coming season, the Dayton Motor Car Company, Dayton, O., has made plans to turn out 2,000 cars, divided principally among the Model 8-H, 18-horsepower runabout; Model 8-K, 30-35-horsepower roadster, and the Model 8-F, 30-35-horsepower touring car. The Model 8-H will be very much along the same lines as the 7-H, with four inches longer wheelbase, bringing this up to 92 inches. The front axle will be an I-beam forging instead of the tubular form hitherto employed, and the body has been improved by placing the seats further back and lowering them. Model K will also have eight inches additional wheelbase, making it 113 inches, and it will be equipped with a new valve-in-the-head type of motor. Model 8-F has the same wheelbase and same motor, the latter being made entirely at the company's plant. The lubrication has been improved, a continuous circulating system now being employed. When specified, the new touring car is equipped with dual ignition, using a Bosch magneto and accumulators. A six-cylinder model is shown.

Wayne.—During the season of 1908, the Wayne Automobile Company, Detroit, Mich., will devote its entire energies to the production of a single model to be known as the "Wayne 30," although this will naturally be presented in runabouts as well as touring types of body. Its specifications are 4 1-2 by 5 1-4 inch, four-cylinder four-cycle vertical motor, nominally rated at 30-horsepower, but having an output largely in excess of this; clutch of the internal expanding type with sliding change-speed gear providing three forward speeds and using the selective method of operation, final drive by shaft. Ignition is of the high-tension type, using unit coils mounted on the dash and accumulators as a source of current. Two sets of brakes, one of the internal expanding and the other of the external contracting type, are fitted. The wheelbase is 107 inches, while the tire dimensions are 34 by 3 1-2 inches front and 34 by 4 inches rear. A five-passenger metal touring body of the popular straight-line type is fitted, the weight all on being 2,400 pounds. The specifications are the same in the case of the runabout with the exception of the weight, which is 2,100 pounds.

Welch.—Past years' experience has failed to change to any appreciable extent the Welch ideals of construction and equipment, and the Welch cars for 1908 will not only be practically the same, but no attempt whatever has been made to alter their appearance, the bodies having the same general lines, although they have been enlarged somewhat and made more commodious and luxurious. There has been also considerable improvement in the general finish of the cars. Where the power-plant is concerned, the motor is still characterized by the use of hemispherical polished combustion chambers in the cylinders, integral camshaft and cams, multiple disk clutch running in oil, independent clutch type of change-speed gear and honeycomb radiator, all of which have been features of the Welch cars for the past four years. Each detail of design, material, and workmanship has, however, been brought to a close state of perfection in that time, so that the efficiency of the car has been steadily improved. Two entirely independent systems of ignition are employed as a regular part of the equipment, consisting of a Bosch high-tension magneto on one side and a set of accumulators and coils on the other, the latter acting as an emergency reserve.

STEAM CARS SHOWN IN FOUR MODELS.

Lane Steamer.—For the season of 1908, the makers of the Lane steamers, the Lane Motor Vehicle Company, Poughkeepsie, N. Y., will list no less than four models, two of them being touring cars and two of the roadsters type. The leader of the line is known as Model 8-7, and is a 30-horsepower, seven-passenger touring car. Its power plant consists of a two-cylinder compound steam engine working at high pressure, and a special generator, fitted with the Lane burner. Final drive is by single chain. It is equipped with a straight-line body, has a 119-inch wheelbase, and weighs 3,500 pounds. The next smaller model is a five-passenger touring car and is known as Lane Model 8-5. Its power plant is rated at 20 horsepower and its specifications throughout are the same, with the exception of its shorter wheelbase and lighter weight, these being 97 inches and 2,300 pounds, respectively. These two chassis are also fitted as runabouts and are known as Models 8-3 and 8-2, the former being the 30-horsepower car and the latter the 20-horsepower. The weights are 2,000 and 1,600 pounds, respectively.

MOTORCYCLES: THE FLEET TWO-WHEELERS.

Aurora Automatic Machine Co., Aurora, Ill.,	1st Gallery 192
Ovington Machine Co., 2208 Broadway, New York,	1st Gallery 215
Reading Standard Co., Reading, Pa.,	1st Gallery 213

Aurora Automatic Machine Company.—Motorcycles and motorcycle parts are manufactured by this firm, a number of them being devices on which patents are held. These parts are usually sold to makers who assemble them in their own factories and market the complete machine under their own trade name.

Ovington Machine Company.—This firm is the American representative of the well-known F.-N. four-cylinder motorcycle, which is a machine of Belgian manufacture and the only one of its kind on the market.

Reading Standard Company.—"R. S." motorcycles and bicycles are made by this firm, which was the first in this country to bring out a motorcycle with mechanically actuated valves. It has numerous other features of merit to attract the attention of the lower of the fleet two-wheel steed.

MANUFACTURERS EXHIBITING COMMERCIAL VEHICLES ONLY

Manhattan.—This is a line of cars built entirely for passenger and freight-carrying capacity—in other words, commercial vehicles, to which the Mack Brothers Motor Car Company, Allentown, Pa., has devoted its entire attention for several years past. The concern is probably better known for its gasoline driven sightseeing cars, which have become a familiar sight in most of the large cities of the country during the past few years. They range from a 12-passenger tonneau type up to the 30-passenger cross-seat type, and are finished in various styles. The bodies are also of various patterns, such as inclosed hotel 'buses, combination passenger and baggage wagons, and the like, in addition to which a most complete line of freight-carrying types are listed, such as stake trucks, heavy delivery wagons, platform trucks, and brewery wagons, ranging in capacity from one to ten tons, all being built on a standard type of chassis equipped with a four-cylinder vertical motor and having side-chain drive. Any type of body is supplied to order to meet the requirements of the buyer.

Rapid.—The makers of these cars, the Rapid Motor Vehicle Company, Detroit, Mich., have one of the most complete exhibits of commercial vehicles ever staged at an automobile show. Ten entirely different models are shown, including covered delivery wagons, sight-seeing cars, trucks, opera 'buses, wagonettes, police patrol wagons and telephone emergency wagons. This only comprises part of the list which would be far too great to exhibit complete, so that the company will exhibit a collection of photographs showing the numerous other types of special bodies

that they have built and which are now in actual service. The 1908 Rapid chassis is as close an approach to "fool-proof" design and construction as its designers have been able to evolve after several years' experience in building this class of vehicles. The power-plant consists of a 30-horsepower horizontal-opposed motor of the four-cycle, water-cooled type, and every part of it as well as the remainder of the mechanism is placed in the most accessible position. Every part of the car, with the exception of such accessories as tires, carbureters and the like, is made in the home factory directly from the raw materials.

Reliance.—The makers of these cars, the Reliance Motor Car Company, Detroit, Mich., devote their attention exclusively to the manufacture of trucks, and are exhibiting three different models, and up to the present have made but one standard chassis having a capacity of two tons, with a safe overload capacity of three tons, but during the past year have been experimenting with two heavier models, rated at three and four tons and having a safe overload capacity of 25 per cent. For the past three years the two-ton model has been built in lots of fifty trucks at a time, carrying in stock 10 to 12 different styles of bodies and building the latter to order where necessary to suit the specifications of the purchaser. These trucks are of particular interest in that their power-plant consists of a motor of the two-cycle type and their success is evident from the statement of the makers, that 50 per cent. of the purchasers have ordered duplicate cars, a fact that speaks for itself better than any other form of commendation.

TIRES WHICH ASSIST IN AUTOING'S ENJOYMENT

Ajax-Grieb Rubber Co., 420 East 106th St., New York,	1st Gallery 202
Continental Caoutchouc Co., 43 Warren St., New York,	1st Gallery 211
Commonwealth Rubber Co., Reading, Mass.,	2nd Gallery
Diamond Rubber Co., Akron, O.,	1st Gallery 104
Empire Auto Tire Co., Trenton, N. J.,	1st Gallery 121
Firestone Tire & Rubber Co., Akron, O.,	1st Gallery 166
Fisk Rubber Co., Chicopee Falls, Mass.,	1st Gallery 110
G & J Tire Co., Indianapolis, Ind.,	1st Gallery 108
Goodrich Co., B. F., Akron, Ohio,	1st Gallery 112
Goodyear Tire & Rubber Co., Akron, O.,	1st Gallery 119

Hartford Rubber Works Co., Hartford, Conn.,	1st Gallery 101
Leather Tire Goods Co., Newton Upper Falls, Mass.,	1st Gallery 130
Michelln Tire Co., Milltown, N. J.,	1st Gallery 129
Motz Clincher Tire & Rubber Co., New York,	2nd Gallery 303
Morgan & Wright, Detroit, Mich.,	1st Gallery 158
Pennsylvania Rubber Co., Jeannette, Pa.,	1st Gallery 180
Pneu L'Electric Co., 1610 Broadway, New York,	1st Gallery 217
Republic Rubber Co., Youngstown, O.,	1st Gallery 124
Swinehart Clincher Tire & Rubber Co., Akron, O.,	1st Gallery 188
Trenton Rubber Goods Mfg. Co., Trenton, N. J.,	1st Gallery 134



OR five or six years automobile manufacturers have been making use of the deficiencies of the pneumatic tire to hide the shortcomings and weaknesses of their own product. In happy moments, when the car is locked in its garage and its owner has his feet spread out before a comforting fire, the much abused tire would be accorded the credit to which it is entitled as an aid and a helpmate in the development of the automobile. But in the first race, competition, or tour in which the great expectations of the manufacturer were disappointed by defective castings, inferior steel, inefficient cooling arrangements, or poor ignition, the abused tire was made to bear the sin of it all.

This year the tire has truly come into its own. In at least three of Europe's fastest and most keenly contested races the winners have declared unreservedly that they have not been in any way delayed

by tire trouble. In the French Grand Prix an average speed of seventy miles an hour was maintained for over four consecutive hours without any weakness developing in the tires with which the leaders were equipped. Compared with the state of affairs at races but two years previously, the result was stupendous. America has had few opportunities of demonstrating by intensified tests of a few hours to what extent her own product has been improved over that of previous years. Deprived of a long-distance road race, the only speed tests have been on circular tracks, where though less conspicuous than in international road races, the improvement has been no less marked.

For those who have had the time and opportunity of watching cars in the more important national touring competitions, the change during the past season is no less conspicuous. Instead of being able now to take shelter behind the rubber with which his wheels are shod, the automobile manufacturer who puts up the plea of tire trouble lays himself open to the charge of cheese paring. Those most closely connected with the industry know that with tires of proper size for the load they have to bear, attention to inflation, and reasonable care, the old familiar cry on the part of the manufacturer is a self-accusation.

Finality has not been reached, but the progress which has been made is more than sufficient to remove the stigma which has somewhat unjustly been attached to the pneumatic tire since its application to automobiles. Apart from the progress which every firm naturally strives to make in material and methods of construction, new developments appear to be in the direction of quick and reliable methods of changing, non-skid devices, and, later—for the problem is a big one—the development of the most economical type of solid tire for commercial vehicles.

Ajax.—Wrapped tread automobile tires are the feature of the Ajax-Grieb Rubber Company. The 1908 lines which are shown differ materially from previously made molded tires, inasmuch as

they bear a cushion of pure Para rubber between the carcass and the tread, varying in thickness from 1-8 to 3-16 inch, according to the size of the tire, and also has two breaker strips between the cushion and the tread, which are declared to absolutely prevent the separation of the tread from the carcass. In curing the tire the carcass is first vulcanized, and the tread, which also varies in thickness according to the size of the tire, is then put on raw and hand-wrapped, after which the whole tire is cured by the open steam process, which toughens the facing and adds miles of wear to the tire. A guarantee of five thousand miles is now given with all Ajax tires, and has proved a great success, not only in the marketing of the tires, but in the guarantee being lived up to.

Continental.—Imported from the old-established factory at Hanover, Germany, the Continental Caoutchouc Company, New York, is exhibiting a full range of its wares. The output includes Model A, or standard type with round tread, and Model C, or flat tread tire, specially manufactured for road racing. The tread of this tire is corrugated on its surface and is so designed that about two inches of it is in constant contact with the road surface. It has been used very successfully on powerful racers, and is especially recommended for long-distance road traveling. All Continentals are made in both American and metric sizes.

Commonwealth.—The Mitchell punctureless pneumatic tire manufactured by the Commonwealth Rubber Company forms the center of attraction at this stand. The tire is absolutely punctureproof, it is claimed, and cannot be wrenched off or blown out from heat, and is as resilient as any ordinary pneumatic tire.

Diamond, prominent among Akron's representatives in the tire section of the show, puts forth the statement with particular emphasis that its line of conduct for 1908 will be competition in the field of quality only. There will be no cutting in prices, no deviation from figures in the net lists, and no preferential treatment for anyone. The Diamond wrapped tread method of manufacture, which has gained for Diamond its present reputation, will be closely adhered to. Quick detachable tires and the Marsh quick-acting clincher rims are the prominent features of the Diamond Rubber Company's exhibit. The tires are shown in the flat tread, regular tread, Bailey tread, and Diamond non-skid tread types. In addition are exhibited the Diamond tire for Fisk rims, also the mechanical Diamond or Dunlop type of tire. A new feature for which great claims are made is the Diamond electric, specially constructed for light electric cars. A dismountable rim which was used to a limited extent in the Vanderbilt race of a year ago, and in later contests with good results, is shown at the Diamond booth. The American rights of this rim are controlled exclusively by the Diamond Company. Two new constructions in solid tires are shown in the wire mesh base and side wire types, both of almost pure white rubber, extremely tough and resilient. This rubber is also used in tires for the buggyabout type of car.

Empire.—Red and gray tubes, automobile cases, and a complete line of tire accessories comprise the show of the Empire Automobile Tire Company. The raised oval tread is constructed, the outer surface being made of very tough wear-resisting rubber

that adheres firmly to the fabric and relieves this latter of much of the shock from severe roads. Of the two types of inner tubes, red ones are specially recommended because of their increased thickness and their special process of construction, which prevents deterioration.

Firestone.—Two new things which have never before been exhibited at any automobile show are on view at the stand of the Firestone Tire & Rubber Company. One is the 1908 Firestone dual non-skid tread and the other is the 1908 Firestone dismountable rim. The dual non-skid, for use on pneumatic tires, consists of two ridges of rubber extending around the tire. This tread is thicker than the regular Firestone wrapped tread, and the surface of the two ridges is corrugated to afford additional protection against skidding. The 1908 Firestone dismountable, which may be used in connection with any clincher tire, has its dismountable portion held on the felloe by six bolts, the removal of the nuts allowing the tire and clincher rim to slide off in one lateral motion, equal merely to the width of the felloe. There is very little contact of metal to metal, thus preventing the rim from rusting on. It cannot creep around the rim, the dismountable portion having clips fastened to its under side, engaging in slots. In addition to these two novelties, the firm's general line of clinchers and quick detachables is shown, and a distribution of a tasty certificate, entirely new in conception and of special value to owners of commercial vehicles, is made at the Firestone booth.

Fisk.—Mechanically fastened tires from the Fisk Rubber Company's factory at Chicopee Falls occupy full attention at this stand, their presentation being made on the three-fold basis of speed, safety, and durability. It is claimed for the Fisk that it cannot possibly come off the rim, whether the tire be inflated or deflated. Fisk clincher tires are made in all sizes, the "Heavy Car Type" being specially recommended for long-wearing quality.

G & J.—The big factory of the G & J Tire Company at Indianapolis supplies specimens of all its lines for 1908, none of which show any great departure from those of the present season. Quality is maintained and improved wherever research has shown that it is possible. The raised tread tire produced a year ago, and which has continued to give excellent service, will continue to be an important feature of the Indiana factory. The strong claim made for the G & J oval raised tread is that it has more frictional contact with the road than any other type. Even when slewing round corners the oval surface always remains in contact with the road. The Indianapolis Dunlop tire is made with non-extensible wires cured in the edges of the case, these wires making it impossible for the edges to stretch over or blow off the rim. Both G & J and Dunlop tires are made with Bailey tread, which to some extent prevents side slipping and skidding, but does not give such long service as the regular raised tread.

Goodrich.—Representative of the huge output from the Goodrich Company's factory at Akron is a big line of the firm's regular stock of goods. There are few or no novelties, but, what is of more importance to the average automobilist, a continuance of the high standard of the firm. The exhibit consists of the regular Goodrich clincher type in smooth, Bailey, and flat treads. Naturally at a time when quick detachables are attracting wide attention on the part of the automobile public, the Goodrich product in this field is not neglected. An opportunity is given of examining in detail and testing as a time saver the Goodrich quick detachable tires and rims. In view of the success of the firm in the touring competitions of the past season, the Goodrich stand and its contents are examined with attention.

Goodyear.—As at last year's automobile show, the principal exhibit of the Goodyear Tire & Rubber Company's stand is the universal rim and detachable tire made up in various types. The firm's new features are a special electric detachable tire and a heavy tourist tire. The electric is used in combination with a special universal rim, made light for the purpose of economy on an electric vehicle. Thus with a 30 by 3 1-2-inch electric tire is

used a 29 by 3-inch rim fitted with tubular side rings, making a much lighter construction than the ordinary 30 by 3 1-2-inch universal rim. This electric tire is made of a special fabric which is very resilient and quite durable. Tests that have been made with it show that it is economical of power, has good wearing qualities and is likely to find special favor on account of the ease with which it may be changed. The heavy tourist tire is made with both flat and round treads, the flat treads being usually used on the rear and the round treads on the front wheels. The flat tread being scalloped, produces a wonderfully efficient non-skid without the use of metal, which generally shortens the life of tires and robs them of some of their resiliency. The heavy tourist is made in the detachable type, is extra heavy and has a good thick inner tube. A full line of clincher, motor truck and motor cycle tires are shown.

Hartford.—Conspicuous in the stand of the Hartford Rubber Works Company, of Hartford, Conn., are Hartford, Dunlop and clincher tires and the new Midgley universal rim. The firm's feature, the Hartford quick detachable clincher tire, has a non-extensible wire edge similar to the Dunlop, with a heel on the side which fits into the clinch of the rim perfectly. There is no toe to the clinch on this tire. The tube lies inside the tire exactly as in the Dunlop. The tire will fit any form of detachable rim.

Leather Tire Goods Company.—Four features from this firm's factory are the 1908 Woodworth tread, Kant-Skid, leather inner tube, and steel tire shoe. Some improvements have been made in the Woodworth tread by the use of a two-ply chrome leather lining in place of the canvas and bark-tanned formerly used. The shape of the rivet head has been so changed that it flanges out at the base, protecting a larger surface and taking a firmer hold in the leather. The leather inner tube is designed to make the tube unpuncturable and proof against any injuries that can be caused by catching on the lugs or under the beads.

Michelin.—The pioneer firm of Clermont-Ferrand, France, now Americanized by the new factory at Milltown, N. J., shows for the first time in America a new compressed tread tire of a remarkable nature. The shape of the tire is such that when mounted on a rim and the inner tube inflated, the rubber on the tread of the envelope is compressed instead of being distended, this compression materially adding to the wearing qualities and general durability of the tire. A cut in an ordinary round tread envelope tends to open and admit water and gravel, to the detriment of the tire and fabric and carcass. A cut in the Michelin compressed tread tire is held closed by the compression of the rubber on the wearing tread, tending to reject instead of admitting sand and water. For heavy road work the Michelin clincher flat tread type of tire is recommended, its broad traction surface giving it a firm grip on the road, which is an advantage in driving and non-skid qualities. The firm's anti-skid type has won for itself a high reputation by being used on the Vanderbilt Cup winner of 1906 and in all the most important events since, with the exception of the Grand Prix, when the compressed tread type was employed. Prominent in the dismountable field is the Michelin demountable rim. The wide margin of security of this rim has been shown by its performance in important automobile races. A quick demountable round tread type made with a stiff wire bead, and which may be easily fitted to any of the well-known detachable rims, will appeal to owners who drive their own cars and wish for ease of removal. All Michelin tires are now made in both American and metric sizes.

Morgan & Wright.—Most prominent in the stand of Morgan & Wright, of Detroit, is the improved Midgley universal rim for use with either clincher or Dunlop tires. When it is remembered that this rim will accommodate every make of clincher or Dunlop, as well as every type of mechanically fastened tire but one, that it is of standard measurement throughout, including inside diameter, and has a solid bead, the strong claims of its inventors would not seem to be exaggerated. Naturally the full line of Morgan & Wright tires are on view.

Motz.—A non-skid cushion tire, claimed to be as resilient as the pneumatic and made to fit any standard clincher rim, is shown by the Motz Clincher Tire & Rubber Company. Demonstrations are given at the stand of the degree of resiliency of this tire and the method of attaching it to any rim.

Pennsylvania.—The changes in the 1908 product of the Pennsylvania Rubber Company are for the most part in material and method of construction. In future the fabric used will be made from Egyptian cotton instead of Sea Island, due to the fact that the former far exceeds the latter in elasticity, and while its tensile strength is no greater, it has been found to resist bursting much more effectively. The fabric is thoroughly impregnated and coated with Para rubber, the tread portion of the tire being composed of a white rubber compound particularly designed to resist wear and abrasion. No change has been made in the shape of the different tires, the flat tread road racing type being particularly intended for use on high-powered cars, as its walls are heavier and tread thicker than the ordinary tire. The Pennsylvania Rubber Company has given particular attention to the manufacture of non-skid tires, and is now marketing one of these equipped with rows of hardened steel rivets extending through a strip of leather into the rubber of the tire.

Pneu L'Electric.—A French production, with the backing of an important home concern, is handled here by agents with offices on Broadway. A full line of various types of pneumatic tires are displayed.

Republic.—Attention here is drawn to a special type of rim fastening constructed at the Republic Rubber Company's factory at Youngstown, O., the claims for which are that it fits the rim exactly and stays there.

Swinehart.—A full display of the regular line of the Swinehart Clincher Tire & Rubber Company is shown on plated rims. In addition are 7-inch commercial, 3-inch dual; a pyramidal, single tube, self-healing clincher pneumatic, and a new cellular tire. The claims for the self-healer are that it is self-healing for all ordinary punctures; can be run flat without injury; there is no friction between inner tube and outer casing; small cuts can be repaired by ordinary single tube repair kit and serious cuts can be repaired by slitting base in center, laying patch inside, coating slit with cement, applying tire to rim and inflating. The Swinehart cellular tire has the same system of fastening to clincher rims as is used on Swinehart solid tires. It has flat tread, is non-skid, and has holes moulded on the slant to prevent picking up gravel stones.

TIRE APPLIANCES, RIMS, AND MISCELLANY

Allen Auto Specialty Co., 1913 Broadway, New York, 1st Gallery 194a
 Gilbert Mfg. Co., New Haven, Conn., 1st Gallery 153
 Long & Mann Co., Rochester, N. Y., 2nd Gallery 352
 Midgley Mfg. Co., Columbus, O., 1st Gallery 117
 Nathan Novelty Mfg. Co., 90 Reade street, New York, 2nd Gallery 345
 Newmastic Tire Co., 68th St. & Broadway, New York, 2nd Gallery 204

Presto Detachable Rim Co., 76 Montgomery street, Jersey City, N. J., 2nd Gallery 341
 Shaler Co., C. A., Waupum, Wis., 2nd Gallery 339
 Schwarz Wheel Co., Philadelphia, Pa., 1st Gallery 182
 Travers Blowout Patch Co., 1265 B'way, New York, 2nd Gallery 315
 Weed Chain Tire & Grip Co., 28 Moore St., New York, 1st Gallery 131

Allen Auto Specialty Company.—This concern makes a specialty of tire protectors, tire holders, and the like, a full line of which are shown at its exhibit.

Gilbert Manufacturing Company.—Fabric supplies for automobile use are shown in a large variety of forms at the exhibit of this firm. Some of these are the Gilbert patent spare tire case, the Gilbert tire sleeves, tool holders, storm helmets, ponchos and the like, as this concern makes a specialty of everything in rubber fabric, though the tire case is the most popular article of this kind, as it has been on the market the longest and is well known.

Long & Mann Company.—"Minute Adjusters," which are claimed to be the best thing ever produced in the shape of a tire tool for clinchers, and also the "L & M" adjusters, for quick-detachable tires, are shown by this firm.

Midgley Manufacturing Company.—While the name of Midgley is chiefly associated in the minds of the autoist and the automobile builder, with the special patented rims of the quick-detachable type brought out by this firm, and which have proven so successful in the past few years that they have been on the market, the firm also makes a specialty of indestructible steel wheels and other pressed steel products for various purposes in connection with automobile construction, such parts combining a maximum of strength and durability with a minimum of weight.

Nathan Novelty Manufacturing Company.—Tire trunks of special design, adapted to carry both outer shoes and inner tubes, special portfolios of enlarged size to hang from the coat rail in the tonneau and intended for carrying maps, goggles, extra clothing and the like, buttoned tire covers and similar articles are a few of the specialties made by this firm in fabric.

Newmastic Tire Company.—Puncture-proof filling for pneumatic tires, known under the tradename of Newmastic, is manufactured by this concern.

Presto Detachable Rim Company.—As its name indicates, this firm manufactures and exhibits a novel form of quick detach-

able rim for pneumatic tires which has numerous features of merit.

Shaler & Company, C. A.—Tire repairs to be permanent must be vulcanized, as the autoist soon learns to his cost and annoyance after having been inconvenienced and delayed by temporary make-shifts. But hitherto it has been impossible to have a repair vulcanized outside of a shop specially fitted for the purpose. This firm makes a special portable electric vulcanizer adapted to repair all but the very worst damage to an inner tube, the device being shown in operation to illustrate the simplicity of its working. They show their complete line, comprising Types B, C, and D, as well as the different attachments for the various models and a complete line of repair materials.

Schwarz Wheel Company.—Wheels for automobiles and heavy vehicles are specialized by this concern. They are built of wood, but by a special method in which all the spokes of a wheel are assembled at one time and under pressure, so that the wheel can be made and shipped without the hub, each of the spokes interlocking with both of its neighbors. The spokes of these wheels cannot loosen and are guaranteed by the makers to stand where all others fail.

Travers Blowout Patch Company.—Unlike many of the devices of this kind designed to effect emergency repairs, the Travers blowout patch is intended to be placed inside the tire. It is made of fabric and tire like a tire tread and is equipped with a brass flange to prevent creeping. It is made in three styles: clincher, Dunlop and Fisk, and is guaranteed as an effective repair for rim cuts or blowouts. An improved type, upon which patents have just been granted, is shown for the first time.

Weed Chain Tire & Grip Company.—There is not much that can be said of the exhibit of this concern that the showing made therein does not say for itself, for Weed chains have become almost as much a part of the car as the tires themselves. Chains hold an honored place in the tool box of every car and they are greeted as familiar friends at the show by the thousands of autoists who see them.

IGNITION: THE CREATORS OF THE VITAL SPARK

HIGH-TENSION SPARK COILS.

Auto Coil Co., Jersey City, N. J.,	1st Gallery 187
Connecticut Telephone & Electric Co., Meriden, Conn.,	1st Gallery 195
Dayton Electrical Mfg. Co., Dayton, Ohio,	1st Gallery 157
Heinze Electric Co., Lowell, Mass.,	1st Gallery 144
Kokomo Electric Co., Kokomo, Indiana,	1st Gallery 170
Splitdorf, C. F., 1679 Broadway, New York,	1st Gallery 106

DRY CELLS AND STORAGE BATTERIES.

American Elec. Nov. & Mfg. Co., 308 Hudson street, New York,	1st Gallery 137
Ampere Mfg. Co., 408 W. 113th street, New York,	2nd Gallery 337
Crown Battery Co., 192 So. Boulevard, New York,	2nd Gallery 314
Eastern Carbon Works, Jersey City, N. J.,	1st Gallery 177
Electric Storage Battery Co., Philadelphia, Pa.,	1st Gallery 148
Gelszler Bros., 316 West 42nd street, New York,	2nd Gallery 312
National Carbon Co., Cleveland, O.,	1st Gallery 115
National Battery Co., 1606 Broadway, New York,	2nd Gallery 322
Witherbee Igniter Co., 519 West 33d St., New York,	1st Gallery 186

TIMING DEVICES, SPARK PLUGS, ETC.

Atwater-Kent Mfg. Works, Philadelphia, Pa.,	1st Gallery 201
Connecticut Telephone & Electric Co., Meriden, Conn.,	1st Gallery 195
Heinze Electric Co., Lowell, Mass.,	1st Gallery 144
Herz & Co., 187 Elm street, New York,	1st Gallery 156
Jeffery-DeWitt Co., 217 High street, Newark, N. J.,	2nd Gallery 356
K. W. Ignition Co., Cleveland, Ohio,	2nd Gallery 319
Kokomo Electric Co., Kokomo, Ind.,	1st Gallery 170
Mosler & Co., A. R., 163 West 29th street, New York,	1st Gallery 185
Splitdorf, C. F., 1669 Broadway, New York,	1st Gallery 106
Triumph Engineering Co., 226 Lafayette St., Brooklyn,	2nd Gallery 320

MAGNETOS AND DYNAMOS.

Dayton Electrical Mfg. Co., Dayton, O.,	1st Gallery 157
Igniter Appliance Co., Cleveland, O.,	1st Gallery 194a
K. W. Ignition Co., Cleveland, O.,	2nd Gallery 319
Lavalette & Co., 112 West 42nd street, New York,	2nd Gallery 331
Remy Electric Co., Anderson, Ind.,	1st Gallery 167
Splitdorf, C. F., 1669 Broadway, New York,	1st Gallery 106
Western Electric Co., Chicago, Ill.,	1st Gallery 128



PROBABLY there is no other branch of the accessory field pertaining to the car which holds such a fascination for the average visitor to the show as does the array of ignition apparatus, most of which is shown in operation by the various makers who devote their attention to the production and improvement of this most essential part of the power-plant. The crackling sparks of the induction coils, the spark plug that will spark under water or oil or anywhere else for that matter and that is always sparking, the inexhaustible dry cells and storage batteries and the dozen and one timers, coils, switches, magnetos, dynamos and other things designed to generate or handle the mysterious force that fires the charge when it occurs at the right time and place, are all matters of absorbing interest to the experienced hand as well as to the tyro who sees many of them for the first time. Improvements are so numerous and so interesting

that neither type of autoist is anxious to miss any of them but wishes to learn of everything new that is to be seen in the entire show, and that is a great deal, as may be seen from the following review of what the principal makers reveal.

Auto Coil Company.—This firm shows a line of spark coils and accessories which are well known to the autoist through having been specified on many prominent American cars.

Connecticut Telephone & Electric Company.—"Connecticut" spark coils, in both automobile and marine types, special removable lever switches, plug switches, coil-current indicators, and similar specialties form the exhibit of this concern, which has achieved a name for itself within the past few years by the quality and grade of workmanship displayed in its products. The standard unit type dash coils are shown with all number of units from two to six. They are inclosed in mahogany cases, and the terminals are protected, while the switch is also waterproof, thus making them especially adapted for cars in which the coil is mounted on a flat dash and receives no particular protection from rain and snow. The marine coils are shown in one and two-cylinder types, and are of a special form of construction, designed particularly for this work, where it is highly essential that no part of the ignition apparatus give out.

Dayton Electrical Manufacturing Company.—The exhibit of this concern consists of a complete dynamo and storage bat-

tery charging system in complete working order. The outfit consists of the well-known Apple dynamo, the No. 12-S switchboard and a portable lead bottle-type of accumulator. The switchboard makes all necessary connections between the battery and the dynamo, and also serves to show the operator exactly the condition of the current supply at all times. The dynamo is friction-driven from a heavy wheel representing the flywheel of an engine, and is charging the battery as in actual service. The timers, coils, and plugs of the system are all in plain sight of the spectator, so that the working of the system may be seen at a glance. It also shows exactly the nature of the spark produced, which is something that interests every autoist, as there are but few who have never experienced ignition trouble in some form or other.

Heinze Electric Company.—This concern has long been identified with the manufacture of high-tension induction coils for use in connection with X-ray apparatus, calling for extremely powerful and necessarily well-built coils, so that they are in an excellent position to understand the requirements of coils for ignition purposes, which they have now been making for three or four years past. They are made in interchangeable unit types from two to six-cylinder styles, and are mounted in weather-proof mahogany cases with switch, for mounting on the dash. The line shown is familiar to the average autoist through its being specified as the regular equipment of such a number of well-known cars, while the Heinze coils have also figured prominently in racing events, such as on the Christie front-engine racer in the last Grand Prix in France.

Kokomo Electric Company.—This concern makes the well-known line of Kingston coils and also several other ignition specialties, all of which are shown in attractive form at their stand. The coils are made in the standard unit types for cars of any number of cylinders, many of the now-popular six-cylinder type being shown. They also show single-cylinder box coils, motorcycle coils and the Kingston multiple-point switches for automobile and motor boat use.

Splitdorf, C. F.—The Splitdorf synchronized distributing coil forms the chief object of attraction in the numerous line of ignition specialties exhibited by this old-established firm. It represents the culmination of years of study of the subject of firing a multi-cylinder engine with a single coil and vibrator. This is accomplished at exactly the proper time in each cylinder without any of the detrimental effects usually experienced with a single coil, as a different unit supplies the secondary current for each cylinder. The distributing vibrator is independent from the coil units, being a separate instrument, but is included in the

coil box, being so placed that it may be easily adjusted at any time. The adjusting parts are of the tension vibrator type, with a ratchet screw for adjusting the vibrator point and a thumb screw for adjusting the tension of the vibrator spring, there being no necessity for the use of tools in either case. These new coils are made up in any number of units, and are mounted in the standard type of mahogany cases employed for other Splitdorf coils are made up in any number of units, and are mounted in the prehensive showing of the varied line of ignition apparatus made by this firm.

DRY CELLS AND STORAGE BATTERIES.

American Electrical Novelty & Manufacturing Company.—This concern is the originator of the numerous "Ever-Ready" specialties, their Ever-Ready dry cells being one of the first on the market, specially made for automobile ignition service. These batteries are made in all sizes, and are put up for both automobile and motor boat use.

Ampere Manufacturing Company.—This concern exhibits a line of dry cells for automobile, gas engine, and telephone work, known as the "Best" dry batteries.

Crown Battery Company.—This firm's exhibit consists of a showing of the Crown high-grade cells in different sizes and shapes, as well as the different elements of which they are composed.

Eastern Carbon Works.—Eastern gas engine dry cells are shown by this concern, which devotes itself entirely to the manufacture of a special type of cell particularly designed for the rigorous service required in automobile work. They also make the Eastern battery connectors, which are guaranteed not to shake loose under the most severe conditions of vibration or jolting. Autoists interested in dry-cell ignition will be able to note the improvements made in the manufacture of these essentials as shown by the Eastern line, the representatives of the latter making tests showing the amperage of their cells, both when new and old.

Electric Storage Battery Company.—This concern makes a showing of its line of chloride accumulators for automobile use.

Geiszler Brothers.—Long life and economy of maintenance are two of the good qualities claimed for the Non-sulphating Storage Battery Igniter, which is the subject of this firm's exhibit. It is said to cost but 50 cents for recharging the accumulators, and they are guaranteed to give a working charge until entirely exhausted, the plates being so formed that they will not disintegrate under the vibration or jolting of a car, and will not sulphate. They are assembled in waterproof cases, and are especially adapted for both automobile and marine use.

National Carbon Company.—The showing of this concern consists of the well-known line of Columbia dry cells, which are shown in five different sizes. In addition to this they are also showing the "Red Top Columbia Igniter" cells, which are manufactured especially for automobile use, their composition being the result of several years' study and experience in catering to the wants of this service, which is unusually exacting. In connection with their exhibit they are distributing a new pamphlet entitled "Helps and Hints of the Motor Car," which has just been issued, and which contains a great deal of information concerning this essential part of the car, that will be found of value by every autoist. Copies will be mailed gratis on application.

National Battery Company.—Sparker, vehicle, and truck batteries form the exhibit of this concern, a new method of assembling and sealing the sparking batteries having been made in the 1908 models of these accumulators. They are shown in the six-volt, sixty-ampere hour type, and the six-volt, forty-ampere hour type, both of which are operating spark coils and lamps. The National method of sealing, which dispenses with the use of the usual sealing compounds, is also displayed. The complete components of the National are shown mounted on an ornamental panel, from which an idea of the construction is obtainable.

Witherbee Igniter Company.—In addition to the well-known Witherbee storage batteries, this concern is showing something entirely new in the shape of a spark plug, which is attracting considerable attention. This, as well as a number of other ignition utilities, have been designed and patented by W. W. Robinson, the concern's mechanical engineer, and are being marketed under the trade name of "Wico." The chief point of distinction about the spark plug is a micrometer adjustment, by means of which the exact distance between the sparking points may be set to any determined width to .001 inch, instead of by guesswork with a pair of pliers, as formerly. The Wico timer is also a new departure, a loose ring always providing a smooth path for the roller and exposing a constantly changing surface of contact to eliminate wear. It operates with metal to metal contact, without noise, and is extremely compact, although it provides about 3-8-inch surface for each contact. The Wico trouble lamp is another compact novelty much appreciated by the autoist, while the Wico plug switches are a novelty that is now being shown for the first time. They are made either single or in gangs up to four, to light the side, gage, and tail lights, also the dome light simultaneously, working on the "touch the button" principle.

TIMING DEVICES, SPARK PLUGS, ETC.

Atwater-Kent Manufacturing Works.—The exhibit of this concern is doubtless one of the most interesting to be found in the show in the line of ignition apparatus. One of its spark-generating outfits was officially sealed in a glass case, together with six small dry cells to supply the current, after the recording apparatus had been duly inspected by experts. The device is driven from outside by means of a small electric motor, a speedometer and odometer being attached to indicate the equivalent rate of speed traveled and the distance covered during the time the test is on. The latter is intended to demonstrate the reliability and low battery consumption of the Atwater-Kent apparatus. In addition to this, they also show their regular line of spark generators, meters, and switches.

Herz & Co.—The Herz ball-bearing timer is one of the chief attractions at the exhibit of this concern, which is chiefly devoted to a showing of timers of various styles. There is nothing so essential to the success of an ignition system as a good timer, and as this firm has made a study of this part of the problem for several years past, the apparatus it shows reveals the results of much careful experimenting. They also show the Pater-Noster shock absorber, which has now been on the market for two or three years past, and has proved very successful. It is a combination of the friction and hydraulic types, the working parts operating in glycerine, and is extremely compact and simple, as well as easy to attach to the car. Some of the other specialties are the new "Oscillum Redivivus," or auxiliary spark gap of improved type, battery connections, patent wire terminals, patent safety switch and electric emergency brake, Puck waterproof switch and others, such as the Herz anti-skidding tires, imported storage batteries, the Motor-Whistle for motor boats, steel-armored ignition cable, French coils, Herz distributors, etc.

Jeffery-DeWitt Company.—This firm exhibits the Reliance spark plug and its demonstration is one of the things that will considerably puzzle the average autoist, as one of the plugs is shown sparking under water. To quote the makers, "The Reliance spark plug is the result of the discovery of a phenomenal action of the electric current when discharging from a minute platinum electrode embedded in and brought flush with the face of the insulating block, thereby concentrating and intensifying the spark so that it not only destroys all short-circuiting matter, but prevents its deposit." The Reliance plug is patented in France and Belgium, while U. S. and other foreign patents are pending.

K-W Ignition Company.—This concern exhibits what is practically a new system of ignition. It is of the standard high-tension type, but it is novel in that a magneto is employed in connection with a simple vibrating coil. The former is the K-W

magneto, of extremely simple and compact design, and which has been described in these columns recently, and the other essential is the K-W Master Vibrator, by means of which exact synchronism in the ignition is obtainable with any number of cylinders, as there is but one vibrator and the adjustment is the same for all cylinders, thus overcoming the great loss of power in the average engine, due to the lack of synchronism arising from the difficulty of adjusting four or six vibrators to work together. Another specialty made by this firm is the Vim spark plug, which has many features of merit.

Mosler & Company, A. R.—The name of Mosler and that of "Split-Fire" plugs have been so long associated as to have become practically synonymous, so that the average autoist knows one as well as he does the other. In addition to this well-known line of plugs, this company also exhibits numerous other ignition specialties of their own exclusive design and construction, and they have prepared an attractive booklet setting forth the details of the Mosler ignition outfits for 1908, which will be presented gratis to visitors or sent on application.

Triumph Engineering Company.—This firm exhibits a line of Holsten spark plugs, for which numerous advantages are claimed.

MAGNETOS AND DYNAMOS.

Lavalette & Company.—This company controls the American patents covering the well-known Eisemann system of high-tension ignition, the magneto being of the type familiarly known as "high tension with coil," in that it generates an alternating current of low-tension which is then passed through a powerful

non-vibrating induction coil and subsequently distributed to the plugs as high-tension current by a special synchronously run distributor forming part of the magneto itself. There have been numerous improvements made in these generators and their accessories during the past year, all of which are exhibited and demonstrated by this firm.

Remy Electric Company.—The chief novelty at this exhibit is the new Type F magneto, now being publicly shown by this concern for the first time. It represents the simplest jump-spark ignition equipment that can be installed on a four-cylinder engine and can be installed with a minimum. No coil is employed, and the same magneto is equally applicable to a single or twin-cylinder engine. The complete wiring installation consists of a single primary wire leading to the switch and a wire from each secondary outlet to the plugs. The generator itself is extremely simple, having but one shaft, instead of two, as used on most high-tension magnetos, and being free from the complication of a geared distributor. It is designed to be gear-driven at the same speed as the crankshaft of the motor, the distributor consisting of a hard rubber drum on which are mounted contact segments, brushes conducting the high-tension current to the cables leading to the plugs. A simple push-button switch may be mounted on the steering wheel for stopping.

Western Electric Company.—One of the departments of this large concern is devoted to the manufacture of battery charging dynamos and motor-generators, of which examples are shown in their exhibit, together with other specialties they make for the automobile trade.

LUBRICATING OILS, GREASE, GRAPHITE, ETC.

Dixon Crucible Co., Joseph, Jersey City, N. J.,	1st Gallery 175
Harris Oil Co., A. W., Providence, R. I.,	1st Gallery 149
Miller's Sons, W. P., Long Island City,	2nd Gallery 330
New York & New Jersey Lubricant Co., 14 Church street, New York,	1st Gallery 164

LUBRICATING APPLIANCES.

Hancock Mfg. Co., Charlotte, Mich.,	1st Gallery 195a
Pedersen Mfg. Co., 636 First avenue, New York,	1st Gallery 204
Randall-Faichney Co., Sudbury Bldg., Boston, Mass.,	2nd Gallery 340

Dixon Crucible Company, Joseph.—Graphite as applied to automobile lubrication tells the story of the exhibit of the Dixon stand, and it is a subject at which the makers of graphite in its various forms have been hammering ever since there has been such a thing as an automobile. That is now several years, and in that time they have learned considerable about it, and their salesmen and demonstrators are willing to give the benefit of the knowledge gleaned by the firm's experts to any maker or autoist who wishes to be enlightened on this up-to-date and efficient method of lubricating certain parts of the car.

Harris Oil Company, A. W.—To the average autoist oil is simply oil, and nothing more; usually he thinks it ought to do the business of lubricating the motor properly as long as it is oil. Some idea of how many different grades of oils there are, as well as the correspondingly numerous purposes to which they are put, may be gleaned from the instructive exhibit of the A. W. Harris Oil Company, Providence, R. I.—a firm that has long made a specialty of refining lubricating oils for automobile use. The requirements of this service have been closely studied, and as a result these refiners are in a position to supply oils of exactly the nature required for each different purpose on the car.

Miller's Sons, W. P.—This concern is an old house in the business of refining lubricating oils, and during the past few years have paid special attention to the manufacture of oils particularly for automobile use.

N. Y. & N. J. Lubricant Company.—The exhibit of this firm has been a familiar sight at automobile shows almost since there has been such an institution in this country, and their non-fluid oils are equally well known to the American autoist, as they are

frequently specified for particular uses. The makers are warning the trade to beware of infringements of their methods of packing and advertising, which are calculated to mislead. Their non-fluid oils are put up in orange-colored cans, and as they are the originators and sole makers of this class of lubricants, this is the only form in which they can be purchased. They are issuing a booklet entitled "The White Boa," which is interesting.

LUBRICATING APPLIANCES.

Pedersen Manufacturing Company.—Pedersen stands for lubricators, of which this firm shows a number of styles, particularly designed for automobile and motor boat use and finished in accordance with the requirements of such service. They manufacture pressure and mechanical force-feed oilers in any number of feeds, and their apparatus has numerous points of advantage. The pressure types are instantly convertible into gravity feed, or both may be used simultaneously, thus providing a safeguard against breakdown, while their mechanical types are of a particularly ingenious and simple design.

Randall-Faichney Company.—The name of this firm and their product, the "B"-Line oil guns and grease, have become inseparably associated to the show-going autoist, while the product itself is so universally used that its makers' recommendation "the handy gun for unhandy places" is one that finds innumerable believers among the autoists of this country. These guns are of high-grade manufacture, all of metal, and are designed particularly with a view to fulfilling the reputation their makers give them, that of being able to put the oil exactly where it is wanted, regardless of the inaccessibility of the bearing, and without wasting it on other parts where it is not wanted.

TELL HOW MANY AND HOW FAST ARE THE MILES

Auto Improvement Co., 216 Hudson St., New York, 1st Gallery 138
 Hicks Speed Indicator Co., Atlantic Ave., Brooklyn, 2nd Gallery 333
 Index Speed Indicator Co., Minneapolis, Minn., 1st Gallery 145
 Jones Speedometer Co., 2228 Broadway, New York, 1st Gallery 199
 Loring Auto Appliance Co., 1900 B'way, New York, 2nd Gallery 327
 Motor Car Specialty Co., 112 N. Broad St., Phila., 1st Gallery 120

Rountree-Stimmel Auto Check, 220 B'way, New York, 2nd Gallery
 Smith, R. H., Mfg. Co., Springfield, Mass., 1st Gallery 154
 Stewart & Clark Mfg. Co., 506 Diversey Blvd., Chicago, 1st Gallery 203
 Veeder Mfg. Co., Hartford, Conn., 1st Gallery 113
 Warner Instrument Co., Beloit, Wis., 1st Gallery 179
 Winchester Speedometer Co., 1557 B'way, New York, 1st Gallery 189

Auto Improvement Company.—The "Ever Ready" specialties form the subject of this firm's exhibit, and under this title they list a patent self-starting mechanism for automobiles, the Ever Ready speedometer, the Ever Ready carbureter, the Ever Ready vulcanizers, and the Ever Ready tire tool.

Hicks Speed Indicator Company.—The instrument shown by this concern is one of the most complete of its kind on the American market, in that it records speeds, trip distances, and total mileage, besides giving the time, as it is combined with a neat clock movement, the face of which forms part of the dial of the instrument, but in no way interferes with the reading of the latter. No less than four sets of ball bearings are used in its construction, and it is built to register as accurately as it is possible for an instrument of this kind to do. It is inclosed in a rectangular, polished brass case, adapted to be fastened to the dash, while the dial face is placed at an angle so as to be plainly seen from any part of the car. The dial is calibrated up to 75 miles an hour and the reading is constant, the hand not being affected by the jolting or vibration of the car.

Index Speed Indicator Company.—The instruments marketed by this concern, which were formerly known as the Oliver, are shown in operation, and the makers call particular attention to the flexible shaft-drive—an essential part of all speed and distance-recording devices that is a prolific source of trouble. The index shaft is milled from solid steel rod and made into universal joints, which are connected with a steel wire in such a manner as to give great strength and durability. This universal shaft runs inside a flexible tube, which in turn is inclosed in a brass casing. The steel tube is spaced so as to hold a large amount of graphite for lubrication. The Index adjustable universal bracket is also made of steel and is applicable to any make of car. The instrument itself has now been on the market for two years and has met with considerable success.

Jones Speedometer Company.—The Jones Automatic Speed Control Governor is the center of attraction at the exhibit of this company, as it is the very latest thing to be brought out in this field. It is the invention of Joseph W. Jones, head of the company, and through its use the owner of the car may positively control its speed, even though he be sitting in the tonneau. The device consists primarily of a speed indicator, an automatic circuit-breaker, a controller, and an electrically operated air-valve. The operation of this combination of devices depends upon a switch having five contact points, each of which represents a circuit, the switch being automatically operated by the action of the centrifugal governor of the speed indicator. This switch is so arranged that when a speed of ten miles an hour is reached by the indicator it will close the circuit through the first contact point; when the hand reaches the 15-mile mark, the switch closes the second circuit, and so on with the remaining points, which correspond to certain speeds per hour, so that the occupant of the tonneau by merely setting a switch to a certain point can keep the car going at a certain speed, regardless of the desires of the chauffeur, as immediately the speed set is exceeded the ignition current of the motor is automatically cut off by the operation of the circuit-breaker, or by closing the circuit, instead of breaking it, the electrically-controlled air-valve is operated and the air or gas supply to the engine is cut off. Once the car's speed drops again until slightly below the limit marked, as nine miles an hour when set for ten, the device automatically renews the connection, thus acting as a governor.

Loring Auto Appliance Company.—Although the Loring Speed Gauge is not new, this is the first time it has been exhibited at any of the New York shows. Several improvements have been made in the instrument during the past year, though the principle remains the same. The dial is now of aluminum, instead of paper, and the protecting glass magnifies the figures several times. The case is now made in one solid piece, instead of with a detachable bottom, as formerly. The Loring Speed Gauge is one of the smallest instruments of its kind on the market, but is extremely easy to read, owing to the unusual length of its dial. It is neat, compact, and permanent in accuracy, while a flexible shaft is arranged to receive the least wear possible, thus making it extremely durable.

Motor Car Specialty Company.—This exhibit is the combined showing of the above-named concern and that of William S. Jones, who is their sole selling agent. The chief object of interest is the Phelps vehicle recorder, which is now shown publicly for the first time. It is a device which automatically records the movement of vehicles of all kinds, whether horse or motor-driven. It consists of an aluminum case, securely locked, containing a clock and the remaining mechanism, which records on a sensitized slip of paper. Another specialty is the Lea Speedistimeter, which has been entirely redesigned and greatly improved, while a third is the New Boss gasoline filter designed to be attached to the fuel pipe line of any car.

Rountree-Stimmel Auto Check.—As an improvement on the type of speed and distance-recording instruments now on the market, this firm is making one which not only indicates the speed, but prints a permanent record of the speed of the vehicle, the time, and all the stops made while it was out. It is termed the Auto Check, in that it keeps tab on the chauffeur who would take his master's car out without the latter's knowledge, and also provides competent evidence for use in a police court when accused of exceeding the legal speed limit. This traveling tape is 3-4 inch wide and is operated by the clock mechanism. It is marked in vertical lines which represent minutes and hours, while the speed is indicated by the strokes of the pen on the paper, each up stroke representing half a mile. When the car stops the tape is automatically disconnected from the clock and ceases to run until the car is started again. It is impossible to beat the instrument, as this has been amply provided against by the method of its attachment.

Smith Manufacturing Company, R. H.—The several important improvements that have been made in the Smith Motometer for 1908 are being demonstrated at this concern's exhibit. The principle of the instrument remains unchanged, but new features have been added. The chief of these is the new maximum speed hand, the vertical dial of the Motometer being particularly adapted to the use of the second hand, as when the latter is not in use, which is effected merely by pushing a button, it is entirely out of sight and does not confuse the driver. When working, this hand indicates the maximum speed reached, being picked up and carried over the scale by the regular indicating hand in its travel and left at the highest point when the latter recedes as the speed again falls off, thus providing indisputable evidence of the highest speed at which the car was traveling. A particular feature of the Motometer is the universal attaching bracket supplied, as this may be assembled to fit any car, whether the knuckle is high or low or whether it is forward or back of the axle.

Stewart & Clark.—Special pains have been taken by this firm to show their speedometers in the most attractive manner. For this purpose a special cabinet has been constructed, in which five of the instruments are shown in operation. They are all lighted by concealed electric lights from above, making the dials stand out very plainly, while the instruments themselves are operated by a small electric motor in the lower part of the cabinet and which is also invisible. Each one runs at a different speed, and the steadiness of the indicating hands at the various rates gives the visitor an excellent idea of the performance of these instruments when in actual service. Mounted in the center of the display board is a speedometer of the same make but of twice the ordinary size, which accentuates its details. The cabinet itself is of quarter-sawed oak in Old English finish, and makes a very attractive show piece.

Veeder Manufacturing Company.—The name Veeder is so inseparably associated with speed and distance-recording instruments that it is hardly necessary to mention that this is the nature of their exhibit. The Veeder Tachodometer is of particular interest, as it is the only instrument of its class on the market which works on this principle. The indicator, which is curved in the section of a circle, shows the speed of the car from zero to 64 miles, or when required to have close readings at slower speeds, the scale reads from 0 to 32 miles an hour. On the latter, it is only necessary to move a small lever to the right and the instrument is adjusted for high-speed work, the value of the readings then being double and corresponding to the higher scale. Among the numerous advantages of this instrument is the entire absence of springs or delicate moving parts.

WITH THE UNIVERSAL PROVIDERS.

Brooke Auto Supply Co., 197 Fulton St., New York,	2nd Gallery 302
Miller, Charles E., 97 Reade street, New York,	1st Gallery 218
New York Sporting Goods Co., 17 Warren street, New York,	2nd Gallery 350
Post & Lester Co., Hartford, Conn.,	1st Gallery 216
Wooster, Wm., 88 Chambers street, New York,	2nd Gallery 318

Brooke Auto Supply Co.—This concern is a newcomer in the list of New York's universal providers, and as jobbers and retailers show a line of wind shields, license hangers, tops, top covers, tire covers, generators, tire holders, and the like. This company makes a specialty of registering applicants for licenses, whether for cars or as chauffeurs, both for New Jersey as well as for Pennsylvania, and can equip a car with the proper lamp numbers and license hangers.

Miller, Charles E.—"Miller," the supply man's stand," is the way the exhibit of this most universal of all automobile providers is generally dubbed by every one at the show, for there is seldom a show in New York without Miller, and what Miller hasn't got in the automobile accessory line is hardly worth having, because if there's a demand for an article Miller is bound to have it. If no one happens to be making it at the time, he will get some one to manufacture it for him. Miller's exhibit suffices to give a pretty good idea of the wide range of things he carries, and a visit to his headquarters is positively a revelation.

New York Sporting Goods Co.—During the past few years this concern has added a comprehensive line of automobile specialties to the goods it handles, many of them being exclusive representations in this territory. Horns, lamps, speedometers, tools, tire repair kits, batteries, and a hundred and one other things too numerous to mention are to be found at its booth, including necessities and luxuries.

Post & Lester Co.—This firm has always been prominent as one of the pioneers in the general supply line. They have been so progressive that anything in the shape of an automobile accessory that they do not handle on representation—usually exclusive in their special territory, embracing

Warner Instrument Company.—Principal stress is being laid by these makers upon the principle of the Warner Auto-meter, and the manner of its drive, in their exhibit. The principle upon which it works is magnetic, and it is the only instrument of its kind on the market. It consists of a circular magnet and a field ring located just above the disk of the dial, so that the tendency of the magnet in revolving is to turn the dial in the direction of its own revolution, this rotation being naturally in proportion to the speed of the magnet, while a hair-spring acts as a controlling force which always tends to return the dial to zero. The strength of this spring increases with the angle of its displacement, so that the dial is marked off in equal divisions throughout the length of the scale. As the magnet acts directly on the indicating dial, there are no intermediaries between the two. The Warner Auto-Meter is driven from the front wheel in the usual manner, but the shaft is of a special type, as is also the drive, using case-hardened spiral gears.

Winchester Speedometer Company.—As its name indicates, this concern shows a combined speedometer and odometer, which is exhibited in operation. It is triangular in shape, with a round-faced dial, and is extremely compact. The new Model H is equipped with a maximum or high-speed record hand, indicating the highest speed attained, while the new reinforced case prevents shaft-breakage as well as the other annoyances arising to cause this essential to go wrong. The makers have also perfected an attaching bracket that fits 90 per cent. of the cars now on the market without change, and sum up the improvements made on their speedometer by calling attention to its finish, which makes it "a fine instrument for a fine car."

practically all of New England—they import from the other side, or have made for them. Their imported lines are numerous, and they also have a number of articles made especially for them which they put out under their own name, so that their booth cannot fail to be of interest. Some of the chief lines shown are the Volier horns, Royal De Luxe lamps and Duray goggles.

ALUMINUM, BRONZE, AND STEEL CASTINGS.

Cramp & Sons, Wm. S. & E. B., Co., Philadelphia, Pa.,	1st Gallery 162
Johnson, Isaac G., & Co., Spuyten Duyvil, N. Y.,	2nd Gallery 348
Light Mfg. & Foundry Co., Pottstown, Pa.,	1st Gallery 178

Cramp & Sons, Wm. S. & E. B. Co.—Manganese bronze castings of every conceivable shape for automobile use are specialized by this great shipbuilding house.

Light Mfg. & Foundry Co., Pottstown, Pa.—Aluminum alloy castings for automobile and marine motor parts are specialized by this firm, and numbers of the various types of parts supplied for different makes of cars are shown.

AUTOMOBILE CLOTHING.

Morrison-Mackintosh & Co., Grinnell, Iowa,	2nd Gallery 334
Scandinavian Fur & Leather Co., 14 West 33d street, New York,	1st Gallery 227

Morrison-Mackintosh & Company.—The "Grinnell Ristfit" glove is one of the specialties of automobile wear manufactured by this firm and now shown for two or three seasons in succession. It is made in both the special ventilated and the plain unventilated types, the former being covered by a patent. Both styles are made of reindeer leather, which is well known for its softness and pliability. They are made in black, tan and drab, and with the plain back are lined with silk or wool for winter use.

Scandinavian Fur & Leather Company.—As this year's first show is coincident with the beginning of cold weather, the autoist's thoughts turn to wishes for warmer outer coverings and this firm is well equipped to satisfy such longings.

LAMPS WHICH SHOW THE ROAD FAR AHEAD

Badger Brass Mfg. Co., 437 Eleventh Ave., New York, 1st Gallery 111
Edmunds & Jones Mfg. Co., Detroit, Mich., 1st Gallery 184
Gray & Davis, Amesbury, Mass., 1st Gallery 103
Ham Mfg. Co., C. T., Rochester, N. Y., 1st Gallery 139
Manhattan Screw & Stamping Works, New York, 1st Gallery 151
Rose Mfg. Co., 910 Arch street, Philadelphia, Pa., 1st Gallery 109

Saxon Lamp Co., 530 West 28th street, New York, 2nd Gallery 321
HORNS TO HELP CLEAR THE WAY.
Automobile Sup. Mfg. Co., 147 Emerson Pl., Brooklyn, 2nd Gallery 347
Gabriel Horn Mfg. Co., Cleveland, O., 1st Gallery 198
International Auto Horn Mfg. Co., New York, 2nd Gallery 310
Manhattan Screw & Stamping Works, New York, 1st Gallery 151

Badger Brass Manufacturing Company.—The exhibit of "Solar" lamps is one of the most interesting of its kind in the show. Four different styles of headlights are displayed and they are shown in four different sizes. After three years' study of the question a special weatherproof finish has been adopted that is indestructible and always remains the same. This firm has also acquired the sole rights to manufacture the Besnard French lamps in this country.

Edmunds & Jones Manufacturing Company.—E. & J. lamps are shown in as many different styles as it is possible to make a lamp for automobile purposes and still keep within the bounds of the practical. While intended for ornamental as well as useful purposes, a lamp must first of all be a reliable article and give satisfactory service, and the makers of this line have not neglected the business end of the illuminator for the ornamental.

Gray & Davis.—Few concerns in the business of manufacturing automobile lamps have been responsible for a greater number of distinctive styles than are credited to these makers, and their exhibit is correspondingly attractive. Their showing for 1908 is even more comprehensive than in past seasons, and a great many styles of side and tail oil lamps, also acetylene headlights and searchlights, are exhibited.

Ham, C. T. Mfg. Co.—Lamps and more lamps, big, little, and intermediate sizes, are shown by this firm, and although its line in the main is similar to that which met with such success during the past season, touches have been added here and there to make the lamps even more attractive looking than they have been in the past. As the makers say themselves: "They are very different looking articles from what they were three years ago."

Manhattan Screw & Stamping Works.—"Phoebus" lamps and generators, "Apollo" exhaust horns, flexible tubing, horn screens, tire holders, oil-guns, pumps, and the like are the

specialties manufactured by this concern. They make "Paraobolens," mirror back and lens mirror headlights in a number of types, searchlights on swivel and rigid brackets, limousine square side and tail lamps, and the "Tattle-Tale."

Rose Manufacturing Company.—"Neverout" lamps, patent generators, searchlights in both automobile and marine types, combination oil-burning launch lights, and similar lines form the showing of this firm, and as it has been making "Neverout" lamps since early in the days of the bicycle, it is hardly necessary to say anything further for them. The "Neverout" patent safety gas producer is of the hydro-pneumatic type.

Saxon Lamp Co.—The *piece de resistance* of this exhibit is a duplicate of the Saxon Model 400 lamp which proved its merits so effectively at the 24-hour races at Morris Park recently, but in place of the bull's-eye portion of the lens there has been inserted a high-grade French clock movement just filling the circular space. In other respects the lamp is an exact replica of those destined for service, with the exception that the brass body has been gold-plated. This ornamental piece will later be presented to the Automobile Club of America.

HORNS.

Gabriel Horn Manufacturing Company.—The Gabriel horn has tooted its way into the affections of the autoist so effectively that it has become one of the best-known articles of its kind on the market and as such scarcely calls for description, except that the makers have so improved on the original that the new Gabriel 28-Chime horn is but a fraction of the size of its prototype and has been bettered in many ways. This firm also shows the Gabriel shock absorber.

International Auto Horn Mfg. Co.—This firm is said to have one of the most complete plants for the manufacture of automobile horns in this country, S. Salvini, its president, having been in the business for a number of years.

SHOCK ABSORBERS: SMOOTHING OUT THE ROAD

Diezeman Shock Absorber Co., Hoboken, N. J., 1st Gallery 142
Gabriel Horn Mfg. Co., Cleveland, O., 1st Gallery 198
Herz & Co., 203 Lafayette street, New York, 1st Gallery 156
Hotchkin, P. N., Mfg. Co., Chicago, 1st Gallery 132

Hartford Suspension Co., 67 Vestry street, New York, 1st Gallery 165
Sager Co., J. H., Rochester, N. Y., 1st Gallery 146
Supplementary Spiral Spring Co., St. Louis, Mo., 2nd Gallery 359
Victor Shock Absorber Co., 1931 B'way, New York, 2nd Gallery 354

Diezemann Shock Absorber Company.—The exhibit of this concern consists of a complete showing of the 1908 model of the Diezemann Shock Absorber, together with a number of parts showing the method of its working. In the new models, the metal parts are all drop-forgings of high-grade steel and the arms are provided with universal joints, the latter being fiber-bushed to eliminate wear and rattling.

Hartford Suspension Company.—Some very radical changes have been made in the Truffault-Hartford shock absorber for 1908, and the details of these improvements as well as the benefits to be derived from them is the subject of the firm's exhibit. In order to be able to adjust all four shock absorbers on a car so that they will not only act all at once, but all to the same degree, an indicating dial, consisting of a number of figures and an arrow, has been made a feature of the 1908 models.

Hotchkin Manufacturing Company.—This concern exhibits both its new model of the Hotchkin Anti-Jolt device, known

as Model 101, and also the former type, known as Model 100. The new model is patterned after exactly the same design as the former model, with the exception that the lugs are placed on the back, so that it may be fastened directly to the frame of the car instead of on the bottom, as previously. The famous Hotchkin "Teddy Bear" is again a drawing card.

Sager Company, J. H.—This firm shows the Sager Equalizing Springs, and the success they have met with in the past few years is amply testified to by the growing list of the most representative American cars on which they are used. They have been making springs for many years.

Supplementary Spiral Spring Company.—These springs are such a familiar sight in the average rear view of an automobile that neither their construction nor their purpose are new to the autoist. They are covered by patents and the makers are warning the trade and users to beware of infringements, which are not only closely patterned after the original, but are also similarly named.

COMPONENTS: MAKERS OF AUTOMOBILE PARTS

American & British Mfg. Co., Bridgeport, Conn.,	1st Gallery 125
Brownell-Trebert Co., Rochester, N. Y.,	1st Gallery 219
Cramp & Sons, Wm., S. & E. B. Co., Philadelphia,	1st Gallery 162
F. R. V. Auto Parts Co., 116 Nassau St., New York,	2nd Gallery 325
Gemmer Mfg. Co., Detroit, Mich.,	1st Gallery 193
Gray-Hawley Mfg. Co., Detroit, Mich.,	1st Gallery 190
Hartford Auto Parts Co., Hartford, Conn.,	1st Gallery 150
Kinsey Mfg. Co., Dayton, O.,	1st Gallery 196
McMullen, Roger B., Chicago, Ill.,	2nd Gallery 329
Shelby Steel Tube Co., Pittsburg, Pa.,	1st Gallery 114
Standard Brake Co., 101 West 66th street, New York,	2nd Gallery 335
Standard Welding Co., Cleveland, O.,	1st Gallery 160
Warner Gear Co., Muncie, Ind.,	1st Gallery 178

RADIATORS: COOLING THE MOTOR.

Briscoe Mfg. Co., Detroit, Mich.,	1st Gallery 163
Haynes Mfg. Co., Detroit, Mich.,	1st Gallery 140
Kinsey Mfg. Co., Dayton, O.,	1st Gallery 196
Metal Stamping Co., 50 Hubert street, New York,	2nd Gallery 307
Whitlock Coil Pipe Co., Hartford, Conn.,	1st Gallery 102

TOPS: PROTECTION FOR THE PASSENGERS.

Auto Accessories Mfg. Co., Detroit, Mich.,	1st Gallery 123
Duane, W. J., & Co., 1771 Broadway, New York,	1st Gallery 141
Rands Mfg. Co., Detroit, Mich.,	1st Gallery 152
Sprague Umbrella Co., Norwalk, O.,	1st Gallery 194
Troy Carriage Sunshade Co., Troy, O.,	2nd Gallery 258

American & British Manufacturing Company.—The chief item in the exhibit of this firm consists of the 1908 model 40-horsepower Herreshoff motors, which are of the same design as the 80-horsepower motor used in the racing motor boat *Den*. They also show a varied line of pressed steel frames and drop-forgings, the workmanship and materials being according to government specifications.

Gemmer Manufacturing Company.—Steering gears of improved pattern and known reliability constitute the showing of this concern, which has long been identified with the manufacture of this most essential part of the car. Their designs are characterized by simplicity, ease of adjustment, and the fact that they are not reversible by road shocks, which is an extremely important factor in their make-up.

Gray-Hawley Manufacturing Company.—Among the new things shown by this concern are the Autochime Junior and the Midget Autochime. The former is constructed exactly the same as the standard Autochime, except that it is shorter, measuring 2 by 9 inches, and its tone is slightly higher-pitched. It is also designed to be operated by air-pressure in connection with a newly-devised air-valve and produces a powerful blast. The combination Autochime and cutout is another new thing. A few changes have also been made in the 1908 models of the muffler.

Hartford Auto Parts Co.—The complete line of this concern is exhibited at the booth of the J. S. Bretz Co., who are New York sales agents for their product. They exhibit a full assortment of Hartford universals and Hartford complete drive sets, the joints ranging in size from those capable of transmitting 10 horsepower up to 100 horsepower.

Kinsey Manufacturing Company.—This firm shows a number of important components that enter into the building of an automobile, ranging in size from pressed steel frames down to force-feed oilers. Between these two extremes they show a line of special "Kinwood" radiators, pressed steel dashes, pressed steel hoods, mufflers, fenders, and the like, the construction of which is more or less familiar.

Standard Brake Company.—The showing of this concern consists of a most instructive exhibit illustrating the use of cork inserts in brakes, clutches, and other friction devices made by the National Brake & Clutch Company, Boston, Mass. The manner of their fitting, the advantages accruing from their use, and much other information of a similar nature is to be gleaned from the various parts shown.

Standard Welding Company.—Special types of detachable, dismountable, and mechanically fastened rims in a number of styles form a large part of the exhibit of this concern, together with a number of special shaped bands, flanges, and inverted rims for various purposes. A tubular automobile steering wheel is another novelty which is shown in various finishes, such as nickel, galvanized, copper-plated, and the like, while some of their standard line consists of auto hangers, brake pedals, control levers, connecting rods, cylin-

ders, gear-blanks, propeller shafts, pinion casings, steering wheels, knuckles and levers, steel frames, and truss rods.

Warner Gear Co.—Selective types of sliding change-speed gears, planetary gears, an improved type of steering gear, and a novelty in the shape of a selective side-control lever, which is also an emergency brake lever in addition, constitutes some of the things shown by the Warner Gear Co.

RADIATORS.

Briscoe Manufacturing Company.—Briscoe radiators form the "faces" of such a very large number of the most prominent American cars that visiting their exhibit is somewhat akin to meeting the shadows of old and familiar friends, as the most distinctive parts of many cars are shown here in the shape of duplicates of their radiators. It would be easy to catalogue quite a portion of the American industry from the numerous types of radiators shown here.

Whitlock Coil Pipe Co.—The automobile department of this concern has been considerably enlarged during the past year or two and now shows a number of different types of coolers, hoods, and motor manifold connections of a special class of construction and in a variety of designs. These consist of inlet manifolds of copper and brass, steel exhaust manifolds, and other specimens of bent pipe work.

TOPS.

Rands Manufacturing Company.—Tops for touring cars and roadsters, the Rand "Duquesne" style runabout top, folding windshields, enameled trunk racks, tire holders, rubber bow separators, drop-forged fork-brackets, and foot and coat rails are a few of the specialties of which this firm makes a comprehensive showing.

Sprague Umbrella Company.—In addition to a complete showing of one of the most complete lines of automobile tops to be seen on this market, and with which the name of Sprague has been synonymous ever since there has been such a thing as an auto top, this concern is exhibiting a novel folding plate-glass windshield which possesses a number of advantages over the majority of types at present in use. Instead of being hinged so as to fold, it works on the principle of the lazy jack and by a slight movement to the right after releasing it comes down in the same plane vertically as when upright. Tops, covers and canopies for every type of car are shown, together with their accessories.

Troy Carriage Sunshade Company.—One of the most novel and practical car shields or fronts to be found in the show is exhibited by this concern. It is not alone an attractive plate-glass front of approved type, but also combines a fine brass screen of the same size as the upper half of the front, which is very easily folded out of the way and the screen substituted in a very short time without leaving the driver's seat. There are many occasions when the upper half of the glass front cannot be used, but when some protection would be appreciated, and the screen fills rôle perfectly.

MAKERS AND IMPORTERS OF ANTI-FRICTION BEARINGS

American Ball Bearing Co., Cleveland, O., 1st Gallery 159
 Bretz Co., J. S., 1004 Times Bldg., New York, 2nd Gallery 355
 Hess Bright Mfg. Co., 19th street, Philadelphia, Pa., 1st Gallery 173

Hyatt Roller Bearing Co., Newark, N. J., 1st Gallery 116
 Standard Roller Bearing Co., Philadelphia, Pa., 1st Gallery 200
 Timken Roller Bearing & Axle Co., Canton, O., 1st Gallery 118

American Ball Bearing Company.—Complete front and rear axles of the ball-bearing type are a specialty of this concern which they show in a number of sizes. These components are completely finished and all ready to install on the car. They are made to makers' specifications, and as they have achieved a reputation for efficiency and durability are largely used.

Bretz Co., J. S.—The exhibit of the Hartford Auto Parts Company, Hartford, Conn., is in charge of this concern, who are New York sales agents for its entire line. They also show the F. & S. annular ball-bearings, of which they are the sole American representatives, and the U. & H. magnetos, which are made by Unterberg & Helmle, Karlsruhe, Germany, and are now being imported for the first time. The latter are designed along standard lines and also incorporate some special features, such as a positive starting device.

Hess-Bright Manufacturing Company.—A full line of the "H B" or "D W F" annular ball-bearings are shown by this concern, the latter designation being that of the German factory. One of the most interesting features of their exhibit consists of two railway axles which have been taken from a standard passenger coach after the latter had run 65,000 miles. These bearings are absolutely without apparent wear or other deterioration of any kind and serve to demonstrate in a striking manner of what properly made ball-bearings are capable under the most severe service conditions. In addition to the show spaces, parlors have been reserved in a nearby hotel, where the heads of the Hess-Bright Company will be pleased to receive visitors and where suitable freedom from interruption not obtainable at the show can be had to talk business.

Hyatt Roller Bearing Company.—Hyatt flexible roller

bearings are a standard part of the equipment of many American cars and their use during the past several years has more than sufficed to make their details of construction, as well as their numerous merits, familiar to the average autoist, so that the queer-looking spirals shown at their exhibit are nothing strange.

Standard Roller Bearing Company.—The new and improved Grant roller bearing is the chief thing dwelt upon by this concern in its exhibit. The Grant is said to be the first and original conical roller bearing devised and has given universal satisfaction in service. In the new model for auto work the rollers are made solid and reduced at the ends to form shafts or pins. They are made in all the standard sizes.

Timken Roller Bearing Axle Company.—This is a combined exhibit of parts for both pleasure and commercial vehicles, the components in the former category being a No. 8 floating clutch with 12-inch brake drum fitted with double brakes, and designed to transmit 25-horsepower; a No. 6 clutch of similar type, but fitted with internal and external brakes designed for cars weighing up to 2,800 pounds and to transmit up to 45 horsepower through the differential; also a No. 5, fixed hub type, equipped with 12-inch internal single brakes and 14-inch external double brakes. In place of a differential, this last axle is fitted with the Hedgeland Equalizer. All the foregoing are rear-axle units. In front axles, two of the I-beam drop-forged type are shown and one of the straight, plain type of tubular front axles, equipped with the regular type of Elliott knuckles and one-piece forged spindles. An even more complete showing of both front and rear axles for commercial vehicles is made, some of them being of extremely heavy types. In addition to this samples illustrating the entire range of Timken roller bearings from the smallest to the largest is shown.

CHAINS, CLUTCHES, AND TRANSMISSION APPLIANCES

Baldwin Chain & Mfg. Co., Worcester, Mass., 1st Gallery 161
 Brown-Lipe Gear Co., Syracuse, N. Y., 1st Gallery 107
 Diamond Chain & Mfg. Co., Indianapolis, Ind., 1st Gallery 191
 Gemmer Mfg. Co., Detroit, Mich., 1st Gallery 193

Merchant & Evans Co., 517 Arch street, Philadelphia. 2nd Gallery 357
 Warner Gear Co., Muncie, Ind., 1st Gallery 178
 Whitney Mfg. Co., Hartford, Conn., 1st Gallery 105

Baldwin Chain & Manufacturing Company.—Chains of all sizes, particularly for automobile use, and sprockets for the same purpose, are the chief items in the exhibit of this concern, which is mainly of interest to the auto dealer and designer.

Brown-Lipe Gear Co.—Transmission, steering and differential gears constitute the products of this concern, and they exhibit their complete line.

Diamond Chain & Manufacturing Company.—Diamond chains are known wherever a chain-drive automobile is made or used, and as they are the result of many years' experience in chain-making, dating back to the time when even bicycle chains were extremely crude things, the claim of the makers that "Diamond chains drive their cars more miles per dollar cost than any others" needs no substantiation. They are made in sizes ranging from some as fine as watch chains up to those capable of transmitting high powers.

Merchant & Evans Company.—This concern, with its wide-spreading business relations and large branches in all the more important cities of the country, is one of the best-known establishments in the metals line in the United States, its name being a byword with engineers and manufacturers. Within the past few years it has gradually become more and more interested in the automobile industry, until now a well-established department devoted to this end forms part of the business. Powell Evans,

president of the company, and most active, has just returned from his third trip abroad in the interests of this department, and in this connection the firm makes the important announcement that it has successfully concluded negotiations for the purchase of the patent rights covering the Hele-Shaw multiple-disk clutch in the United States. Mr. Evans has considerably improved the design of the clutch before putting it on the American market by substituting light steel stampings for the case and other parts which are needlessly heavy in the British original. A housed central spring now controls the pressure with a very simple, positive and easily adjusted regulation, the improved design greatly decreasing the cost of the complete clutch. The company will shortly install a large new plant of heavy presses for its manufacture in property recently acquired near Pittsburgh, and the manufacture of the clutch and other parts will be undertaken on a large scale. Other specialties are a change-speed gear and a complete rear axle unit of special construction, which is the result of more than two years' constant study on Mr. Evans' part to overcome the defects of existing types.

Whitney Manufacturing Company.—Whitney chains in all sizes and the Woodruff patent system of keying, which is largely used in the construction of automobiles, form the subject of this firm's exhibit. Many of their types of chains are made under their own patents and are largely specified for auto use by American makers.

CARBURETERS: THE LUNGS OF THE MOTOR

Auto Improvement Co., 316 Hudson St., New York, 1st Gallery 138
 Breeze Carbureter Co., Newark, N. J., 1st Gallery 183
 Byrne-Kingston & Co., Kokomo, Ind., 1st Gallery 171

Hill Mfg. Co., 27 Fuller street, Buffalo, N. Y., 2nd Gallery 338
 Turner Brass Works, Sycamore, Ill., 1st Gallery 133
 Wheeler & Schebler Co., Indianapolis, Ind., 1st Gallery 174

Breeze Carbureter Company.—This firm exhibits a special type of carbureter that they have been manufacturing for several years past and which represents considerable study of the problems of carburetion during that time, so that its design and construction are of interest to the autoist.

Byrne, Kingston & Co.—Carbureters are the chief specialties shown by this concern, but the Kingston carbureter is almost too well known to call for any detailed description, as it is specified as a part of the regular equipment of so many prominent American cars that this would be unnecessary. It is made in a range of sizes to fit cars of any power, from the smallest to the largest, and numerous types are shown adapted to well-known cars and on which it can be placed without any special fitting. They also show a line of the Kingston mufflers in both automobile and marine types.

Turner Brass Works.—The Turner carbureter, which is shown in four sizes, is but one of the many specialties shown by this firm, a comprehensive showing of which is made. They also show the Martin multiple-feed lubricator and the Martin gasoline strainer.

Wheeler & Schebler.—Schebler carbureters are so well-known through their use on such a very large number of cars staged at the show that it is easy to see more of them on the main floor than it is in the gallery space where they are exhibited. "Schebler" is a frequent answer returned to the query concerning the carbureter fitted to a car, and it would seem to have reached a point where it is almost as staple a fitting on the American car as iron is for cylinders or aluminum for crankcases. The 1908 model forms the subject of the exhibit, but a description would be superfluous.

HAND TOOLS, JACKS, ETC.

Coes Wrench Co., Worcester, Mass., 1st Gallery 135
 Oliver Mfg. Co., 213 S. Desplaines St., Chicago, Ill., 1st Gallery 172
 Noonan Tool & Machine Works, Rome, N. Y., 2nd Gallery 305
 Patterson, Gottfried & Hunter, Ltd., 148 Centre St., New York, 2nd Gallery 346

Coes Wrench Co.—As the originators of the anomalously-named monkey-wrench, and manufacturers of this useful tool for the past seventy-two years, the exhibit of the Coes Wrench Company, is one that serves to show the extremely wide range in which such an apparently simple device can be made, as this firm makes wrenches ranging in weight from four ounces up to 162 pounds, the sizes varying from four to seventy-two inches. For some time past they have been devoting attention to a special type of automobile wrench designed for service in inaccessible places and for durability, as the tool is entirely of steel.

Oliver Mfg. Company.—Oliver jacks are known wherever it is necessary to raise an automobile, so that it is hardly necessary to describe them for the benefit of the average autoist to whom they are already familiar.

Noonan Tool & Machine Works.—Tools and specialties for the quick repair of automobiles, motorcycles, and bicycles are manufactured by this concern, which lists more than two dozen handy labor and time-saving devices.

Patterson, Gottfried & Hunter, Ltd.—This firm has long made a specialty of automobile tool kits in roll form and the line they present is one of the most complete of its kind on the market.

COMPRESSED ACETYLENE GAS TANKS.

Prest-O-Lite Co., 1904 Broadway, New York, 1st Gallery 155

Prest-O-Lite Co.—Prest-O-Lite has become a by-word with the automobilist, so much so that it is practically synonymous with compressed acetylene gas tanks. One means the other, so that it is hardly necessary to explain this fact even to the beginner at automobiling or the new visitor—the man who is seeing his first automobile show, as the polished copper-plated steel tanks which were once such a subject for curious questions are now so common a sight fastened to the side of a car or on the running board that few realize their presence. Prest-O-Lite gas tanks have made themselves indispensable to the autoist, and the same is true of the Prest-O-Tire tanks, which eliminate the annoyance of pumping up large, heavy tires. According to the makers, there are now 35,000 users of Prest-O-Lite and Prest-O-Tire tanks.

TANKS AND FUEL SUPPLY SYSTEMS.

Bowser & Co., Inc., S. F., Fort Wayne, Ind., 1st Gallery 126

Bowser & Co., S. F., Inc.—This firm has simplified the autoist's problem of complying with the fire underwriters' rules regarding the handling of gasoline to such an extent that it is now only necessary to specify one of the Bowser "long distance" outfits of the required capacity in order to be certain, not alone of fulfilling every demand of the insurance companies for the protection of the property, but also to procure as convenient and economical a method of fuel-handling as has ever been devised. Outfits adapted to the capacity of the smallest private garages as well as the largest public establishments are made by this concern, and many of the most prominent garages in the metropolitan district have had the Bowser system installed for some time past, so that the autoist who is contemplating the purchase of such an outfit can readily see it in actual operation as well as the show, with but little additional trouble. One of the new things they are showing is a portable wheel-tank for oils.

AUTOMOBILE AND MARINE MOTORS.

Brownell-Trebert Co., Rochester, N. Y., 2nd Gallery 316

Brownell-Trebert Co.—Automobile and marine motors constitute the product of this concern, the latest models of which are shown in their exhibit. They manufacture standard four-cylinder, water-cooled motors of the four-cycle type, embodying numerous improvements of design and construction that are exclusive. The design is of the valves-in-the-head type, actuated by rocker arms working on a single camshaft, the cylinders being cast in pairs. The timer is mounted on a vertical standard forward, with the carbureter and valve mechanism all on the right-hand side. Lubrication is automatic and of the self-contained type. These motors are made in 4, 6, or 8 cylinders and from 15 to 160 horsepower.

AUTOMOBILE BODIES.

Quinby & Co., J. M., Newark, N. J., Main Floor 42

Quinby & Co., J. M.—Apparently this firm's exhibit is one of complete cars rather than bodies, of which they have made a specialty for a number of years past. Instead of being shown separately, the bodies are mounted on the chassis for which they were designed, and the car is offered for sale as it stands, or orders are taken for duplicates of any of the bodies shown, or according to the purchaser's specifications.

MISCELLANEOUS EXHIBITS AT PALACE SHOW

Acetevone Co., Niagara Falls, N. Y.,	1st Gallery 147	Masury & Sons, John, Brooklyn, N. Y.,	2nd Gallery 371
Auto Spring Repairer Co., 54 Malden Lane, New York,	2nd Gallery 375	National Surety Co., 115 Broadway, New York,	Main Floor 57
Auto Pump Co., Springfield, N. Y.,	1st Gallery 168	N. Y. School of Automobile Engineers, 146 West 56th	
Automobile Utilities Co., Boston, Mass.,	2nd Gallery 364	street, New York,	2nd Gallery 311
Balzer, Gus, 1556 Broadway, New York,	2nd Gallery 326	Norris Auto Co., Saginaw, Mich.,	2nd Gallery 363
Bureau of Tours, A. C. A., New York,	2nd Gallery 376	Norton Co., 26 Cortlandt street, New York,	2nd Gallery 343
Clover Mfg. Co., 226 West 58th street, New York,	2nd Gallery 361	Pacific Iron Works, Bridgeport, Conn.,	2nd Gallery 326
Columbia Nut & Bolt Co., Bridgeport, Conn.,	1st Gallery 169	Ralmes Co., 50 Ferry street, New York,	1st Gallery 142
Comptoir d'Innovations Pour Autos, Paris, France,	2nd Gallery 351	Perfection Spring Co., Cleveland, O.,	2nd Gallery 349
Consolidated Optical Co., 112 W. 31st St., New York,	2nd Gallery 365	Prosser & Son, Thomas, 15 Gold street, New York,	2nd Gallery 308
Cowles & Co., C., New Haven, Conn.,	1st Gallery	Spicer Universal Joint Co., Plainfield, N. J.,	2nd Gallery 366
Danels, W. Smalley, 52 Church St., Boston, Mass.,	2nd Gallery 317	Springfield Portable Construction Co., Springfield,	1st Gallery 197
Downing, C. J., 54 Warren street, New York,	2nd Gallery 301	Mass.,	2nd Gallery 377
Demar, J. E., 244 West 49th street, New York,	2nd Gallery 332	Stolt, Oscar S., New York,	1st Gallery 127
Elite Mfg. Co., Ashland, Iowa,	2nd Gallery 306	Travelers' Insurance Co., Hartford, Conn.,	Main Floor 53
Kling, Julius, Optical Co., 48 Malden Lane, New York,	2nd Gallery 336	Ventilated Cushion & Spring Co., Jackson, Mich.,	2nd Gallery 309
Klauder, Charles E., Philadelphia, Pa.,	2nd Gallery 313	West Side Y. M. C. A. Auto School, 318 West 57th	
Krause, Richard E., Cleveland, O.,	2nd Gallery 350	street, New York,	2nd Gallery 362
Mann Co., Leon, 699 Broadway, New York,	2nd Gallery 353		

Auto Pump Company.—This well-known concern manufactures the Spencer power air pump, which is a simple device that can be carried in the tool box when not in use and instantly applied to the engine when it is necessary to inflate any of the tires. The operation is very simple.

Balzer, Gus.—The marks that make the car distinctive both in the eye of the law, and of its owner, are specialized by this manufacturer, who makes a specialty of a line of attractive monograms, as well as license pads, numbers, and other marks of identification. They are made in a variety of styles.

Cowles & Company, C.—This firm exhibits a comprehensive line of high-grade carriage fittings, one of the novelties specialized being an ingenious locking handle for limousines, landaulets and broughams and which can also be used on touring cars. It is termed the security locking handle, each pair being fitted with locks that can only be opened by the keys accompanying them, as each pair is made with a different combination locking key, similar to a postoffice box key. This concern has also recently perfected a window lock and anti-rattler which is a valuable adjunct.

Masury & Sons, John.—The name of this concern is synonymous with that of fine carriage varnishes of which they have been manufacturers for a great many years before the automobile became a factor.

Pantasote Company.—Upholstery material forms the subject of this firm's exhibit, and the variety of shades and styles in which it is manufactured are little short of amazing. Almost any desired effect can be produced and any shade matched to contrast or correspond with the remainder of the car's finish.

Raimes & Company.—"Globe" liquid and paste metal polish constitutes the line exhibited by this concern. It is

suitable for nickel, silver, copper and brass, and is used both for cleaning and polishing.

Spicer Universal Joint Company.—As its name indicates, this firm manufactures a line of universals now so generally employed on shaft-driven cars, which form a large majority of all those in use at present. These joints are of a special type, of which this concern is the originator and maker.

Springfield Portable Construction Company.—Building material has reached such a high-water level that in many cases it is now far cheaper to buy buildings of the portable type, all ready to set up, than it is to have them erected under local contract. This applies particularly to private garages, which the above-named firm makes a specialty of supplying.

DISTANCE RECORD FOR COLUMBUS ELECTRIC.

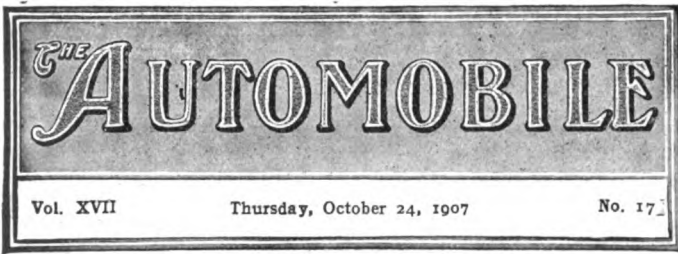
BOSTON, Oct. 21.—An excellent mileage record has been accomplished for an electric automobile by a run of 100 1-8 miles, made by Charles S. Henshaw with a Columbus stanhope, equipped absolutely according to stock specifications. Starting from Boston, the little car ran out to Gloucester and return, a distance of 74.7 miles, without any trouble. Roads were of a give-and-take nature, macadam predominating, but cobblestones showing their uneven surface from time to time, and a few hills relieving the trip of monotony. On the return to the city the car was in such good condition that Henshaw decided to try for the long distance record, and for one hour ran on the square formed by Arlington, Beacon, and Boylston streets and Massachusetts avenue, at an average of ten miles an hour, until 101 1-8 miles were recorded.

At this stage the batteries showed signs of exhaustion, and although it was still possible to run at seven miles an hour the test was called off. During the country run an average of ten miles an hour was maintained, as is testified by the judges' car.

TWO MAKES WHICH ARE HAVING THEIR OWN SHOWS

Berliet.—The American Locomotive Motor Car (license Berliet) is holding forth independently of either the "independents" or the licensed show, and instead of tenancing a niche at either the Palace or the Garden it will reign supreme in a jurisdiction all its own during the period of both shows, including the interim between them. It will be exhibited at the Waldorf-Astoria and will be represented by one of the new six-cylinder chassis, a complete 40-horsepower four-cylinder touring car, and a 40-horsepower roadster on the same chassis as the last named. These three will have everything to themselves at the huge Fifth-avenue hostelry and will be a miniature automobile show of their own. The remaining models will be shown at No. 1886 Broadway.

Rambler.—"Two automobile shows are to be held in New York for the display of 1908 models. These are under the control of contesting organizations with neither of which we are affiliated. Therefore, though many strong friends of the Rambler may attend either or both, it has been thought better that the Ramblers be exhibited independently throughout the period of both than at either of the partisan shows." Thus runs the Rambler announcement made by Thomas B. Jeffery & Company regarding its stand on show matters this year. This exhibit will be held during the period of both shows. October 24 to November 9, at the salesrooms of Homan & Schulz, 38-40 West Sixty-second street, and includes a full line of stock models and finely finished chassis.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor

R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT

A. B. SWETLAND, Business Manager

LOUIS R. SMITH FRANK B. BARNETT

W. I. RALPH, 1035 Old South Building, Boston, Mass.

C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Iliffe & Sons, Limited, 20 Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor
Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903,
and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905, - - - - -	730,000
“ “ in 1906, - - - - -	791,000
“ “ This Issue - - - - -	18,000
“ “ Since January 1, - - - - -	708,650

Now for the Innings of the Annual Shows. It is one of the penalties of a new industry that at regular intervals of twelve months every person connected with it must have his ordinary routine scattered to the winds. When selling automobiles becomes commonplace, there will be little need for yearly upheavals. Since we are obliged to take things as they are and not as the superior man's superior wisdom would have them be, the person who has for his mission the converting of the classes and the masses from patriarchal methods of locomotion to modern means of propulsion is wise who enters into the movement with whole-hearted energy.

Probably individual firms could sell as many cars for spot cash by holding special exhibitions in their own showrooms and entering into a special publicity campaign as by participating in a show; but the final result to the industry as a whole would be quite different. Shows have another object than transferring automobiles from the hands of the manufacturer to those of the user for spot cash, and that object is an appeal to the people which can only be made by a united, and, to a certain extent, disinterested effort. The super-technical man has too frequently made it known that he does not like the modern spectacular show, and that a plain chassis and plain boards would be more satisfactory.

Directors of the big national shows, however, display true wisdom in making their appeal to the large majority indifferent to

the automobile industry. A trading store display pure and simple is never likely to stir up the emotions of the uninitiated. The efforts in Grand Central Palace and Madison Square, at Chicago and a few other of the important cities of the country, will strike the imagination of the masses as nothing else can, and it is in that power to excite interest that their chief value lies. When the automobile industry becomes a commonplace one there will be no need for shows—for there will be no converts to make.



A Comparison of Risks in Auto and Horse Travel.

It must be admitted by even the most ardent automobile user that accidents with the new conveyance are frequent enough to be deplorable, and there is little question but with systems of more strictly examining into operators' qualifications the number of fatalities might be lessened materially. The same, of course, is true of horse use—to an extent that might surprise the prejudiced advocates of this more dangerous method of locomotion—but as long as the race endures it undoubtedly must continue to be the case that moving about from place to place, by whatever means, will subject the individual to certain hazards he might avoid by resolutely remaining in the home of his birth. A disproportionate popular conception of the automobile accident matter has been rather deliberately fostered by many daily newspapers, which play up in front-page display the mishap occasioned by the machine, while relegating to a few obscure lines the fatality consequent upon a misdirection of horse sense. Yet it seems to be the fact, insofar as statistics on the subject are available, that the horse is responsible for the greater proportion of accidents—even taking into account the present predominance of the horse vehicle.

One has only to look into the records of the coroner's office in any community to find long lists of deaths, resulting year after year from the use—often by women and children—of an animal which is prone to spasms of terror every time a bit of paper blows across the road, or a locomotive, bicycle, or automobile intrudes on the equine vision. Even admitting the present probability that there are twenty horse vehicles to one automobile (the most reliable recent figures indicating about 3,000,000 of the former to 150,000 of the latter) it still would require far less than twenty horse accidents to one automobile accident to place the two means of transportation on a parity as respects safety. And careful estimates disclose something like sixty horse accidents to one automobile accident. The essential unfairness, however, of balancing one horse vehicle against one automobile is found in the greater average mileage and carrying capacity of the latter.

In any sort of ordinary circumstances, an automobile is called upon to carry twice the load five times the distance that would be expected from a horse vehicle. This being the case, is it reasonable to expect the greater travel with the lesser risk? Certainly the liability of individual accident is more likely to bear a proportion to the number of individuals carried and the mileage accomplished than it is to any arbitrary comparison of vehicle numbers. Railroad statisticians recognize and are familiar with a basic unit they term a "passenger mile." Borrowing this, an automobile conveying seven people two hundred miles would afford 1,400 passenger miles against, say, a horse vehicle carrying two people twenty-five miles, affording 50 passenger miles. Surely it is natural that the hazard of one amount of travel should be greater than of one-twenty-eighth as much.

So, if the automobile increases travel, can we expect this to be the case without some accompanying increase in the accidents of travel? Apparently not, if we frankly face the figures. Yet an analysis of these same figures makes it plainly appear that the automobile, while vastly increasing the total of passenger miles, with a related increase in accidents, nevertheless most materially decreases the risk per passenger mile. This, too, is with the conditions as they are—admittedly not all that they should be. With better roads, saner legislation, and increased caution and competence on the part of all road users, much of the risk that is now present will disappear.

A. L. A. M. LONG ISLAND PRESS RUN.

The Show Committee of the A. L. A. M. did the job thoroughly on Monday last, conveying several score of press representatives from New York City to the famous Chateau des Beaux Arts, most picturesquely located at Huntington, L. I., where the party arrived with keen appetites for the roast pig luncheon. Incidentally there was some tall traveling in the 1908 six-cylinder and four-cylinder models utilized for the occasion, the field embracing the Pierce (six), Stevens (six), Peerless (six), Packard, Thomas, Lozier, Locomobile, Columbia, White, Studebaker, Autocar, Matheson, Pope-Hartford, Pope-Toledo, Thomas (Detroit), Northern, and Knox, with several interlopers.



COLONEL GEORGE POPE,
Chairman of the A. L. A. M.
Show Committee.

There were only two speechmakers, and both of them were good. Col. George Pope, chairman of the A. L. A. M. Show Committee, in addition to a "distributed" speech given below, made timely comments upon the industry in general, the tenor of which was substantially optimistic. Then John C. Wetmore, automobile editor of the *Evening Mail* and the dean of the automobile writers of the metropolitan district, contributed one of

his facetious and versatile talks which put everybody in excellent humor, with a single exception.

The run back to town was done more or less leisurely and the beauties of the Autumn tinted Long Island roads were more thoroughly appreciated than was the case in the somewhat hurried outward journey. The ease with which the 75-mile trip was accomplished illustrated the reliability of the Seldenite array of up-to-date cars.

Besides Col. Pope, Marcus I. Brock and Secretary M. L. Downs were other members of the Show Committee who contributed to the pleasure of the guests. The press department trio, consisting of Harry T. Clinton, Arthur N. Jervis and Henry Caldwell, accepted the occasion as one for pleasure and not for "working" purposes. Charles W. Schroeder represented the Madison Square Garden Company. E. H. Cutler, general manager of the A. L. A. M., was also quietly in evidence.

Among other things which Col. Pope said in his prepared speech were the following:

These 1908 models, which we have had the good fortune to see practically tried out this early, are undoubtedly the finest products in the line of cars yet seen, and they are destined to sell readily.

The business done by the licensed makers during the first six months of 1907 was nearly as great as during the whole of 1906. The sales of the 1907 half-year amounted to \$40,000,000, while for the whole of 1906 they were only \$45,000,000. The sales of the first nine months of 1907 have surpassed the total of 1906 by more than \$5,000,000, and the total business of this year will exceed that of last year by at least \$15,000,000. This is to say that the total business done this year by the licensed makers will show a gain of at least 33 1-3 per cent. over 1906.

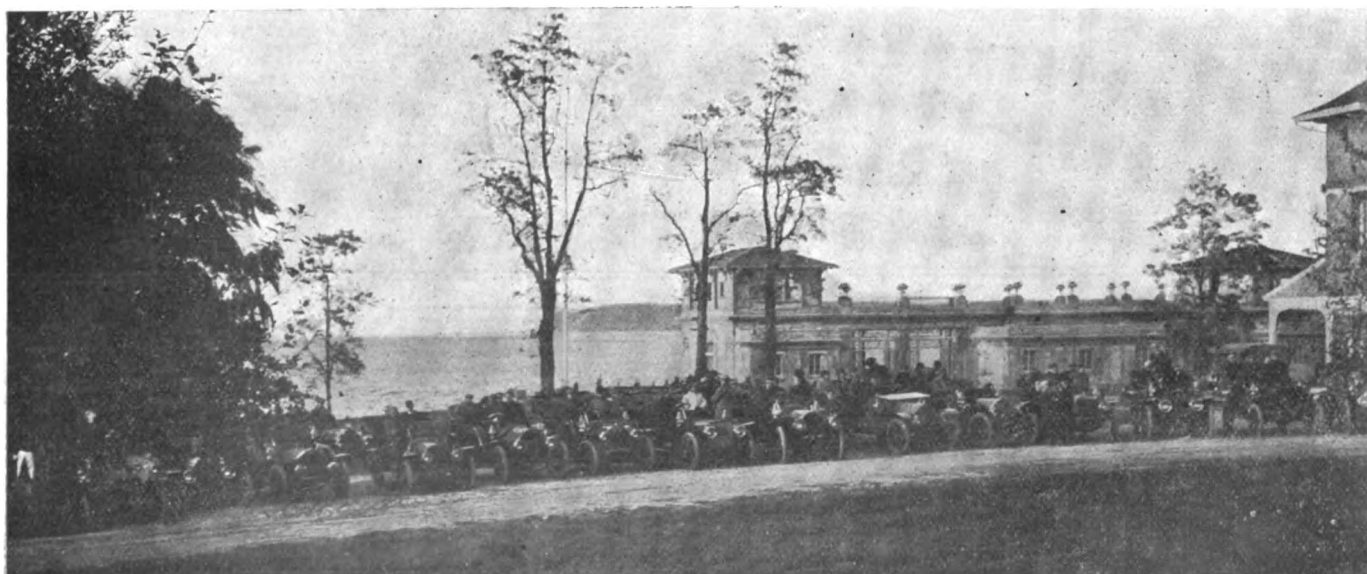
The figures justify an optimistic outlook for 1908, as does also the quality of the cars themselves. The American car has rapidly attained the excellence of the foreign product; and it has even demonstrated itself superior for the roads of this country. The industry has withstood the trials of unfavorable weather and the blows of a panicky stock market, and is still in good condition as a whole. Every circumstance warrants confidence in a prosperous future for the conservative maker and dealer.

CHRISTIE FRONT-DRIVE LOWERS ITS RECORD.

BIRMINGHAM, ALA., Oct. 18.—On the State Fair Grounds here, Walter Christie's 135-horsepower front-drive automobile has lowered its own record for the mile on a circular track to 51 3-5. Louis Strang, who was Christie's mechanic on the same machine in the French Grand Prix last July, handled the car, Christie being unable to drive owing to his injuries at Pittsburg last month. Barney Oldfield, who for a long time held the mile record with Christie, has now been left behind, the best time of the Green Dragon driver being 3 seconds. Owing to the meet being an unsanctioned one, there is some possibility of Strang's record not being accepted as official by the Racing Board of the A. A. A.

KULICK'S NARROW ESCAPE FROM DEATH.

DETROIT, MICH., Oct. 21.—Striving for a new one-mile record on a circular track, Frank Kulick crashed through the fence at the State Fair Grounds, converted the new 120-horsepower Ford racing machine into a pile of junk, and narrowly escaped death, landing in the hospital with injuries that will put him on the retired list for some months. Kulick had been trying for some time to clip a few seconds off Strang's mark of :51 3-5 with the Christie front-drive, and succeeded in reeling off a mile in :49 4-5 at a private trial. The accident happened in rounding a turn, the car crashing through the fence and executing a couple of complete somersaults. The front axle broke loose and went spinning off to one side. Kulick was picked up fully sixty feet from where he started his flight through the air, and hurried to a hospital, where it was found that his right leg was broken in two places. After the accident Henry Ford said he was through with racing.



THE SIX AND FOUR-CYLINDER A. L. A. M. LINE-UP AT THE CHATEAU DES BEAUX ARTS, HUNTINGTON, LONG ISLAND.

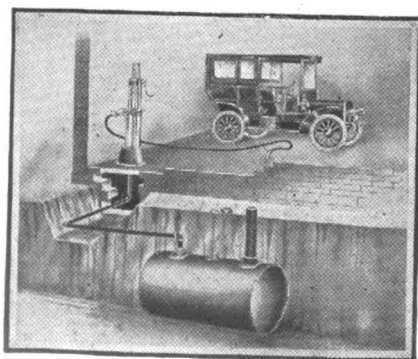
INDEX
ADVERTISERS

A. L. A. M. Show146
 Abendroth & Root Mfg. Co.155
 Acetylene Gas Illuminating Co. 55
 Acme Motor Car Co.112
 Adams Co.153
 Add-Wear Tire Sleeve Co.60
 Adjustable Lighter Co.54
 Ajax-Grieb Rubber Co.102
 Aluminum Solder & Refining Co.80
 American Ball Bearing Co.82
 Am. Brass & Alum. Works.56
 American Die Casting Co.61
 American Locomotive Automobile Co.149
 American Motor Car Co.142
 American Motor Truck Co.111
 American Veneer Co.70
 Anderson Forge & Machine Co. 56
 Apperson Bros. Automobile Co.152
 Arc-Toledo Spark Plug Co.63
 Ashton Valve Co.61
 Atlas Motor Car Co.150
 Auburn Automobile Co.60
 Audel & Co., Theo.65
 Aurora Motor Works.113
 Austin Automobile Co.112
 Auto and Power Appliance Co. 54
 Auto Pump Co.54
 Autocar Co.111
 Autocar Equipment Co.112
 Automobile Supply Co.56
 Automobile Utilities Co.Cover
 Autoshine Co.55
 Auto Supply Mfg. Co.85
 Avery Portable Lighting Co.160
 Badger Brass Mfg. Co.78
 Baldwin Chain Mfg. Co.110
 Barndt-Johnson Auto Supply Co.59
 Barnett Drop Forging Co.71
 Bartholomew Co.114
 Bay State Auto Co.60
 Beaver Mfg. Co.55
 Behen-Faught Motor Car Eq. Co. 54
 Bellush Motor Co.60
 Berkshire Motor Car Co.60
 Besly & Co., C. H.79
 Bethlehem Steel Co.78
 Billings & Spencer.58
 Blasier Mfg. Co.69
 Blomstrom Mfg. Co.107
 Blomstrom Motor Co., C. H.60
 Boker & Co., H.65
 Bosch, Robert.117
 Boston Auto Gage Co.62
 Bowser & Co., S. F.83
 Boyle & Co., John.129
 Bridgeport Vehicle Co.129
 Briscoe Mfg. Co.59
 Brownell Motor Co.55
 Brush Runabout Co.147
 Buckeye Jack Mfg. Co.149
 Buckeye Mfg. Co.159
 Buffalo Carburetor Co.78
 Bullard Automatic Wrench Co. 70
 Bullard, J. H.63
 Buob & Scheu.59
 Byrider Electric Auto Co.113
 Byrne-Kingston & Co.91
 Cadillac Motor Car Co.117
 Cameron Car Co.86
 Carr, F. S.59
 Chadwick Eng. Works.78
 Champion Co., A.64
 Chandlee & Chandlee.69
 Charter & Co.64
 Chase & Co., L. C.135
 Clark, E. S.64
 Cleanola Co.65
 Cleveland Motor Car Co.72
 Cleveland-Canton Spring Co. 89
 Coates Clinper Mfg. Co.61
 Coes Wrench Co.61
 Colgan Co., J. W.108
 Colt Runabout Co.66
 Columbia Lubricant Co.78

Connecticut Gauge Co.82
 Conn. Tel. & Elec. Co.83
 Conover Motor Car Co.88
 Continental Auto. Mfg. Co.155
 Continental Caoutchouc Co.101
 Continental Motor Car Co.119
 Continental Motor Mfg. Co.84
 Cook's Sons, Adam.98
 Corbin Motor Vehicle Corp.118
 Cornish-Friedburg Motor Car. 119
 Correspondence School Motor Car Practice.55
 Cotta, Chas.62
 Covert Mfg. Co.55
 Cradock & Co., Geo.87
 Crawford Inn.89
 Crescent Parts Co.60
 Cullman Wheel Co.56
 Daimler Mfg. Co.60
 Darracq Motor Car Co.60
 Dayton Electrical Mfg. Co.63
 De Luxe Motor Car Co.60
 Diamond Chain & Mfg. Co.56
 Diamond Rubber Co.108
 Dietz Co., R. E.63
 Dixon Crucible Co., Joseph.66
 Dorris Motor Car Co.113
 Dover Co., Geo. W.53
 Dow Portable Electric Co.78
 Dragon Automobile Co.66
 Duff Mfg. Co.62
 Dubied & Co., Ed.72
 Eclipse Machine Co.54
 Eco Mfg. Co.82
 Edmunds & Jones Mfg. Co.60
 Eldredge Electric Mfg. Co.66
 Electric Vehicle Co.118
 Ellsworth, J. M.140
 Elmore Mfg. Co.171
 Empire Automobile Tire Co.84
 Ericka Mfg. Co.54
 Excelsior Supply Co.64
 Fiat Automobile Co.137
 Firestone Tire & Rubber Co. 60
 Fisk Rubber Co.99
 Ford Motor Co.60
 Forest City Motor Car Co.118
 Franco-Am. Auto Supply Co. 54
 Franklin Mfg. Co., H. H.161
 Fry, T. C. & W. L.55
 G & J Tire Co.98
 Gabriel Horn Mfg. Co.156
 Garford Co.139
 Gearless Transmission Co.175
 General Electric Co.116
 Geometric Tool Co.92
 Gibney & Bros., Jas. L.55
 Gieszler Bros.77
 Gilbert Mfg. Co.67
 Goodrich Co., B. F.58
 Gray & Davis.Cover
 Grout Bros. Auto Co.60
 Gum Elastic Tire Co.91
 Ham Mfg. Co.94-95
 Hardy Co., The R. E.68
 Harris Oil Co., A. W.128
 Hartford Auto Parts Co.57
 Hartford Rubber Works Co.57
 Hartford Suspension Co.134
 Hatcher Auto Parts Co.78
 Hatfield Motor Vehicle Co.119
 Haynes Automobile Co.60
 Heald Machine Co.92
 Healy Leather Tire Co.60
 Heinz Electric Co.127
 Heltzer Carburetor Co.55
 Henshaw Motor Car Co.131
 Hercules Auto Specialty Co. 80
 Hercules Electric Mfg. Co.55
 Herschell-Spillman Co.54
 Herz & Co.61
 Hess-Bright Co.56
 Hicks Speed Indicator Co.57
 Hine-Watt Mfg. Co.61
 Hoffecker Co.84
 Hoffman, Geo. W.54
 Holley Bros. Co.99
 Holsman Automobile Co.174
 Hopwell Bros.169
 Hotchkiss Mfg. Co.148
 Hotel Fredonia.89
 Hotel Lafayette.89

Hotel Westminster.72
 Hume Carriage Co.Cover
 Hydraulic Pressed Steel Co.56
 Imperial Motor Car Co.157
 Indestructible Steel Wheel Co. 56
 Index Speed Indicator Co.77
 Jackson Automobile Co.93
 Jamesville Mfg. Co.62
 Jeffery & Co., Thos. B.170
 Jeffery-Dewitt Co.120
 Jenckel Motor Mfg. Co.77
 Jenkins Specialty Co.78
 Jersey Brake Co.68
 Johnson Sporting Goods Co., I. 64
 Jones Speedometer.151
 K. W. Ignition Co.61
 Kansas City Motor Car Co.60
 Kellom Co., Chas. F.70
 Killgore Mfg. Co.65
 Kimball Tire Case Co.62
 Kinsey Mfg. Co.54
 Kinsler-Bennett Co.77
 Klink Motor Car Mfg. Co.70
 Knox Automobile Co.71
 Konigsloew, Otto.56
 Lavalette & Co.141
 Lavigne Mfg. Co.61
 Lear Automobile Co., Oscar.133
 Leather Tire Goods Co.110
 Limousine-Carriage Mfg. Co. 63
 Lipman Mfg. Co.55
 Lobe Pump Co.62
 Locke & Co.83
 Locomobile Co. of America.165
 Logan Construction Co.53
 London Auto Supply Co.59
 Long Mfg. Co.68
 Long-Turney Mfg. Co.100
 Loring, E. J.66
 Lozier Motor Co.113
 M. & M. Mfg. Co.91
 McClellan, Chas. P.59
 McCord & Co.68
 Mandeville Steering Wheel Muff Co.115
 Manhattan Electrical Sup. Co. 54
 Manhattan Screw & Stamping Co.65
 Maple City Mfg. Co.67
 Martini Import Co.87
 Marvel Mfg. Co.109
 Mason Car Sales Co.114
 Maxwell-Briscoe Motor Co.162
 Mayro Radiator Co.56
 Menger, C. A.62
 Merchant & Evans Co.70
 Merritt & Co.54
 Mich. Crucible Steel Cast. Co. 56
 Michellin Tire Co.143
 Midgley Mfg. Co.56
 Miller Bros.63
 Miller, Chas. E.104
 Mitchell Motor Car Co.136
 Moline Automobile Co.60
 Monogram Crest & Sign Co. 68
 Mora Motor Car Co.Cover
 Morgan & Wright.74-75
 Morrison, McIntosh & Co.121
 Mosler & Co., A. R.55
 Moss Photo Engraving Co.90
 Motor Car Co.114
 Motor Car Equipment Co.81
 Motz Clincher Tire & Rub. Co. 60
 Muller, Albert.54
 Muttly Co., L. J.59
 Myers Auto Top Co.59
 National Auto Accessories Co. 90
 National Brake & Clutch Co. 154
 National Carbon Co.85
 National Motor Vehicle Co. 146-59
 National Oil Pump & Tank Co. 50
 Neustadt Auto & Supply Co. 77
 New England Motor Co.79
 N. Y. Gear Works.61
 N. Y. Sporting Goods Co.55
 N. Y. & N. J. Lub. Co.116
 Niagara Falls Brass Works.115
 Nordyke & Marmon Co.163
 Northern Mfg. Co.144
 Northway Motor & Mfg. Co. 66
 Norton Co.121
 Nuttall Co., R. D.56
 Nutting Machine Co.83

Ofeldt & Sons.54
 Okey Motor Car Co.60
 Old Colony Light Co.70
 Olds Motor Works.60
 Owen & Co., R. M.173
 Pacific Tucking & Mfg. Co.55
 Packard Electric Co.54
 Packard Motor Car Co.167
 Page-Storm Drop Forge Co.53
 Palmer & Singer Mfg. Co.164
 Pantasote Co.153
 Parish & Bingham Co.56
 Parker, Stearns & Co.77
 Peerless Motor Car Co.Cover
 Penna. Auto Motor Co.111
 Penn. Rubber Co.Cover
 Perfection Spring Co.54
 Peugeot Chains.56
 Pfanstiehl Elec. Laboratory.55
 Picrome Hide Co.56
 Pioneer Brass Works.56
 Pirelli Tires.60
 Pittsfield Spark Coil Co.69
 Potter & Johnston Machine Co. 92
 Precision Appliance Co.114
 Premier Motor Mfg. Co.132
 Prest-O-Lite Co.105
 Progressive Mfg. Co.67
 Prosser & Sons, Thos.69
 Quad Mfg. Co.62
 Quincy Co., J. M.59
 Quincy, Manchester, Sargeant Co.55
 Ralms & Co.54
 Rainier Co., The.96-97
 Rajah Auto Supply Co.61
 Ranger Motor Works.114
 Randall-Fachney Co.138
 Reeves Pulley Co.55
 Remington Tool & Machine Co. 35
 Remy Electric Co.80
 Renault Freres.145
 Rice Vulcanizing Co., L. E.87
 Robert Instrument Co.54
 Roberts Motor Co.55
 Robinson & Sons Co.84
 Rose Mfg. Co.86
 Ross Gear & Tool Co.56
 Royal Battery Co.61-62
 Royal Equipment Co.55
 Royal Motor Car Co.119
 Rushmore Dynamo Works.122
 St. Louis Car Company.145
 Salisbury Wheel & Mfg. Co.55
 Samson Leather Tire Co.64
 Sanford Mfg. Co., F. C.56
 Sanxon Lamp Co.79
 Schraeder Sons, A.81
 Schwarz Wheel & Mfg. Co.100
 Shaler Co., C. A.56
 Shawver Co.68
 Shoemaker Automobile Co.118
 Smith Auto Co.132
 Smith Co., A. O.81
 Smith Mfg. Co., R. H.158
 Smith & Sons, S.90
 Speed Changing Pulley Co.148
 Speedwell Motor Car Co.111
 Spicer Universal Joint Mfg. Co. 109
 Splittorf, C. F.72
 Sprague Electric Co.35
 Sprague Umbrella Co.82
 Stackpole Battery Co.90
 Standard Automatic Lub. Co. 56
 Standard Battery Connection Co.61
 Standard Co.106
 Standard Connecting Rod Co. 63
 Standard Roller Bearing Co.55
 Steam Carriage Boiler Co.56
 Stearns Co., F. B.60
 Stevens-Duryea Co.178
 Stewart & Clark Mfg. Co.76
 Stret Machine Co.67
 Studebaker Auto Co.154
 Success Auto Bugey Co.60
 Supplementary Sprol Spring. 67
 Swinehart Clincher Tire Co.57
 Syracuse Alum. & Bronze Co. 91
 Teel Mfg. Co.64
 Thomas Motor Co., E. R.168
 Thompson, J. P., Sons Co.62
 Timken Roller Bearing Axle.152



The Safest Way to Store Gasoline

The NATIONAL is the only pump that discharges gasoline at every movement of the crank; it saves one-half the labor and one-half the time to pump gasoline; there is no evaporation or leakage; the tank is buried underground; the pump may be put in the building in a convenient place. It is the safest way because it meets all of the requirements of The National Board of Fire Underwriters.

For a Garage owner the National portable wheel tank will enable you to fill a car quickly by pushing the wheel tank by hand to the car. It is easily handled even in case the car would be at the curb.

The NATIONAL is also adapted to private motorists, also for lubricating oil storage
 Ask for catalogue—it will explain all about the National System.

The National Oil Pump and Tank Co., Dayton, O.

THE AUTOMOBILE

VOL. XVII

NEW YORK—THURSDAY, OCTOBER 31, 1907—CHICAGO

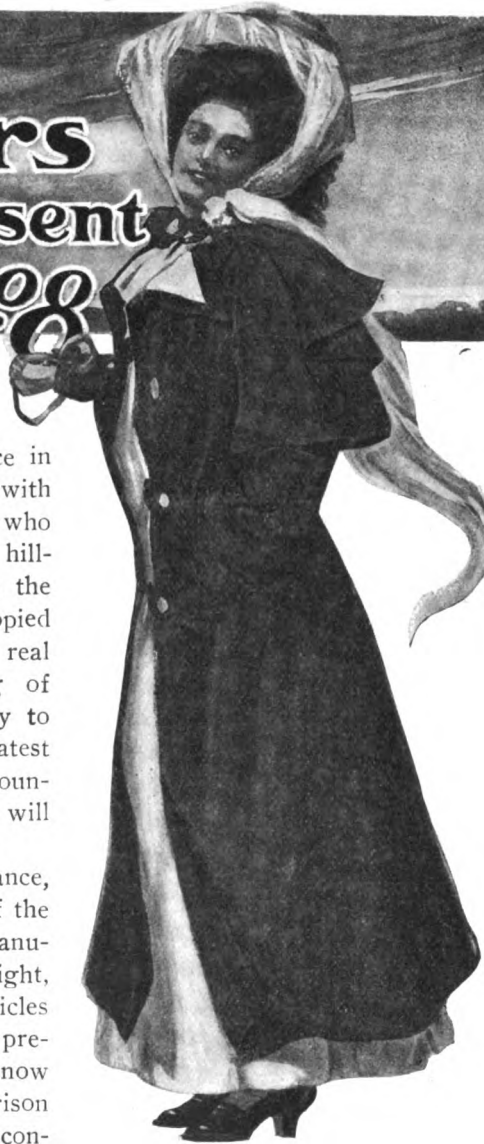
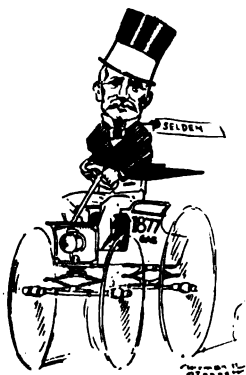
No. 18

What the A. L. A. Makers Proudly Present for 1908

It was the "Garden" which first gave a place to the automobile, and when one remembers that modest space in the bicycle show, next the exhibition with its play track and the elated passengers who had their first rides, and the wonderful hill-climbing stunt on the roof underneath the astonished gaze of Diana of the Seville-copied tower, and then the beginning of the real automobile shows, there is a feeling of "home-coming" as you wend your way to the big amphitheater to look at the latest product of the pioneer makers of the country, and one knows that the new models will be displayed pleasingly and comfortably.

From a study of what is known in advance, it would appear that the annual show of the Association of Licensed Automobile Manufacturers, opening on this Saturday night, will give a display of motor-driven vehicles far in advance of anything ever before presented by the American makers, who now challenge, without any hesitancy, comparison with the best efforts of the European concerns, from whom, it is confessedly admitted, much has been learned, though to this information much is now added which enters into the making of the staunch and reliable automobile that in a single day can excel the total mileage of a score of horses, and still be found willing to duplicate the distance if necessary.

The setting prepared by the Show Committee of the A. L. A. M. is "rich, not gaudy," and Director Ball has never done anything better. The terraced garden supplies a setting that is an exemplification of

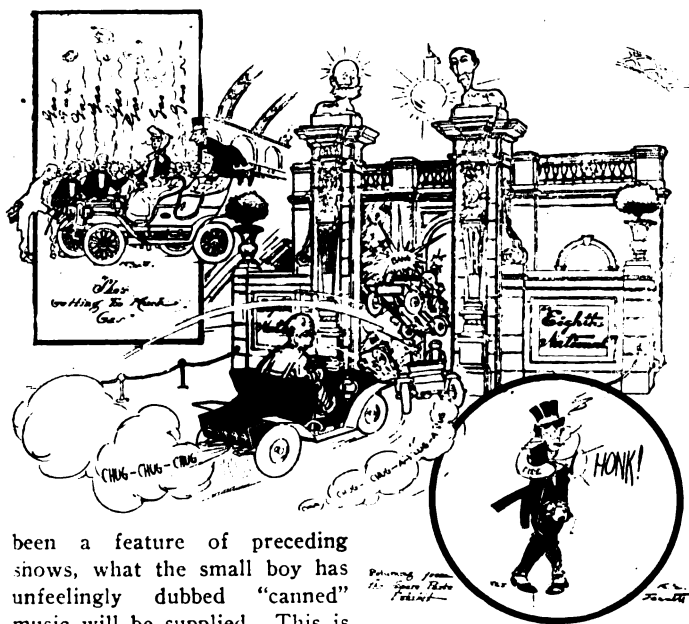


simplified elegance, the blending of French grays and rich cardinals, interspersed with natural flowers and some statuary, is harmoniously accomplished. The 1908 models, with lustrous bodies of various hues and shining brass and nickel, can hardly fail to have their attractiveness enhanced by the surroundings, for the Garden will scarce be recognized by the frequenters attracted to its familiar precincts by the ever-changing category of events which go to make up its varied career.

For most affairs the Garden has room and to spare, but the increasing demands on the part of automobile exhibitors for space began to be felt three years ago, so that the management has been forced to adopt one expedient after another that would enable it to provide additional floor space within the four walls of the structure. The plan adopted last year of building platforms to overhang the balcony seats, and by which 10,000 square feet of floor space for the exhibition of cars was gained, has again been utilized, while every available square foot of space in the Garden's numerous annexes, such as the concert

hall, restaurant, and basement has been pressed into service. In the concert hall a departure has been made from the decorative scheme prevailing in the amphitheater, by having it as an adjunctory rose garden, set with latticed arbors in green and white. Access to it is through an arched entrance, with double diagonal lattices framed in white, and a central dividing lattice down the center of the room, while the walls under the balconies and back of the stage are finished in the same manner. The bareness of the basement floors and walls has also been appropriately covered, making it a far more attractive part of the show than it was in the first years that it was utilized for this purpose.

In place of the time-honored brass band that has always



been a feature of preceding shows, what the small boy has unfeelingly dubbed "canned" music will be supplied. This is

the introduction of the Telharmonic service in place of the band, and it will be the first time that this electric music will be heard in such a large amphitheater. Special cables have been strung through the conduits of the telephone company in Twenty-sixth street and the apparatus is already installed.

Where the cars themselves are concerned, it is quite evident from advance reports that the six-cylinder note is to be predominant. No less than eleven models of this multi-cylinder type will be revealed, of which eight or nine will be shown publicly for the first time. Though greatly in contrast with former years they have been ready for some time since and have not

been completed just in time to get into the show. Under the new A. L. A. M. rating, which has been followed by the majority of the association's members, they range in size from 42 to 70 horsepower, the minimum cylinder bore being 1-8 inches and the maximum 5 inches. For the first time, cars will be rated in odd and unusual figures, such as 43, 45, and 46.6 horsepower, which represent some of the official powers of the six-cylinder models in question, and the contrast between this and the former practise of crediting a motor with an output of 45-50 horsepower, or more widely varying limits, cannot fail to be noticed. Most of these six-cylinder models are to be staged in the shape of seven-passenger touring cars, though there will be a few representatives of the roadster type as well.

Where the remainder of the cars are concerned there will be 33 different types, or rather different makes, of gasoline pleasure vehicles shown, nine different makes of electrics, one steam-driven make of cars, the first complete showing of motor-cycles ever brought together in the country, besides a number of both gasoline and electric trucks, the showing of the former being larger by far than has characterized this end of the

show in former years. But then this is also true of the show as a whole, for as compared to the total of 225 individual exhibitors of last year, that apparently took up every inch of space from basement to roof, the management has been able to juggle with the interior of the Garden so that its present capacity as revealed by a tabulation of the show is something like 325 exhibitors—a number that is said to be the largest ever assembled under a single roof at an automobile show. Yet, for all that, the interior of the Garden as a whole will present a much more open and less crowded aspect than has been the case, in the past two or three years when there were considerably fewer exhibitors.

Probably the chief thing to strike the average visitor, who, while observant, reckons not of automobile associations or the ties that bind them, is the striking degree of uniformity that marks the product of the exhibitors. Not that all are alike by any means, nor that they are characterized by a degree of sameness that tends

to make them uninteresting, but the fact that all reveal an air of settled design that speaks plainly of a closely followed policy of conservatism in the draughting room, is unmistakable. In other words, it is amply evident that, so far as the numerous makers gathered in the Garden are concerned, the day of experimenting is long since past and it is no longer possible to find the product of ripe experience at one exhibit and the first stages of haphazard experimenting as its neighbor. This is a respect in which the association of American makers, under whose auspices the Garden show is held, is unique, as, with one or two exceptions, they were all recruited at a time when the industry in general, and automobile design in particular, was in a state of chaos. They emerged from that state triumphant, and in their product as it will be revealed by the show is strikingly displayed the results of organization and co-operation, despite the fact that many of these manufacturers are producing widely divergent types of motor-driven vehicles selling at various prices.

They are a tribute to the American industry, and in this connection it is well to remark that this is the first thoroughly American automobile show that the Garden has housed in its seven years or more of sheltering the power-driven vehicle. If we were half so rampantly patriotic as our cousins of over seas—the Britishers—we would have long since coined a new compound to describe our cars. It would be "all-American"; but unlike its prototype that is used so much in the "Tight Little Isle," and means so little, it would not represent cars made of French or German parts and assembled after having passed the customs barrier. With the exception of a stray parts exhibit here and there that is virtually lost amid the scores that surround it, there is nothing to suggest the existence of such a thing as a great industry of the same kind in several different countries on the other side of the Atlantic. There is not a car of foreign origin in the entire show, and this eighth show marks an epoch.

Probably the chief thing to strike the average visitor, who, while observant, reckons not of automobile associations or the ties that bind them, is the striking degree of uniformity that marks the product of the exhibitors. Not that all are alike by any means, nor that they are characterized by a degree of sameness that tends to make them uninteresting, but the fact that all reveal an air of settled design that speaks plainly of a closely followed policy of conservatism in the draughting room, is unmistakable. In other words, it is amply evident that, so far as the numerous makers gathered in the Garden are concerned, the day of experimenting is long since past and it is no longer possible to find the product of ripe experience at one exhibit and the first stages of haphazard experimenting as its neighbor. This is a respect in which the association of American makers, under whose auspices the Garden show is held, is unique, as, with one or two exceptions, they were all recruited at a time when the industry in general, and automobile design in particular, was in a state of chaos. They emerged from that state triumphant, and in their product as it will be revealed by the show is strikingly displayed the results of organization and co-operation, despite the fact that many of these manufacturers are producing widely divergent types of motor-driven vehicles selling at various prices.

They are a tribute to the American industry, and in this connection it is well to remark that this is the first thoroughly American automobile show that the Garden has housed in its seven years or more of sheltering the power-driven vehicle. If we were half so rampantly patriotic as our cousins of over seas—the Britishers—we would have long since coined a new compound to describe our cars. It would be "all-American"; but unlike its prototype that is used so much in the "Tight Little Isle," and means so little, it would not represent cars made of French or German parts and assembled after having passed the customs barrier. With the exception of a stray parts exhibit here and there that is virtually lost amid the scores that surround it, there is nothing to suggest the existence of such a thing as a great industry of the same kind in several different countries on the other side of the Atlantic. There is not a car of foreign origin in the entire show, and this eighth show marks an epoch.





CHARLES CLIFTON
President and Member of
Show Committee



E. H. CUTLER
General Manager
A. L. A. M.



COL. GEORGE POPE
Chairman of Show
Committee



MARCUS I. BROCK
Assistant General Manager
A. L. A. M.



M. L. DOWNS
Secretary of the
A. L. A. M.

THE A. L. A. M. AND PROGRESS OF THE INDUSTRY

By HARRY T. CLINTON, A. L. A. M. PUBLICITY DEPARTMENT.



STATISTICS show the phenomenal strides made in the manufacture of automobiles and the rapid growth of an industry that three years ago was hardly out of swaddling clothes. In 1899 a few manufacturers had the courage of their ideas and attempted, in the face of adverse sentiment, to make automobiles. At that time the capital invested was \$5,768,000, while the amount of business for that year was \$4,748,011. In 1904 the records show about \$35,000,000 employed to do \$26,645,064 worth of business. For the year 1907 the business done will be four times as much as 1904, or nearly 133 per cent. increase in business each year.

The estimates for this year show that directly and indirectly there is \$171,448,769 invested in the manufacture and sale of automobiles and accessories, while the gross amount of sales of automobiles alone will be over \$100,000,000. To produce this amount of business it requires 58,000 men directly interested in the manufacture or sale of

automobiles and 29,500 men indirectly interested, making a total of 108,500 men directly and indirectly interested in the manufacture and sale of automobiles and accessories.

In 1903 the total output of American manufactured cars amounted to \$16,000,000. Of these, \$13,000,000 were manufactured by members of the Association of Licensed Automobile Manufacturers. In 1904 \$26,500,000 were sold; \$21,000,000 by the licensees under the Selden patent. In 1905 the total was \$42,000,000, of which \$32,000,000 were licensed cars, and in 1906, \$59,000,000, with the members who manufactured under the Selden patent doing \$46,000,000 of the total amount.

Why the Licensed Association Was Formed.

The organization of the Association of Licensed Automobile Manufacturers is well known. The fundamental patent on the compression gas engine, which was granted to George B. Selden, was the basis for its organization. The leading manufacturers and importers in 1903, after a thorough investigation into the merits of the patent, became convinced of its validity and protected themselves, their dealers, and the users of their product, by securing a license. These licensees were the organizers of the Association. From the start, the Association has had two objects—the protection of its members as regards their patent rights and the development of the industry.

From its organization a vigorous prosecution of infringements of its patent rights has been maintained. Some manufacturers, evidently not realizing the liability that they, their dealers, or the

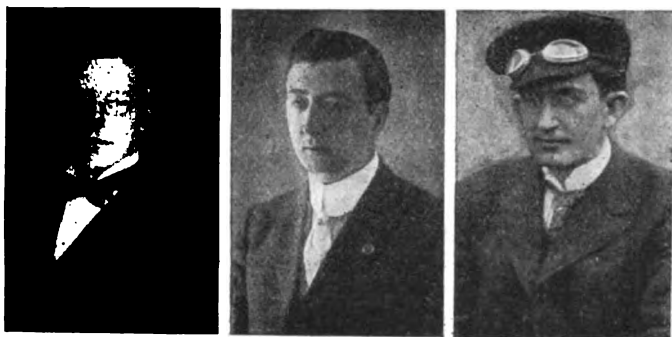
buyers of their cars were assuming, in producing or using cars contrary to the legal rights given a patentee, were sued for infringement. How persistently the prosecution of the test case was maintained is told in the volume of evidence now on record, making it one of the most voluminous in patent litigation. The defense has, however, introduced nothing material that was not known to complainants before the bringing of the suits. Complainants' testimony was closed in January last, and the case would have been ready for final argument this spring if defendant had not asked for additional time for taking surrebuttal testimony. Aside from this test case, many other suits have been brought, mostly against users, for infringement of the patent, and many decrees have been entered holding that it is valid and that defendant had infringed the same. In some of these cases little testimony was heard, in others the contest continued for years. In a few cases defendant was allowed to settle by paying royalty and taking a license, and in some the court has awarded not only costs and damages to the owners of the patent, but has granted perpetual injunctions, restraining defendants from further use of the cars.

Instrumental in the Evolution of the Automobile.

That the many departments of the organization have been instrumental in the evolution of the automobile to its present standardized condition is shown by the results each department has attained. In the Mechanical Branch, however, the greatest tangible evidence of this progress can be seen. It became apparent, as far back as 1903 and 1904, that to reach a point of perfection in motor car construction some standard form of construction, standardized material, and design would have to be reached, and this could only be done by the mutual co-operation of the larger manufacturers.

The Mechanical Branch was formed for this purpose, and consists of the chief engineers and factory superintendents of the 32 leading manufacturers who are members of the Licensed Association. The keynote of the Mechanical Branch is its experience meetings, interchange of ideas toward co-operative and intelligent standardization, which results in improved automobile design and production, the comfort and convenience of the public, and the general imparting of sound information to the industry and its allied arts and sciences.

The accomplishments of the Branch have been many, resulting in both direct and indirect benefits to the manufacturer and user. The A. L. A. M. screw standard, the adoption of a universal size for all nuts, bolts and screws used in the construction of automobiles has been one of the greatest standards used in any industrial individual enterprise, and the adoption of standard spark plugs and universal formula for computing horsepower rating are of equal importance to the screw standard. In the



A. N. JERVIS. H. T. CLINTON. HARRY CALDWELL.
THE A. L. A. M. PUBLICITY TRIO.

former the many inconveniences caused by the varying sizes of spark plugs has been eliminated, and the latter is an epoch-making innovation in the industry.

Tires and rims have come in for their share of attention. Not so long since, the tire and rim situation was in an almost chaotic state. Many sizes of tires were in the market—too many for economy or convenience to manufacturer or user. Intelligent interchange of ideas of the tiremakers and engineers of the Branch resulted in a revision of sizes and decreased the number used from 23 to 11, the latter being adequate for all demands.

In the standardizing of steel tubing, rods, magnetos and many other component parts of a car the hallmark of progress is stamped on every car made by the engineers of the Branch.

The Experimenting Laboratory at Hartford.

At Hartford a laboratory for exhaustive tests and scientific experiments in metals, oils, rubber and other materials is maintained by the Branch, and the results are not only recognized by the automobile manufacturers of the Association, but are acknowledged in all branches of engineering and by the various Government scientific departments. It must be noted that while the Engineering Branch of the organization has been hard at work, the other branches have not been neglected.

Another feature and one of moment is the Exhibition or Show

Committee. To the first Show Committee of the Association the credit of bringing order out of chaos in regard to automobile shows is due. Prior to that time very little system was used in the promotion of exhibitions. The exhibitors were required to arrange for their own decorations, signs, lighting and display of goods. No thought, care or taste was used, with the result far from artistic or even pleasing, it being a mere hodge podge and jumble of booths, cars and sensational advertising literature.

The committee was the first, and is still the only body, to provide rules to prevent overcrowding of the show by other than the interested public and to exclude mere automobile experimenters from the exhibition. An innovation was the placing of all automobiles of the same nature and power in their appropriate places, making each exhibit complete in itself. It was the first to carry out its conviction that artistic and uniform decorations were the just due of the automobile. This could be better provided for by the management and would insure an artistic ensemble rather than barbarous individual decoration. The thoroughness of the Show Committee is shown in the details of its work. Not only does it provide the decorations, signs, lighting furniture, telephones and transportation of the exhibitors' goods, but a postoffice and messenger service during the week of the show are established, for the exclusive use of all exhibitors and their friends. The Licensed Show is the only one where the profits of the exhibition are rebated pro rata to space rental.

Work of the Traffic Department.

Another valuable department of the Association is the Traffic Department. The growth of the industry has been phenomenal. From \$50,000,000 to \$100,000,000 worth of automobiles had to be transported from the factory to the consumer, thus creating a high class of freight. The railroads were unprepared and freight cars for this class of freight were scarce. The Traffic Department, knowing the requirements necessary, pointed out to the railroads the advisability of specially constructed cars. At first only a few were put in service, but at present there are over 5,000 freight cars for the exclusive transportation of automobiles. The department has been instrumental in effecting many new classifications of economic value, both in the transportation from and to the factory.

NO S. A. E. MEETING DURING SHOW FORTNIGHT.

Owing to the comparatively short time that has elapsed since the midsummer meeting of the Society of Automobile Engineers, it has been decided not to hold the annual meeting of that body during the course of the New York shows, as has been customary hitherto. The interval has been too short to permit of the preparation of the necessary papers on subjects of interest to the members as well as to the industry at large, and the annual meeting has accordingly been set for some time during January next, possibly during the Importers' show. The Society of Automobile Engineers is the only organization of the kind in the automobile industry that is without trade affiliations of any nature, and, owing to its independent position, is capable of accomplishing a great deal of good. It is the real purpose of this society to supply an open quorum in which can be discussed any subject of general interest in the making of or allied to automobile manufacturing.

A. S. M. E. ANNUAL MEETING IN DECEMBER.

The fifty-fourth annual meeting of the American Society of Mechanical Engineers will be held in the Engineering Societies' building, 29 West Thirty-ninth street, New York, from December 3 to 6. Foundry practice, superheated steam, the utilization of low-grade fuels in gas producers, combustion control in gas engines, tests of producer gas engines, power transmission by friction, and cylinder port velocities will be some of the subjects discussed and on which special papers have been prepared.

NEW HAVEN'S SHOW IS IN PROGRESS.

NEW HAVEN, CONN., Oct. 28.—The third annual automobile show of the New Haven Business Men's Association in the Second Regiment Armory was opened Saturday night with a parade in which over fifty cars were in line. The parade started from City Hall, headed by a platoon of mounted police, and a large auto truck gorgeously decorated contained the Second Regiment band. The parade through the principal business streets was enthusiastically greeted all along the line of march.

In the machines were Governor Rollin S. Woodruff, of Connecticut; Mayor Studley, Mayor-elect James B. Martin, city officials, exhibitors at the show, any many invited guests. The show is a success and is the largest auto exhibit held in the State of Connecticut.

BUFFALO'S SHOW TO BE MARCH 9 TO 14.

BUFFALO, N. Y., Oct. 28.—Secretary D. H. Lewis of the Automobile Trade Association and the Automobile Club of Buffalo is busy mailing application blanks for the eighth annual automobile show of these organizations, which is to be held in Convention Hall from March 9 to 14. Mr. Lewis has had many inquiries from prospective exhibitors. The show is later than usual, and it is the hope of automobile men that they will have better demonstrating weather than they have had during past shows in this city. The opinion of the Buffalo dealers is that the exact time for a local show immediately precedes the opening of the early spring selling season, and March dates suit their city.

ADVANCES REVEALED BY THE LICENSED CARS

By CHARLES B. HAYWARD.



Y far the greater number of the oldest-established automobile makers which go to make up the body of the great American industry are to be found within the ranks of the A. L. A. M., and on this account one is led to expect that solidity of construction and conservatism of design which naturally follow as a result of well-directed and skillfully organized effort bent on the attainment of a single object—improvement in automobile design and construction. “Old-established,” in this connection, does not mean a great deal when held up to the light of comparison with the relative standing of the members of any other well-known industry, but owing to the policy adopted by the Association of Licensed Automobile Manufacturers at its inception, and since rigidly adhered to, its membership roll practically represents what was the flower of the industry at the time of its formation. Many of these may not antedate outside concerns by more than a year or so—others not at all, as some of the very oldest are to be found without the Selden pale, yet the benefits of co-operation are visible in the design and construction of the “licensed” cars as a whole.

What Is New in Motor Design.

Since the purveyors of automobile news for the dailies still adhere to the practice adopted several years ago—when there was considerable reason for it—of hailing every car shown as an entirely new model, describing it as being infinitely in advance of its predecessor of but a year ago, not alone the public, but many otherwise well-informed autoists are led to believe that the show will be responsible for something entirely different than has been presented formerly. As a consequence, they go expecting to find things very much out of the ordinary—just what the new things may consist of they have no definite conception, as the writers in question, having none themselves, were forced to confine their accounts to generalities. Whether many such confidently anticipated finding motors in an inverted position, or placed on the rear axle, with similarly unlooked-for changes, is hard to say, but one and all are disappointed, for motors, transmissions, and other essentials look just the same as they did last year. And they are the same. Motor design and construction have been brought to entirely too fine a point at the present stage of the industry to have it otherwise, and accordingly improvements are necessarily confined to those matters of detail which do not serve to alter the appearance of the motor, except to the experienced eye.

Motor design may be said to have reached a standard, but it must be borne in mind at the same time, that, even with a standard, there may be varying schools of design, and this is the case where the automobile is concerned. It is merely the old, old story of there being “more than one way to kill a cat,” and the designer who advocates valves in the head is quite as confident that he has despatched the feline in the most effective and summary manner possible as his confrère is that he has accomplished identically the same end by placing the valves of his motor in outboard chambers. There are reasons for both of course, and neither is lacking in its good and bad points, of which no one of the many differing designs shown has any monopoly of one or the other. Naturally the important thing is that both do reach the same end, and, in what appears to the layman, to be an equally effective manner. Hence we have motor cylinders cast in pairs and cast separately, with valves in the head, on one side, and on both sides, and the makers who adhered to any particular

type last year have remained loyal to their faith in its efficiency—hence the sameness which disappoints the visitor who expects to see marvels in the way of radical changes. Of course, there are exceptions. Take the new Thomas which will play the rôle of either a taxicab in public service, or a town car in private use. It is a new design pure and simple. For instance, its four cylinders are like some of those of French origin, cast in a single piece, and in numerous other ways it reveals the nationality of its designer. It also has a thermo-siphon system of water circulation. The same thing holds good of the new Winton “Six-Teen-Six,” which is a new development embodying numerous innovations, not the least of which is an ingenious method of self-starting on compressed air, while another consists of housing in the valve-operating mechanism entirely. The Selden in two models and the Lozier shaft-driven six-cylinder car are also entirely new.

Motor Details and Accessories.

It is in the matter of detail that change is to be found and by change, in this connection, is meant improvement, of which evidence is not lacking. In keeping with its relative importance in the internal economy of the automobile motor, the ignition has naturally come in for considerable attention, though it is quite apparent that things have settled down to a standard where this essential is concerned, as much if not more than many other parts of the car. That is, practice is much more uniform in that there are but one or two standards, and the latter vary more on account of the selling price of the car than from the designer's likes or dislikes in this respect. For instance, practically every car shown above a certain price is fitted with dual ignition of one kind or another, a magneto being relied upon for the service end in every case. The fact that the latter may be either of the high or low-tension type is one of the chief differences to be found, though there are occasional instances where both systems are employed on the same motor, the magneto being of the low-tension type. In the great majority of cases, however, high-tension is employed in both systems, and standard accumulator and unit coil outfits are almost invariably employed for the standby, though special systems are employed on some cars, such as the Atwater-Kent on the Thomas Flyers.

On cars above a certain price-limit—and most of the licensed cars come within this category—the magneto has come to form practically an integral part of the motor, probably the Bosch, Eisemann, Gianoli, and Remy figuring most prominently. Where the fitting of duplicate systems of ignition is concerned, there is also a difference to be noted in that there are some exceptions to the practice of making both systems absolutely independent, even to the spark plugs. In these, the same plugs and high-tension wiring are utilized for both sides of the system, an accumulator serving as the current-source with a single coil, usually of the non-vibrating type, acting as a transformer, while the magneto distributor also performs this function for the battery current. The Packard with the Eisemann high-tension magneto is an excellent example of this. Low-tension ignition has not found any new advocates among the licensed cars, though, on the other hand, it has not lost any, this type being represented by the Locomobile with its own special magneto, the Columbia using the Gianoli, and the Matheson and the Studebaker using the Bosch.

Carburetion and the Essentials of Cooling.

American makers have departed considerably from practice current on the other side where carbureters are concerned, as abroad every maker of prominence takes great pains in evolving a system of his own, so that the carbureters of the better-known foreign makes have come to form a distinctive part of their cars. This is also the case here to a certain extent, such cars as the Packard, Lozier, Matheson, Columbia, Stearns, Franklin, Pierce,

Thomas, and a number of others being distinguished by special devices of their own for this purpose; but, on the other hand, there is a very large number who have been willing to let the responsibility for this essential rest where it rightfully seems to belong—in the hands of the specialist—and have adopted stock types of carbureters, such as in the case of the Haynes, Corbin, Winton, Autocar, Cadillac, Olds, Thomas-Detroit, and others, though this practice is more prevalent among newer cars, most of which are not to be found in the licensed fold. Some of the principal makes of carbureters thus adopted are the Schebler, Holley, Kingston, and a few others. In general, it may be said that the chief aim of the American carbureter maker has been simplicity, in contrast with that of his foreign competitor, and as a result, few of the carbureters seen are distinguished by any unusual or bizarre features. Water-jacketing is employed in a few instances, but usually this is confined to exclusive designs. Though using a stock carbureter—the new Holley of the Venturi tube type—the Winton fuel system is unique in that pressure is employed merely to elevate the fuel from the main tank beneath the frame at the rear to a special auxiliary tank holding a pint or two, and mounted on the dash. This gives all the advantages of the gravity system while still permitting the use of a pressure system, at the same time doing away with one of the disadvantages of the latter—that of having to pump in order to raise fuel to the carbureter preparatory to starting.

The details of the cooling system are something that have come in for more or less attention during the past year, and to the practised eye changes that make for better service and greater efficiency are visible here and there. In this connection, there is a decided tendency apparent to clear the motor of everything that partakes of the nature of a makeshift device, such as the fan belt always has been and always will be. Consequently it has been eliminated in numerous instances, such as the Lozier, Winton, Peerless, Franklin, and others, on which simple types of gear-driven fans have been adopted. A novel piece of construction in evidence on the Peerless is the use of a special one-piece fan stamped from sheet steel. Circulating connections have been simplified wherever possible, and looking back but a few years, it is marvelous to note how much has been learned about such an apparently simple thing as the water circulation. The centrifugal type of pump prevails and, owing to its manifest advantages, change was hardly to be expected here. An innovation is to be found in the adoption of the thermo-siphon cooling on the new Thomas town cars, but, as already mentioned, this is really an exotic product, though as a matter of fact it embodies several features which might be adopted by others to advantage. Radiator practice continues unchanged, the tubular fin type being most prevalent, but with a few scattering representatives of the honeycomb type.

Air-cooling is neither more nor less important a factor than it was at this time a year ago, for, as has been set forth repeatedly in these columns, it has long since proved its worth and graduated beyond the probation class. It is represented by the Franklin, Knox, Corbin, and Waltham-Orient cars and the most striking of these is the first-named, its motor having been completely redesigned since the previous show. It now has spherical-shaped combustion chambers, concentric valves, and phosphor-bronze cooling flanges, beside a number of other improvements, all of which have been described in *THE AUTOMOBILE*. As it is a special design throughout, it can hardly be said to represent a tendency, but a type of its own. Though the weight has not been increased, the power of the motor is greater and the proportion of power to weight correspondingly higher. Both the Knox and Corbin factories are showing what are practically replicas of their familiar designs with water-cooled motors.

To sum up the subjects of motor design both as concerns the foundation of the motor itself, as well as its accessories, there are one or two decided tendencies noticeable. Probably the most prominent of these is the largely increased use of ball bearings, such cars as the Lozier and Stearns incorporating this type of

anti-friction bearings in such a number of their moving parts as really to entitle them to the nickname of being "ball-bearing" cars, though they are merely representative instances of the very general advance noticeable in the adoption of this class of bearings. The latter first made their presence apparent in the gear-set and have since become so universally used for this essential that a change-speed gear with plain bearings is indeed a rarity at the present day. But ball-bearing crankshafts and camshafts have since become common, and this is also true of the gear-driven cooling fans now a feature of such a number of cars. Simplicity and higher power with less weight are also noticeable, though it may be said that these incorporate in themselves all the other improvements, as they represent the end sought by the designer.

Tendencies in Transmission Practice.

Though at first sight it would appear as if the adoption of the multiple-disk type of clutch had been very general, observation reveals the fact that the conical type has by no means disappeared, and, in addition, there are a number of special types extant. For instance, the Royal Tourist, Pope-Hartford, Thomas-Detroit, and Columbia still stick to the cone, some with the addition of cork inserts and others without, while the Walter employs an inverted conical type. Where special types are concerned, the Peerless and Stearns use an internal-expanding clutch, the Elmore two-cycle an expanding ring type, and the Haynes a band, while the Cadillac and Hewitt still employ a planetary gear-set. This is also true of the lighter of the two Northerns. But the number that employ a multiple-disk type of clutch is comparatively large, including such makes as the Thomas Flyers, Franklins, Lozier, Pope-Toledo, Stevens-Duryea, and the new Selden.

Coming to the next step in the transmission, the adoption of a sliding change-speed gear of the selective type has become very general—in fact, for cars above a certain size it is almost universal, while it is also to be found in numerous instances on those of lighter powers, the chief difference being in the number of speeds provided. For instance, such cars as the Oldsmobile, the air-cooled Corbin, and the lighter Selden model, as well as the new Winton six-cylinder, are equipped with three speeds forward. The great majority of the larger cars are provided with four forward speeds, though exceptions are to be found here and there, and the same is true where some of the smaller ones are concerned, such as the Locomobile, which is now identical in this respect with its high-powered brother in having a four-speed selective gear-set. The progressive method of operation has been all but eliminated and appears destined to be less and less a factor as time goes on, except in the case of such special systems as the Packard, in which the gear-set is placed on the rear axle and under the same housing as the bevel drive and differential. The larger of the two Northern cars still employs this form, and this is likewise true of one of the models of the Studebaker. Both the Northern and Cadillac still retain the planetary change-speed gear on their smaller cars, and one of the heavy touring cars of the latter make is also thus equipped.

There have been defections from the list of side-chain-driven models, or, to put it more correctly, additions to those that are shaft-driven, as some prominent advocates of the former who have never built any other type of car than chain-driven have still retained the latter, though bringing out shaft-driven types. Instances of this are to be found in the case of the Lozier and the Apperson. As was the case at the last Garden show, the most advanced type of transmission is to be found on the Columbia gasoline-electric, which is a law unto itself, combining, as it does, the standard Columbia gasoline motor with a special type of electric transmission which embodies many points of merit. It has been made the subject of considerable study and has been very cleverly worked out, so that the control has been simplified to a degree akin to that of a street car, the driver having five forward speeds available.

(Continued on page 647.)

WHO THEY ARE AND WHERE THEY ARE LOCATED

GASOLINE PLEASURE VEHICLES.

ALDEN SAMPSON, 2D: Alden Sampson, 2d, Pittsfield, Mass.	Elev. Plat. 28
APPERSON: Apperson Bros. Automobile Co., Kokomo, Ind.	Main Floor 12
AUTOCAR: Autocar Co., Ardmore, Pa.	Main Floor 4
BUICK: Buick Motor Co., Flint, Mich.	Main Floor 3
CADILLAC: Cadillac Motor Car Co., Detroit, Mich.	Main Floor 15
COLUMBIA: Electric Vehicle Co., Hartford, Conn.	Main Floor 11
CORBIN: Corbin Motor Vehicle Corporation, New Britain, Conn.	Elev. Plat. 30
ELMORE: Elmore Manufacturing Co., Clyde, O.	Main Floor 6
FRANKLIN: H. H. Franklin Mfg. Co., Syracuse, N. Y.	Main Floor 18
HAYNES: Haynes Automobile Co., Kokomo Ind.	Main Floor 10
HEWITT: Hewitt Motor Co., 10 East 31st street, New York	Basement 55
KNOX: Knox Automobile Co., Springfield, Mass.	Main Floor 9
LOCOMOBILE: Locomobile Company of America, Bridgeport, Conn.	Main Floor 13
LOZIER: Lozier Motor Co., 55th street and Broadway, New York	Main Floor 8
MATHESON: Matheson Motor Car Co., Wilkes-Barre, Pa.	Elev. Plat. 25
NORTHERN: Northern Motor Car Co., Detroit, Mich.	Main Floor 7
OLDSMOBILE: Olds Motor Works, Lansing, Mich.	Main Floor 22
PACKARD: Packard Motor Car Co., Detroit, Mich.	Main Floor 14
PEERLESS: Peerless Motor Car Co., Cleveland, O.	Main Floor 20
PIERCE: George N. Pierce Co., Buffalo, N. Y.	Main Floor 16
POPE-HARTFORD: Pope Manufacturing Co., Hartford, Conn.	Main Floor 21
POPE-TOLEDO: Pope Motor Car Co., Toledo, O.	Main Floor 1
ROYAL TOURIST: Royal Motor Car Co., Cleveland, O.	Main Floor 2
SELDEN: Selden Motor Vehicle Co., Despatch, N. Y.	Elev. Plat. 27
STEARNS: F. B. Stearns Co., Cleveland, O.	Main Floor 5
STEVENS-DURYEA: Stevens-Duryea Co., Chicopee Falls, Mass.	Main Floor 19

STUDEBAKER: Studebaker Automobile Co., South Bend, Ind.	Elev. Plat. 31
THOMAS: E. R. Thomas Motor Co., Buffalo, N. Y.	Main Floor 17
WALTER: Walter Automobile Co., Trenton, N. J.	Elev. Plat. 26
WALTHAM-ORIENT: Waltham Mfg. Co., Waltham, Mass.	Elev. Plat. 24
WINTON: Winton Motor Carriage Co., Cleveland, O.	Main Floor 23

STEAM PLEASURE VEHICLES.

WHITE: The White Co., Cleveland, O.	Elev. Plat. 29
--	----------------

ELECTRIC PLEASURE VEHICLES.

BABCOCK ELECTRIC: Babcock Electric Carriage Co., Buffalo, N. Y.	Exhib. Hall 32
BAKER: Baker Motor Vehicle Co., Cleveland, O.	Exhib. Hall 39
COLUMBIA: Electric Vehicle Co., Hartford, Conn.	Exhib. Hall 38
COLUMBUS: Columbus Buggy Co., Columbus, O.	Exhib. Hall 36
GENERAL: General Vehicle Co., Borden and Review avenues, Long Island City, N. Y.	Exhib. Hall 35
POPE-WAVERLEY: Pope Motor Car Co., Indianapolis, Ind.	Elev. Plat. 38
R. & L. ELECTRIC: Rauch & Lang Carriage Co., Cleveland, O.	Exhib. Hall 34
STUDEBAKER: Studebaker Automobile Co., South Bend, Ind.	Exhib. Hall 33

GASOLINE COMMERCIAL VEHICLES.

ALDEN SAMPSON, 2D: Alden Sampson, 2d, Pittsfield, Mass.	Basement 50
CADILLAC: Cadillac Motor Car Co., Detroit, Mich.	Basement 52
FRANKLIN: H. H. Franklin Mfg. Co., Syracuse, N. Y.	Basement 53
HEWITT: Hewitt Motor Co., 10 East 31st street, New York	Basement 55
KNOX: Knox Automobile Co., Springfield, Mass.	Basement 41
PACKARD: Packard Motor Car Co., Detroit, Mich.	Basement 48

TIRE MAKERS ARE MANY AND HAVE MUCH TO SHOW

Ajax-Grieb Rubber Co., 420 East 106th street, New York	Concert Hall 162
Antioak Tire Co., 200 Broadway, New York.	2d Tier Boxes 200
Automobile Utilities Co., Boston, Mass.	3d Tier Boxes 286
Consolidated Rubber Tire Co., 40 Wall street, New York.	Balcony 148
Continental Caoutchouc Co., 43 Warren street, New York	2d Tier Boxes 207
Diamond Rubber Co., Akron, O.	Mezzanine Plat. 56
Dow Tire Co., 104 West 42d street, New York.	Basement 205A
Empire Auto Tire Co., Trenton, N. J.	Basement 265
Empire State Tire Co.	3d Tier Boxes 292
Firestone Tire & Rubber Co., Akron, O.	Mezzanine Plat. 91
Flak Rubber Co., Chicopee Falls, Mass.	Mezzanine Plat. 108
Goedrich Co., B. F., Akron, O.	Mezzanine Plat. 114

Goodyear Tire & Rubber Co., Akron, O.	Mezzanine Plat. 58
G & J Tire Co., Indianapolis, Ind.	Mezzanine Plat. 61
Hartford Rubber Works Co., Hartford Conn.	Mezzanine Plat. 113
Healy Leather Tire Co., 1906 Broadway, New York.	Basement 211
Leather Tire Goods Co., Newton Upper Falls, Mass.	Mezzanine Plat. 83
Michelin Tire Co., Milltown, N. J.	Basement 209
Morgan & Wright, Detroit, Mich.	Mezzanine Plat. 78
Motz Clincher Tire Co., Akron, O.	Basement 271
Voorhees Rubber Mfg. Co., Jersey City, N. J.	Balcony 184
Pennsylvania Rubber Co., Jeannette, Pa.	Mezzanine Plat. 96
Republic Rubber Co., Youngstown, O.	Balcony 133
Swinehart Clincher Tire & Rubber Co., Akron, O.	Mezzanine Plat. 75

TELLING HOW FAR AND HOW FAST

Auto Improvement Co., 316 Hudson street, New York.	Balcony 141
Hicks Speed Indicator Co., Atlantic avenue, Brooklyn.	Basement 269
Hoffecker Co., Motor Mart, Boston, Mass.	Concert Hall 171
Index Speed Indicator, Minneapolis, Minn.	Balcony 145
Jones Speedometer Co., 2228 Broadway, New York	Mezzanine Plat. 95
Lipman Mfg. Co., Beloit, Wis.	Balcony 138
Loring Auto Appliance Co., 1900 Broadway, New York	3d Tier Boxes 291

Motor Car Specialty Co., Philadelphia, Pa.	Concert Hall 165
Smith & Son, S., Ltd., 116 Broad street, New York.	Basement 255
Smith Mfg. Co., R. H., Springfield, Mass.	Balcony 142
Stewart & Clark Mfg. Co., 506 Diversey boulevard, Chicago, Ill.	Mezzanine Plat. 86
Veeder Mfg. Co., Hartford, Conn.	Mezzanine Plat. 63
Warner Instrument Co., Beloit, Wis.	Mezzanine Plat. 77
Webb Mfg. Co., Newark, N. J.	Mezzanine Plat. 74
Winchester Speedometer Co., 1557 B'way, New York.	Balcony 137

THOSE WHO MAKE THE LAMPS.

Badger Brass Mfg. Co., 437 11th avenue, New York	Mezzanine Plat. 107
Dietz Co., R. E., 60 Laight street, New York.	Mezzanine Plat. 64
Gray & Davis, Amesbury, Mass.	Mezzanine Plat. 62
Edmunds & Jones Mfg. Co., Detroit, Mich.	Balcony 124
Ham Mfg. Co., C. T., Rochester, N. Y.	Concert Hall 170
Manhattan Screw & Stamping Works, West End avenue and 67th street, New York.	Balcony 185
Rose Mfg. Co., Philadelphia, Pa.	Mezzanine Plat. 111
Rushmore Dynamo Works, Plainfield, N. J.	Balcony 188

MAKERS OF THE CAR'S COMPONENTS.

American & British Mfg. Co., Bridgeport, Conn.	Concert Hall 154
Brennan Mfg. Co., Syracuse, N. Y.	Mezzanine Plat. 69
Gemmer Mfg. Co., Detroit, Mich.	Concert Hall 166
Globe Machine & Stamping Co., Cleveland, O.	Mezzanine Plat. 89
Gray-Hawley Mfg. Co., Detroit, Mich.	Balcony 135
Hartford Auto Parts Co., Hartford, Conn.	Mezzanine Plat. 80
Merchant & Evans Co., Philadelphia, Pa.	Basement 210
Muncie Auto Parts Co., Muncie, Ind.	Concert Hall 176
Perfection Spring Co., Cleveland, O.	3d Tier Boxes 294
Standard Welding Co., Cleveland, O.	Mezzanine Plat. 106

Standard Brake Co., 101 West 66th street, New York..Basement 260
Timken Roller-Bearing Axle Co., Canton, O.....Mezzanine Plat. 98
Whitlock Coll Pipe Co., Hartford, Conn.....Mezzanine Plat. 104
Whitney Mfg. Co., Hartford, Conn.....Mezzanine Plat. 104
Westinghouse Machine Co., Pittsburg, Pa.....Balcony 188

SHOCK ABSORBERS.

Comstock Shock Absorber Co., 1775 Broadway, N. Y..Basement 270
Gabriel Horn Mfg. Co., Cleveland, O.....Balcony 147
Hartford Suspension Co., 67 Vestry street, N. Y..Mezzanine Plat 93
Hotchkiss Mfg. Co., P. N., Chicago, Ill.....Balcony 134
Kilgore Mfg. Co., Old Town, Me.....Mezzanine Plat. 90
Sager Co., J. H., Rochester, N. Y.....Balcony 129
Victor Shock Absorber Co., 1931 Broadway, N. Y..3d Tier Boxes 298

LUBRICATING OILS, GREASE, GRAPHITE, ETC.

Atlantic Refining Co.....3d Tier Boxes 290
Columbia Lubricant Co., of New York, N. Y.....Basement 224
Cook's Sons, Adam, New York.....Balcony 131
Dixon Crucible Co., Joseph, Jersey City, N. J.....Balcony 116
Harris Oil Co., A. W., Providence, R. I.....Balcony 256
Havoline Oil Co., 78 Broad street, New York.....Basement 213
N. Y. & N. J. Lubricant Co., 14 Church street,
New YorkMezzanine Plat. 70
Robinson, William C., & Son Co., Baltimore, Md.....Balcony 149
Stanley, John T., 642 West 30th street, New York.....Balcony 259
Vacuum Oil Co., 29 Broadway, New York.....Balcony 262

TOPS.

Auto Accessories Mfg. Co., Detroit, Mich.....Concert Hall 153
Chase & Co., L. C., Boston, Mass.....Concert Hall 177
Duane & Co., W. J., 1771 Broadway, New York....Concert Hall 159
Manhattan Auto Top & Body Co., 247 West 64th street,
New YorkBasement 217
Rands Mfg. Co., Detroit, Mich.....Concert Hall 157
Sprague Umbrella Co., Norwalk, O.....Concert Hall 182
Troy Carriage Sunshade Co., Troy, O.....Basement 228

TIRE PROTECTORS, TIRE TOOLS, ETC.

Allen Auto Specialty Co., 1931 Broadway New
York3d Tier Boxes 278
Brown Mfg. Co., Butler, Ind.....Basement 246
Gilbert Mfg. Co., New Haven, Conn.....Balcony 125
Newmastic Tire Co., 68th street and Broadway, N. Y..Basement 274
Shaler Co., C. A., Waupun, Wis.....2d Tier Boxes 206
Traver Blowout Patch Co., 1265 Broadway, New
York2d Tier Boxes 197

WHEELS, RIMS, AND BRAKES.

Indestructible Steel Wheel Co., 1303 Michigan ave-
nue, Chicago, Ill.....Concert Hall 155
Jones, Phineas, & Co., Newark, N. J.....Mezzanine Plat. 94
Midgley Mfg. Co., Columbus, O.....Mezzanine Plat. 112
Schwartz Wheel Co., Philadelphia, Pa.....Mezzanine Plat. 71
Standard Brake Co., 101 West 66th street, New York..Basement 260

CARBURETERS.

Breeze Carbureter Co., Newark, N. J.....Balcony 187
Byrne, Kingeton & Co., Kokomo, Ind.....Mezzanine Plat. 66
McCord & Co., Chicago, Ill.....Balcony 144
Turner Brass Works, Chicago, Ill.....3d Tier Boxes 279
Wheeler & Schebler, Indianapolis, Ind.....Balcony 121

RADIATORS.

A. Z. Co., 527 West 56th street, New York.....2d Tier Boxes 194
Briscoe Mfg. Co., Detroit, Mich.....Basement 267
Livingston Radiator Co., 8 W. 30th street, New York..Basement 253
McCord & Co., Chicago, Ill.....Balcony 144
Whitlock Coll Pipe Co., Hartford, Conn.....Mezzanine Plat. 110

LUBRICATING APPLIANCES.

Hancock Mfg. Co., Charlotte, Mich.....Concert Hall 175
McCord & Co., Chicago, Ill.....Balcony 144
Precision Appliance Co., Chicago, Ill.....Mezzanine Plat. 85
Randall-Falchney Co., Boston, Mass.....Balcony 180

FUEL SUPPLY TANKS.

Bowser, S. F., & Co., Inc., Fort Wayne, Ind.....Concert Hall 156
Janney & Steinmetz, Philadelphia, Pa.....Mezzanine Plat. 87
National Oil Pump & Tank Co., Dayton, O.....Basement 254

BODIES FOR THE CAR.

Manhattan Auto Top & Body Co.....Basement 217
Springfield Metal Body Co., Springfield, Mass.....Concert Hall 158

COMPRESSED ACETYLENE GAS TANKS.

Avery Portable Lighting Co., Milwaukee, Wis.....Concert Hall 172
Prest-O-Lite Co., Indianapolis, Ind.....Concert Hall 161

PAINTS AND VARNISHES.

Masury & Son, John W., Brooklyn, N. Y.....2d Tier Boxes 188
Sherwin-Williams Co., Pittsburg, Pa.....Concert Hall 163
Valentine & Co., 257 Broadway, New York.....Balcony 117

ANTI-FRICTION BEARINGS.

American Ball-Bearing Co., Cleveland, O.....Mezzanine Plat. 106
Bertz, J. S., Co., Times Building, New York....
Hess-Bright Mfg. Co., Philadelphia, Pa.....Mezzanine Plat. 73
Hyatt Roller-Bearing Co., Newark, N. J.....Mezzanine Plat. 109
New Departure Mfg. Co., Bristol, Conn.....Basement 226
Standard Roller-Bearing Co., Philadelphia, Pa.....Balcony 150

PROVIDERS OF THE RAW MATERIALS.

Bethlehem Steel Co., Bethlehem, Pa.....Balcony 127
Carpenter Steel Co., Reading, Pa.....Balcony 132
Prosser, Thomas, & Sons, 30 Gold street, New York....Balcony 192
Shelby Steel Tube Co., Pittsburg, Pa.....Mezzanine Plat. 59

WITH THE UNIVERSAL PROVIDERS.

Auto Accessories Mfg. Co., Detroit, Mich.....Concert Hall 158
Auto Supply Mfg. Co., Brooklyn, N. Y.....Basement 225
Miller, Charles E., 97 Reade street, New York....2d Tier Boxes 193
New York Sporting Goods Co., 17 Warren street, New
YorkBasement 208
Pierson Motor Supply Co., Brooklyn, N. Y.....Basement 222
Post & Lester Co., Hartford, Conn.....Basement 272

CHAINS AND TRANSMISSION APPLIANCES.

Baldwin Chain & Mfg. Co., Worcester, Mass....Mezzanine Plat. 68
Brown-Lipe Gear Co., Syracuse, N. Y.....Mezzanine Plat. 102
Diamond Chain & Mfg. Co., Indianapolis, Ind.....Concert Hall 169
Spicer Universal Joint Mfg. Co., Plainfield, N. J.....Balcony 140
Timken Roller-Bearing Axle Co., Canton, O.....Mezzanine Plat. 98
Warner Gear Co., Muncie, Ind.....Mezzanine Plat. 99

HAND TOOLS.

Auto Pump Co., Springville, N. Y.....Mezzanine Plat. 82
Coe's Wrench Co., Worcester, Mass.....Concert Hall 178
Cook's Standard Tool Co., Kalamazoo, Mich....Mezzanine Plat. 81
Duff Mfg. Co., Pittsburg, Pa.....Mezzanine Plat. 84
Patterson, Gottfried & Hunter, Ltd., 146 Center street,
New YorkBasement 264
Watres Mfg. Co., 1133 Broadway, New York.....2d Tier Boxes 204
Wray Pump & Register Co., Rochester, N. Y.....Concert Hall 167

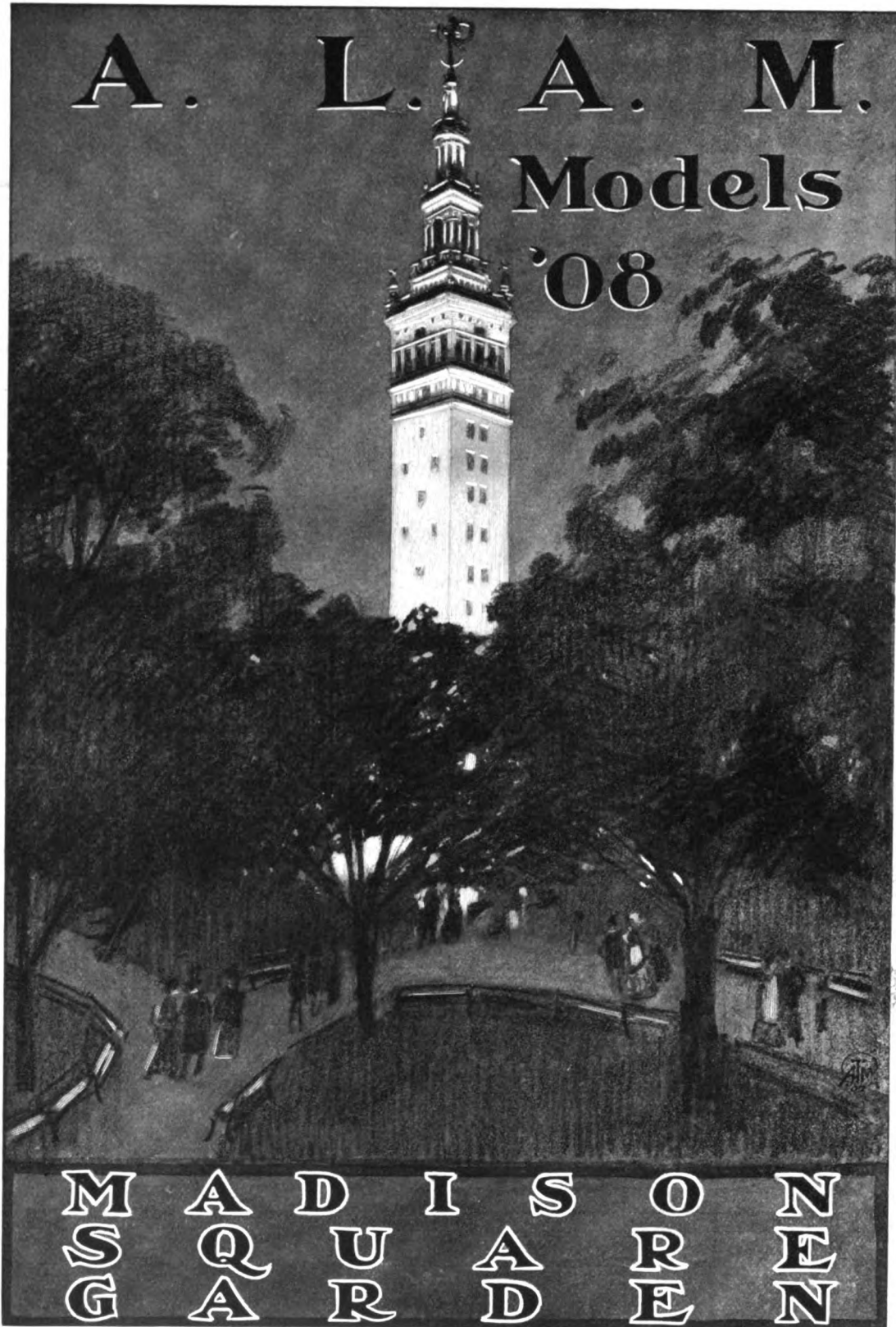
ALUMINUM, BRONZE, AND IRON CASTINGS.

Cramp & Sons, William, Philadelphia, Pa.....Balcony 128
Johnson & Co., Isaac G., Spuyten Duyvil, N. Y.....Balcony 181
Light Mfg. & Foundry Co., Pottstown, Pa.....Mezzanine Plat. 76
Manufacturers' Foundry Co., Waterbury, Conn..Mezzanine Plat. 101

MISCELLANEOUS.

Acetyvone Co., Niagara Falls, N. Y.....Balcony 182
Allers & Co., Harry A., 36 Liberty street, New
York2d Tier Boxes 195
Aluminum Solder & Refining Co., Oswego, N. Y..3d Tier Boxes 238
American Aluminum Co., Pittsburg, Pa.....Basement 229
Blue Ribbon Auto & Carriage Co., Bridgeport, Conn...Basement 215
Chandler Co., Springfield, Mass.....Concert Hall 88
Clover Mfg. Co., 226 West 58th street, New York.3d Tier Boxes 293
Columbia Nut & Bolt Co., Inc., Bridgeport, Conn.Mezzanine Plat. 79
Cowles & Co., C., New Haven, Conn.....Concert Hall 164
Downing, Charles J., 54 Warren street, New York....Basement 233
Dubled & Co., Ed., 43-45 West 34th street, New
York3d Tier Boxes 281
English & Mersick Co., New Haven, Conn.....Balcony 190
Glaenger & Co., 26 Washington place, New York....Basement 231
Kalb & Berger Mfg. Co., 1565 Broadway, New York....Basement 234
Mann, Leon, Co., 699 Broadway, New York.....Basement 236
Muttly Co., L. J., Boston, Mass.....Basement 232
Noera Mfg. Co., Waterbury, Conn.....Balcony 151
Norton Co., 26 Cortlandt street, New York.....Basement 273
Norris Auto Co., Saginaw, Mich.....3d Tier Boxes 288
Pantasoote Co., 11 Broadway, New York.....Concert Hall 160
Reilly & Son, P., Newark, N. J.....Basement 219
Tavernier & Quezin.....3d Tier Boxes 282
Ventilated Cushion & Spring Co., Jackson, Mich.....Basement 230
Young, O. W., Newark, N. J.....Balcony 122

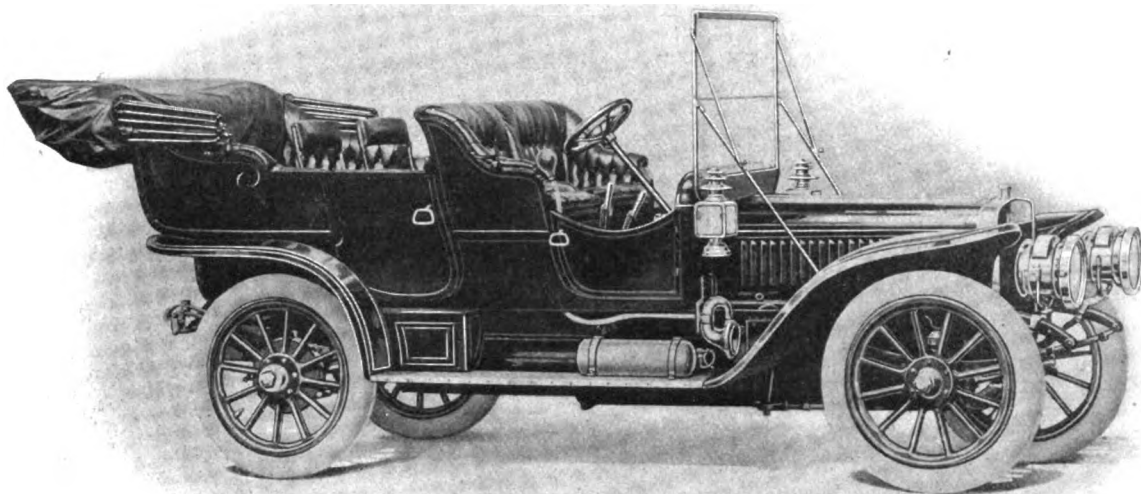
(Continued on page 656.)



A.L.A.M.
Models
'08

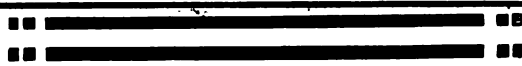
M A D I S O N
S Q U A R E
G A R D E N

The advertisement features a central illustration of the Madison Square Garden tower at night, illuminated against a dark sky. The tower is framed by silhouettes of trees and a path leading towards it. At the bottom of the illustration, the words 'MADISON SQUARE GARDEN' are arranged in a grid-like pattern of individual letters.

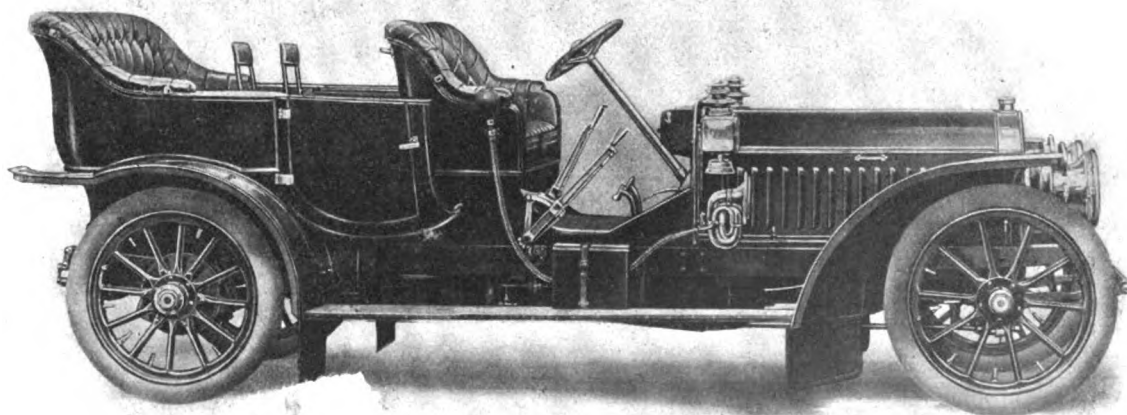


WINTON SIX-TEEN-SIX TOURING CAR, 6 CYLINDERS, 48-H.P., PRICE \$4,500.
 Winton Motor Carriage Co., Cleveland, O.

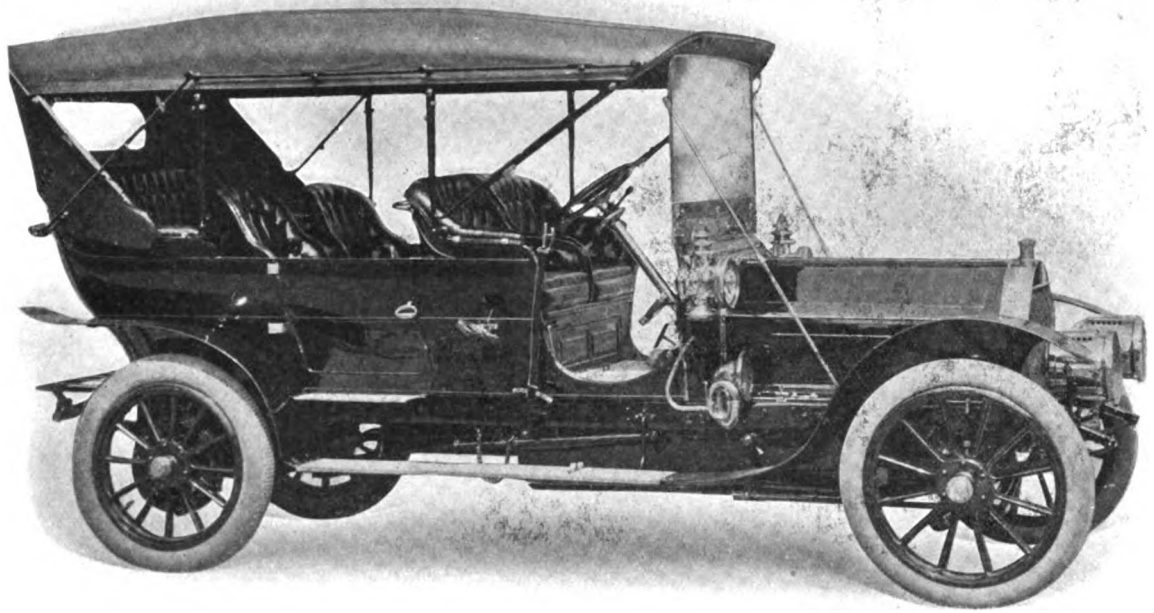
AJAM



1908

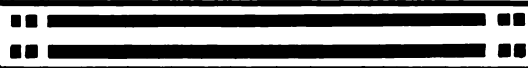


PEERLESS TOURING CAR, 6 CYLINDERS, 60-H.P., PRICE \$6,000.
 Peerless Motor Car Co., Cleveland, O.

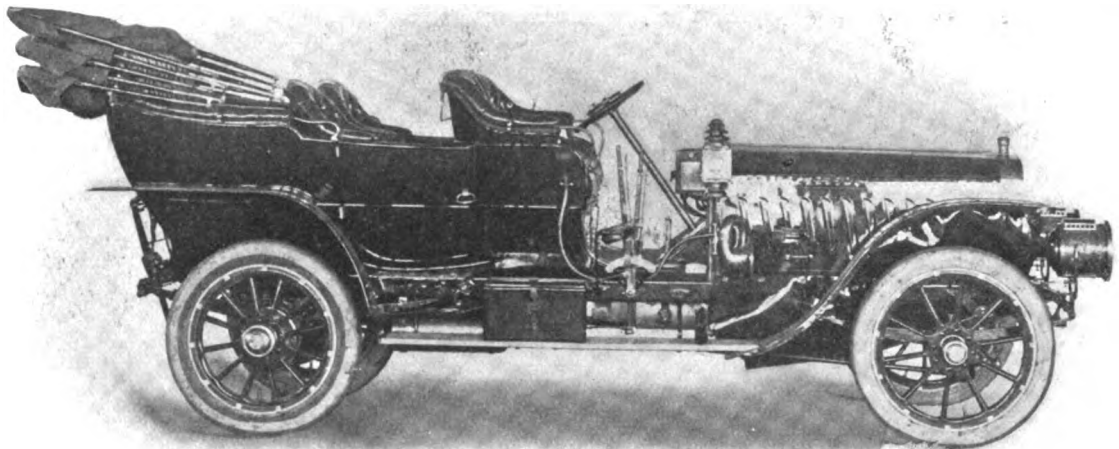


PIERCE GREAT ARROW TOURING CAR, 6 CYLINDERS, 40-H.P., PRICE \$5,500.
The George N. Pierce Co., Buffalo, N. Y.

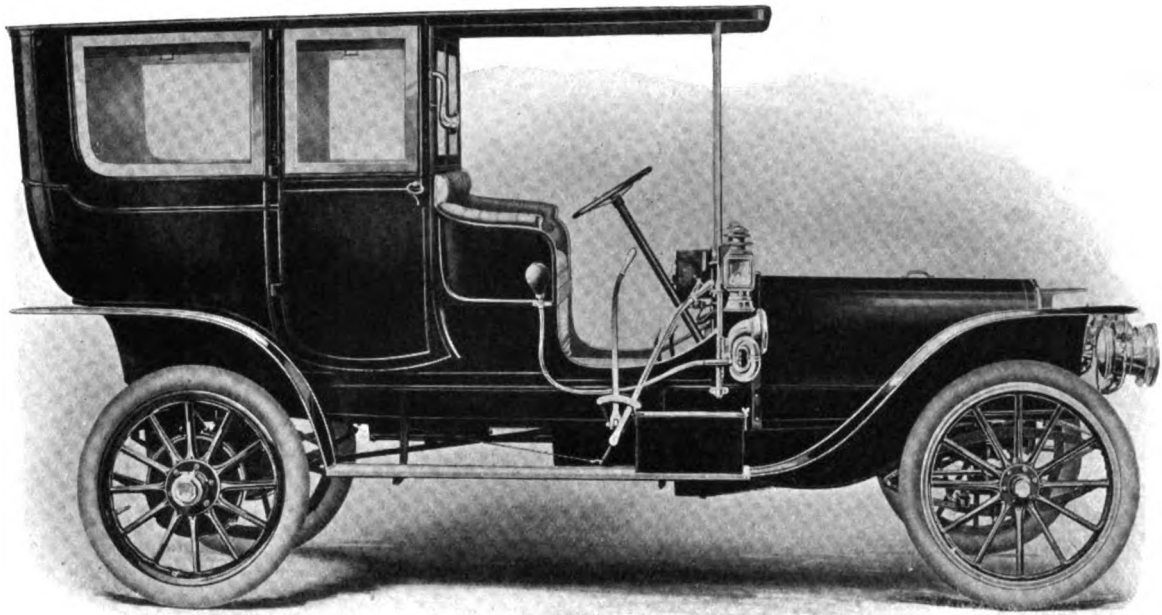
A.I.A.M.



1908



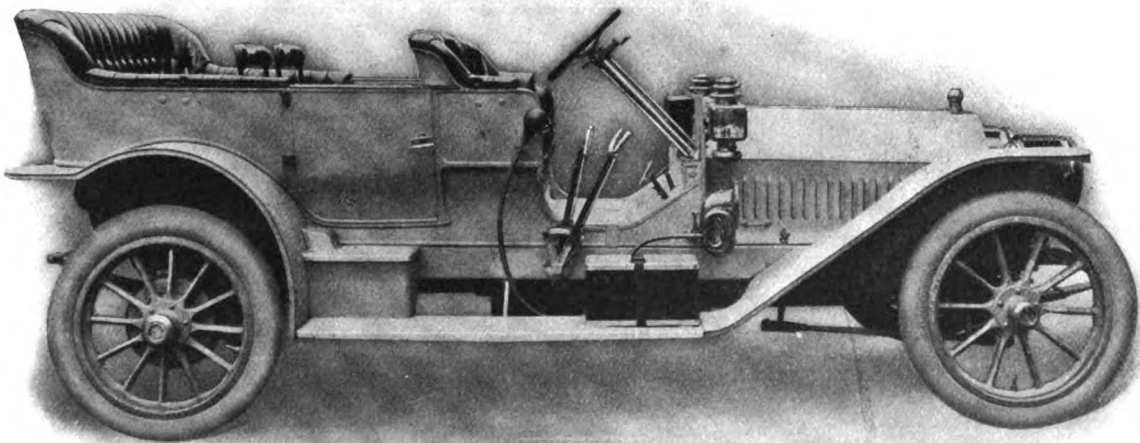
STEVENS-DURYEA BIG SIX TOURING CAR, 6 CYLINDERS, 50-H.P., PRICE \$6,000.
Stevens-Duryea Company, Chicopee Falls, Mass.



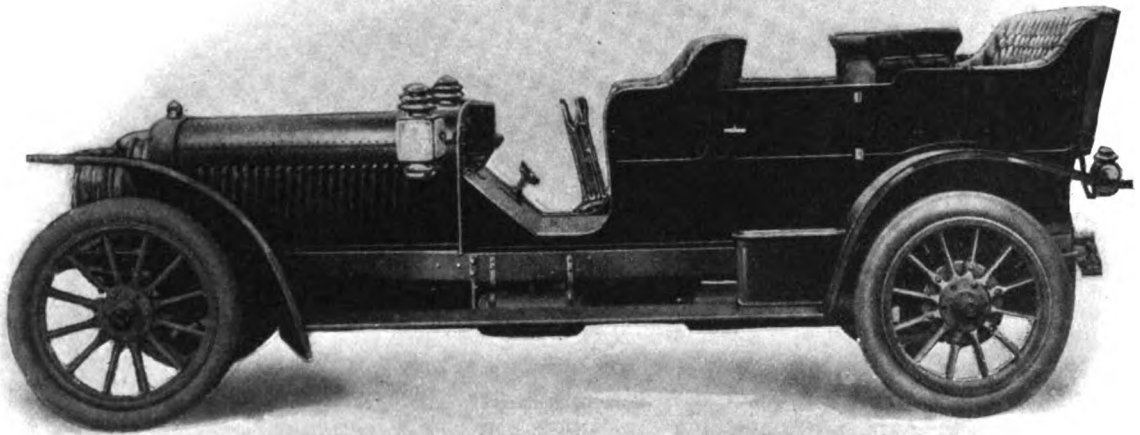
FRANKLIN LIMOUSINE, MODEL H, 6 CYLINDERS, 42-H.P., PRICE \$5,200.
H. H. Franklin Mfg. Co., Syracuse, N. Y.

A·I·A·M

1908



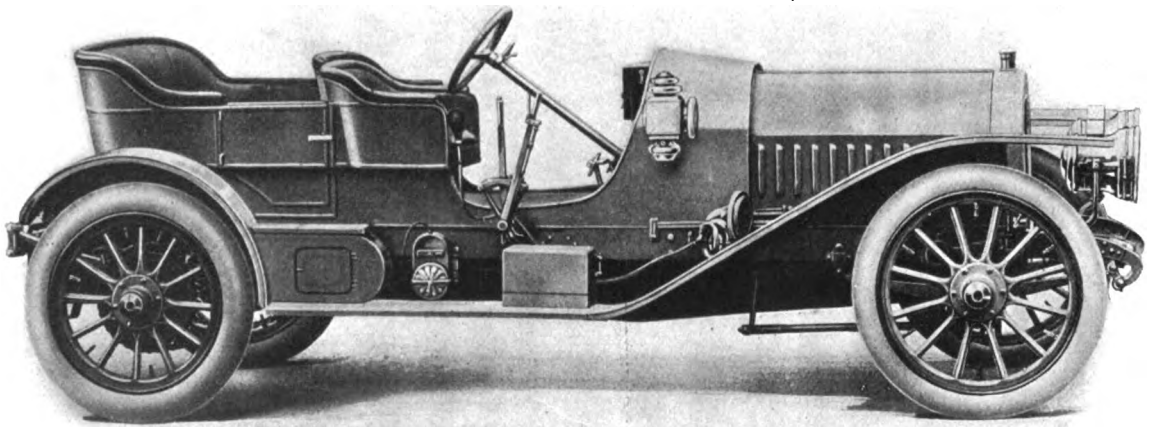
OLDSMOBILE MODEL Z TOURING CAR, 6 CYLINDERS, 48-H.P., PRICE \$4,200.
Olds Motor Works, Lansing, Mich.



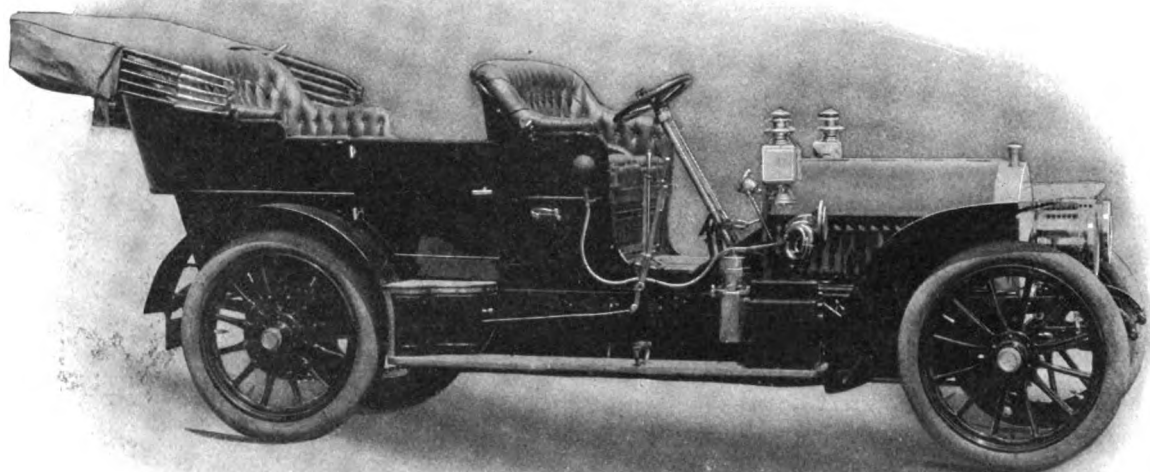
LOZIER MODEL I TOURING CAR, 6 CYLINDERS, 50-H.P., PRICE \$6,000.
Lozier Motor Company, New York City.

A·I·A·M·

1908

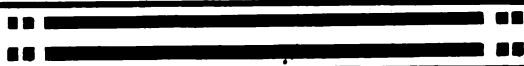


STEARNS LIGHT TOURING CAR, 6 CYLINDERS, 45-H.P., PRICE \$6,250.
F. B. Stearns Co., Cleveland, O.

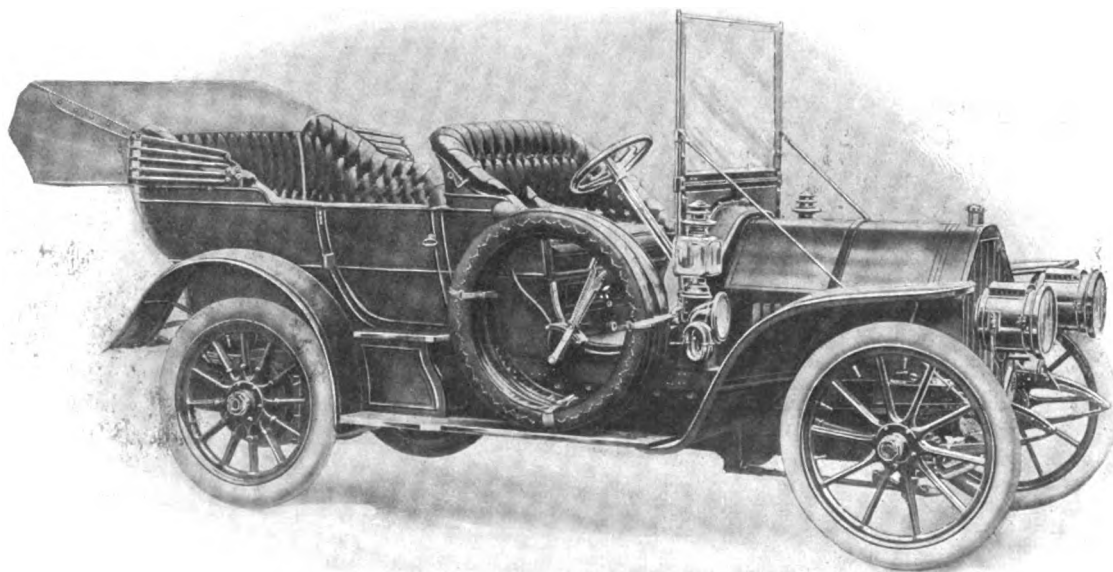


LOCOMOBILE TOURING CAR, TYPE I, 4 CYLINDERS, 20-H.P., PRICE \$4,750.
 Locomobile Company of America, Bridgeport, Conn.

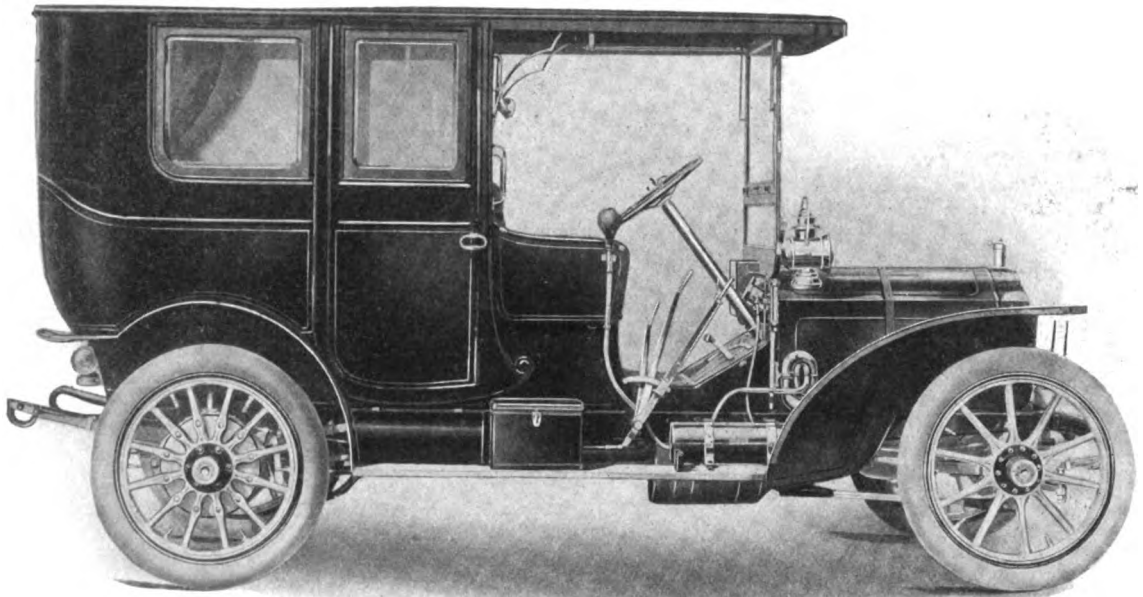
A.I.A.M.



1908



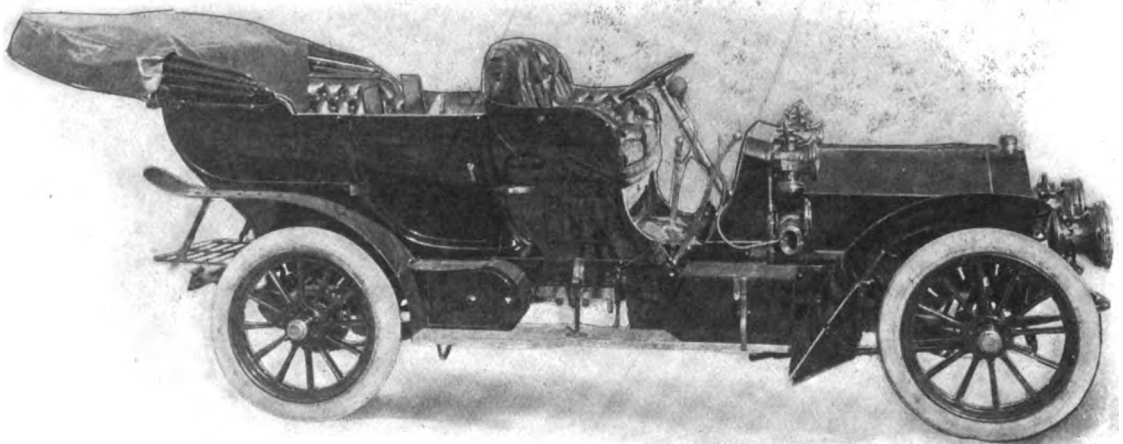
POPE-TOLEDO TOURING CAR, MODEL XVII, 4 CYLINDERS, PRICE \$4,750.
 Pope Motor Car Co., Toledo, Ohio.



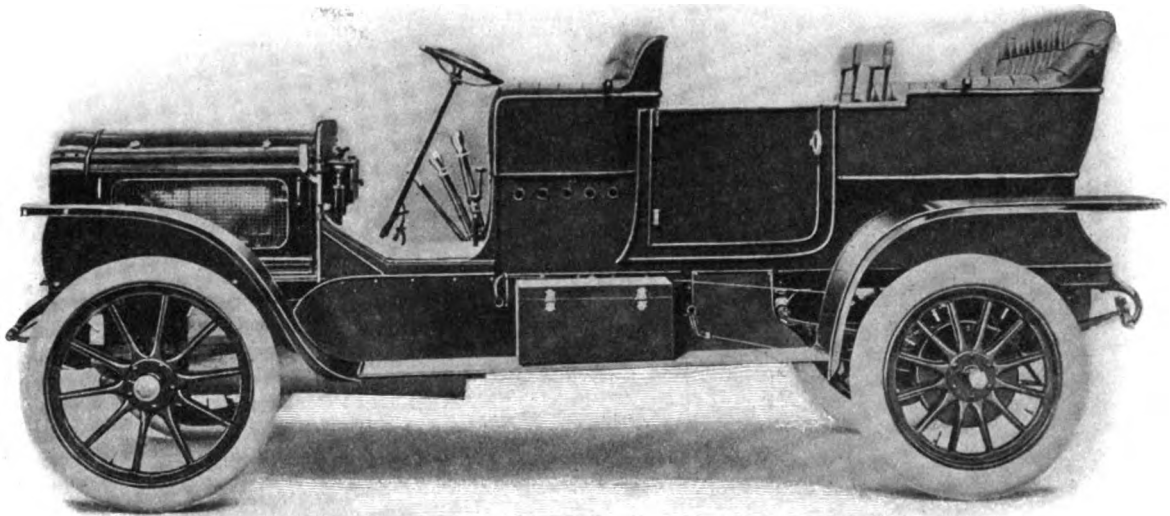
PACKARD LIMOUSINE, 4 CYLINDERS, 30-H.P., PRICE \$5,600.
Packard Motor Car Co., Detroit, Mich.

A·L·A·M·

1908



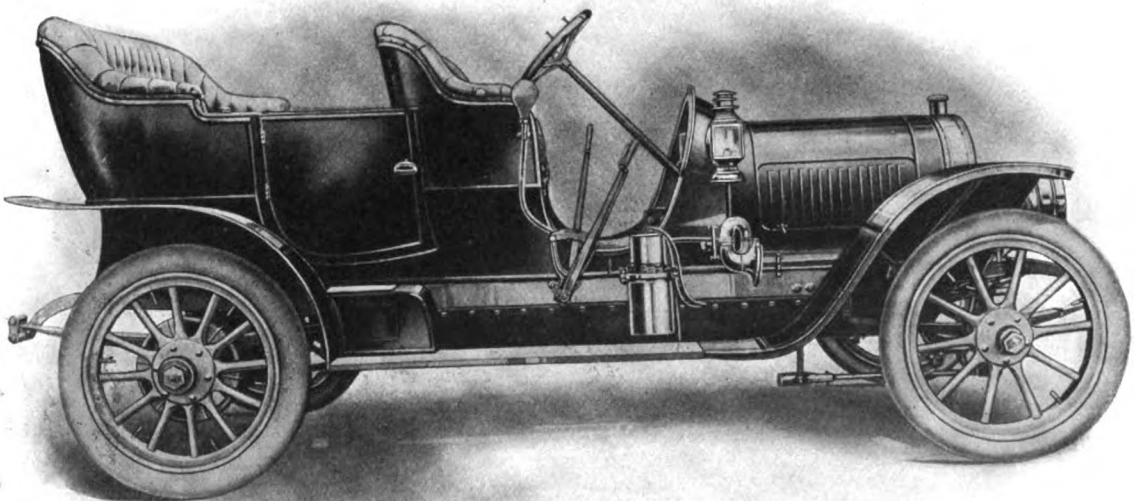
APPERSON TOURING CAR, MODEL K, 4 CYLINDERS, 50-H.P., PRICE \$4,200.
Apperson Bros. Automobile Co., Kokomo, Ind.



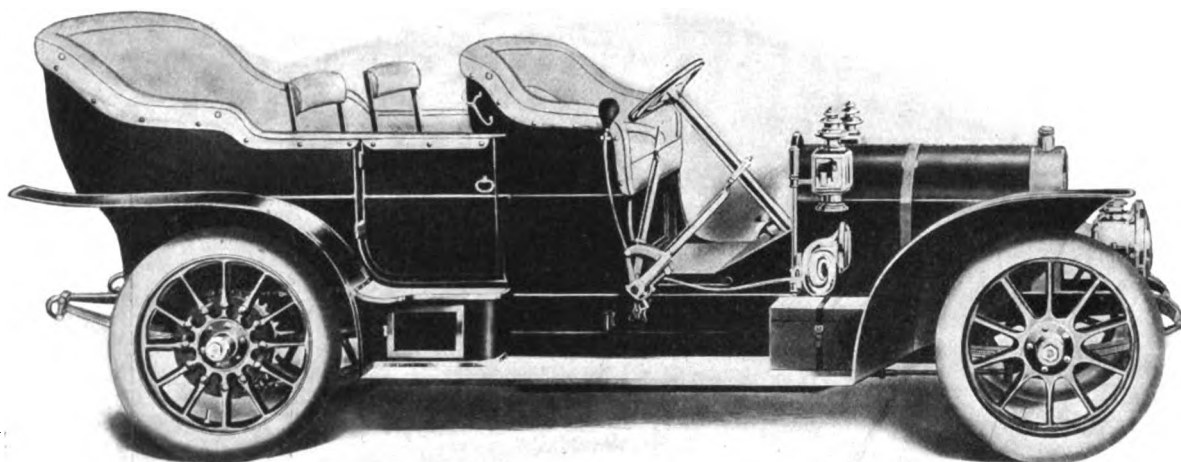
WHITE STEAMER TOURING CAR, MODEL K, 30-H.P., PRICE \$3,700.
The White Company, Cleveland, O.

AJAM

1908

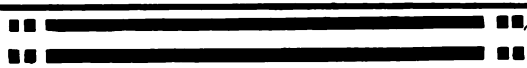


POPE-HARTFORD TOURING CAR, MODEL M, 4 CYLINDERS, 30-H.P., PRICE \$2,750.
Pope Manufacturing Co., Hartford, Conn.

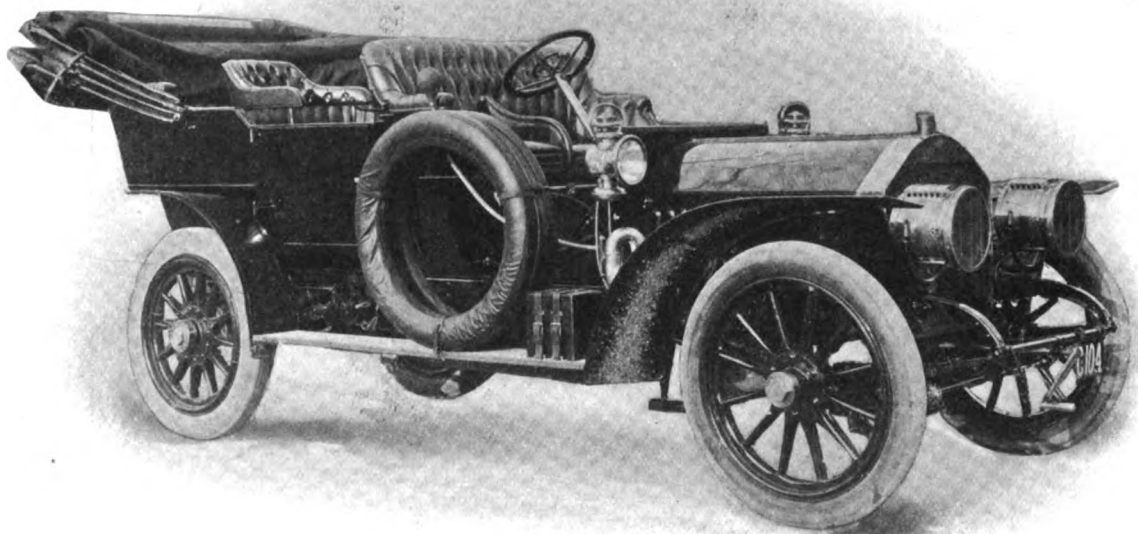


THOMAS FLYER TOURING CAR, 4 CYLINDERS, 60-H.P., PRICE \$4,500.
E. R. Thomas Motor Co., Buffalo, N. Y.

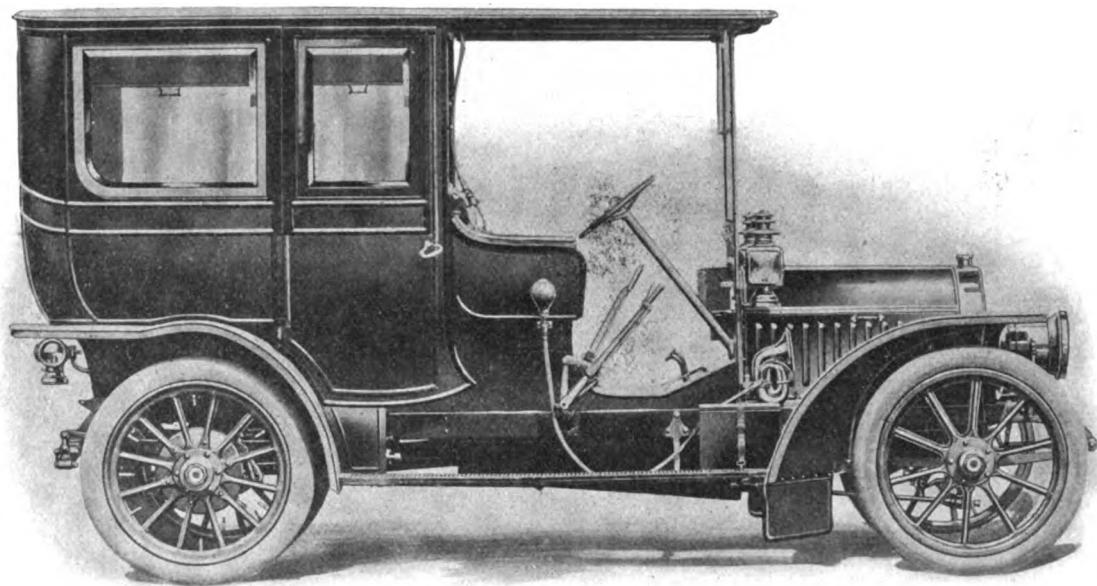
A·I·A·M



1908



**COLUMBIA GASOLINE-ELECTRIC TOURING CAR, 4 CYLINDERS, 48-H.P.,
PRICE \$6,500.**
Electric Vehicle Co., Hartford, Conn.

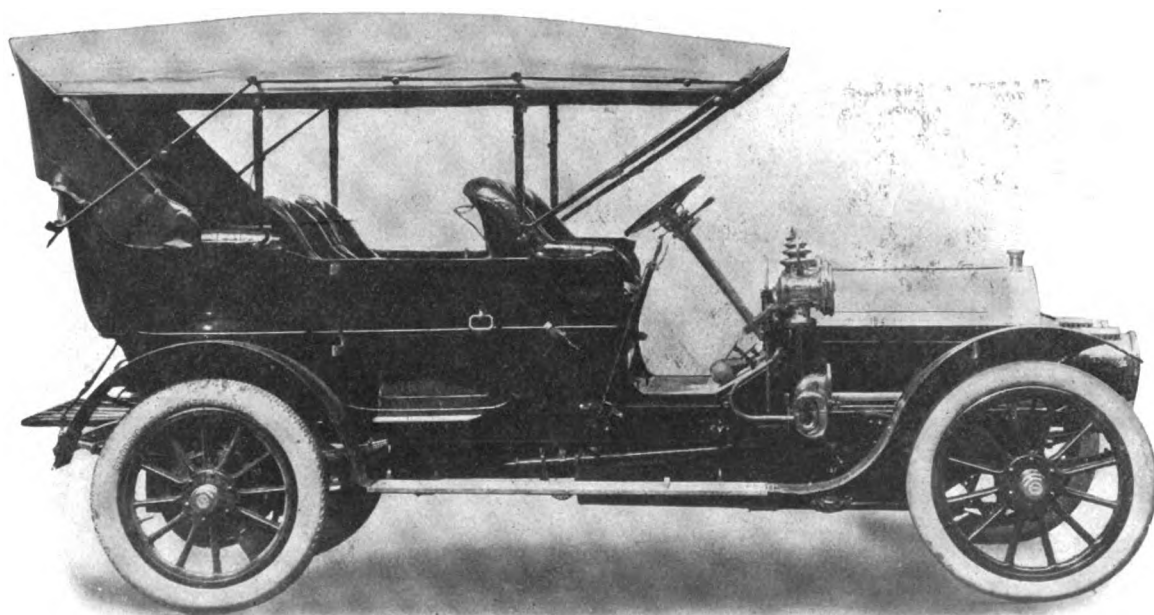


PEERLESS LIMOUSINE, MODEL XVIII, 4 CYLINDERS, 30-H.P., PRICE \$5,500.
Peerless Motor Car Co., Cleveland, Ohio.

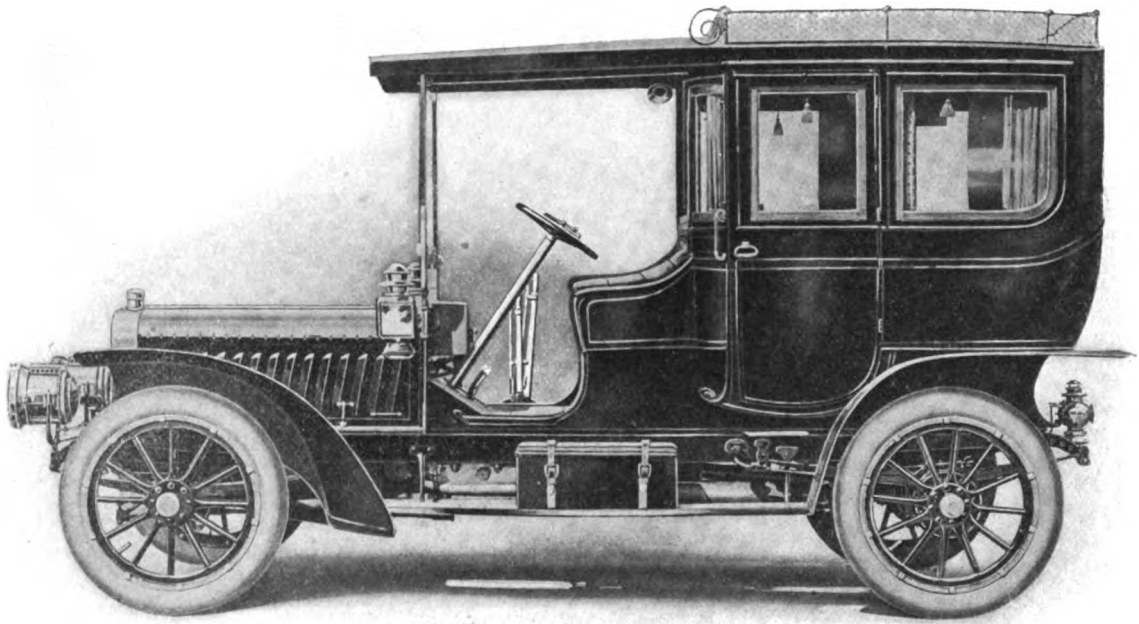
A.I.A.M.



1908



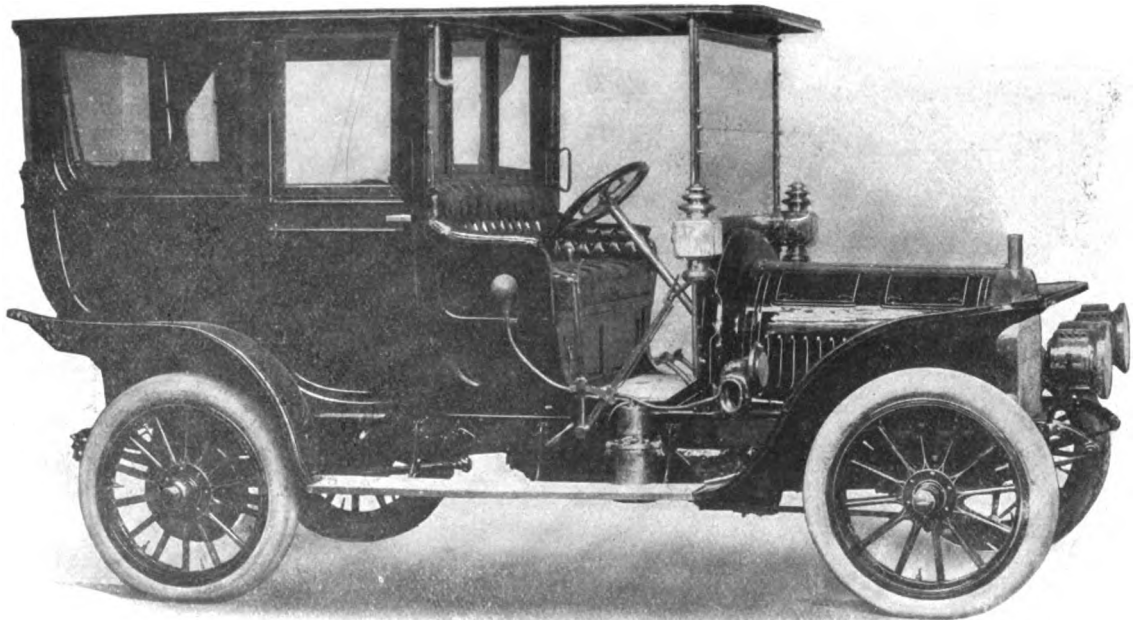
PIERCE GREAT ARROW TOURING CAR, 4 CYLINDERS, 40-H.P., PRICE \$5,000.
George N. Pierce Co., Buffalo, N. Y.



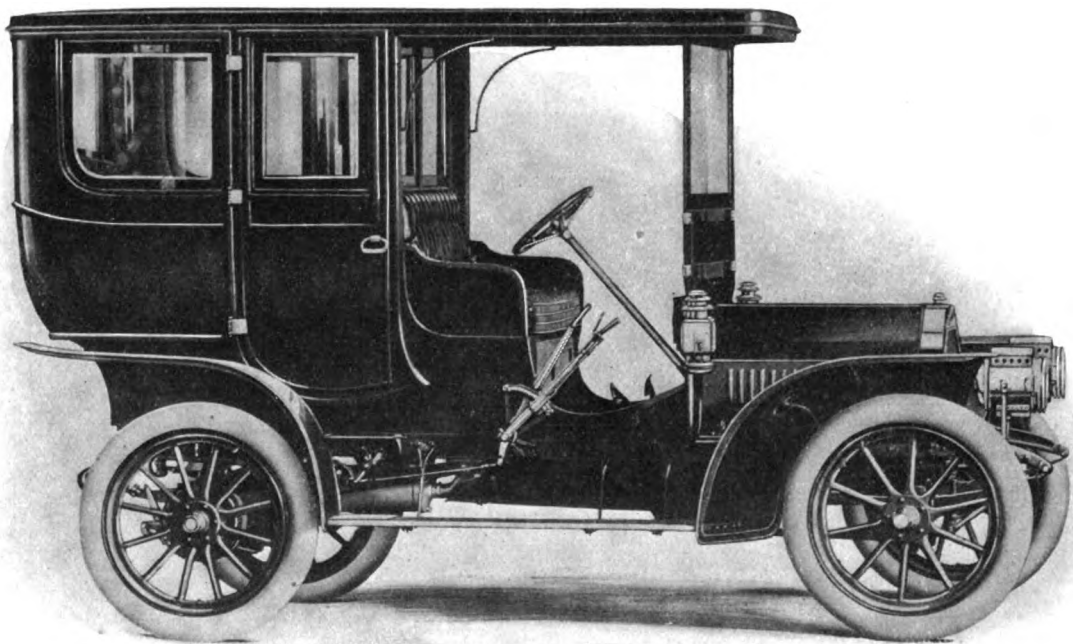
STEVENS-DURYEA "LIGHT SIX" LIMOUSINE, 6 CYLINDERS, 35-H.P., PRICE \$4,500.
Stevens-Duryea Company, Chicopee Falls, Mass.

A·L·A·M·

1908



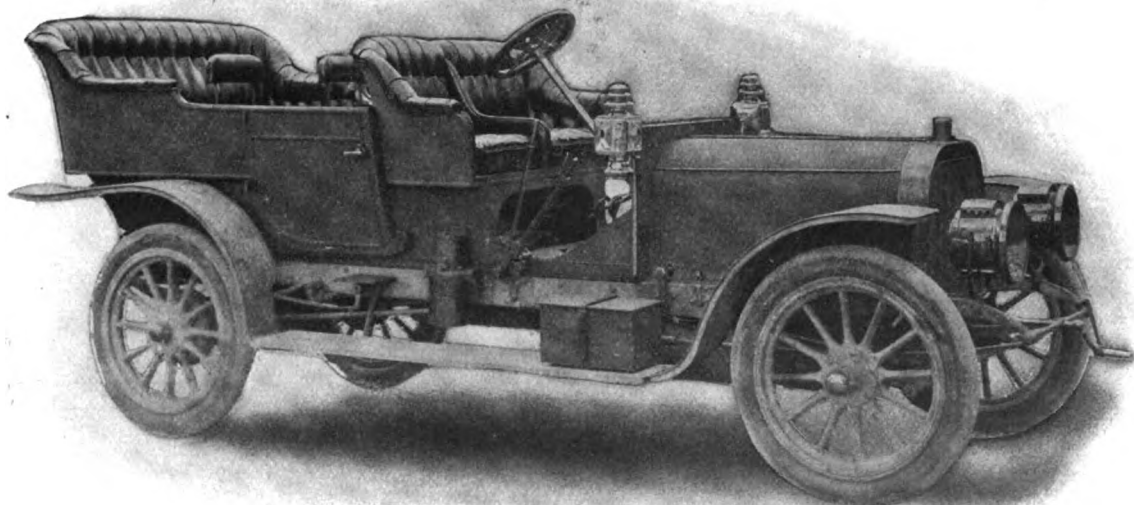
ROYAL TOURIST LIMOUSINE, 4 CYLINDERS, 45-H.P., PRICE \$5,000.
Royal Motor Car Co., Cleveland, Ohio.



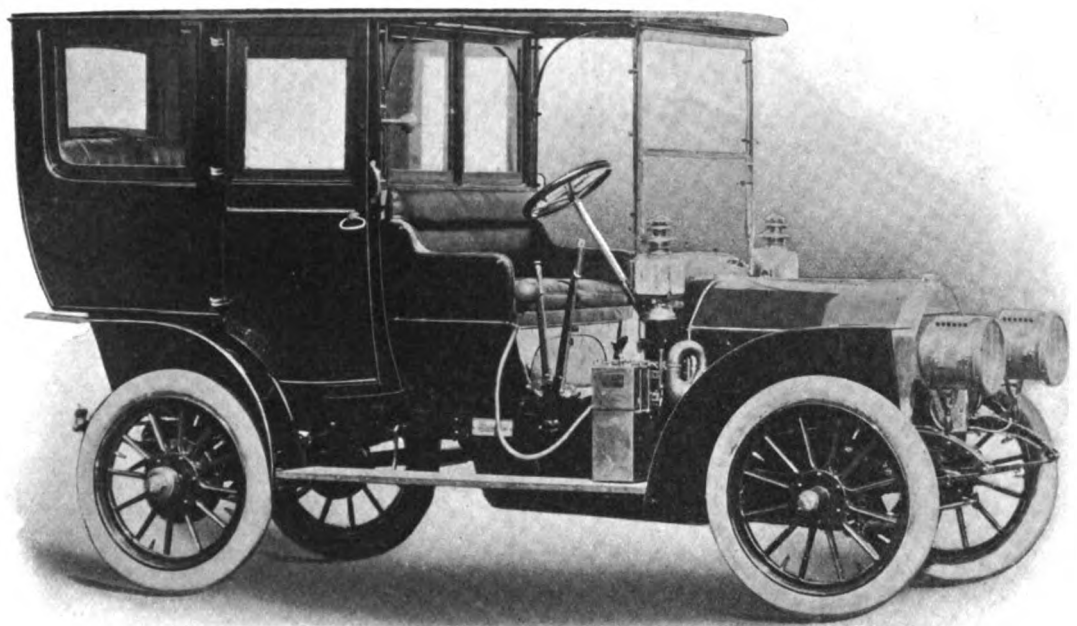
CADILLAC LIMOUSINE, MODEL G, 4 CYLINDERS, 25-H.P., PRICE \$3,000.
Cadillac Motor Car Co., Detroit, Mich.

A·J·A·M·

1908



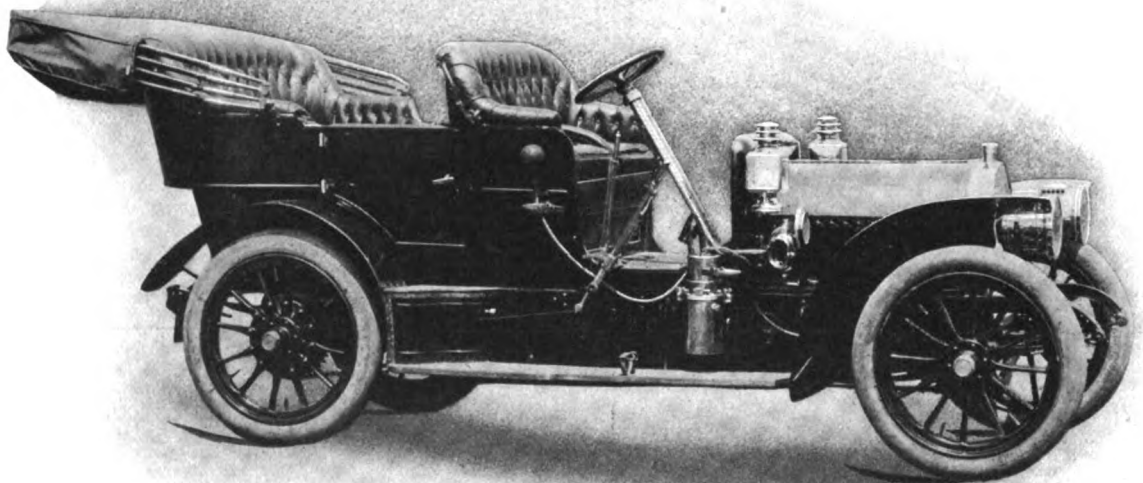
HAYNES TOURING CAR, MODEL U, 4 CYLINDERS, 60-H.P., PRICE \$3,750.
Haynes Automobile Co., Kokomo, Ind.



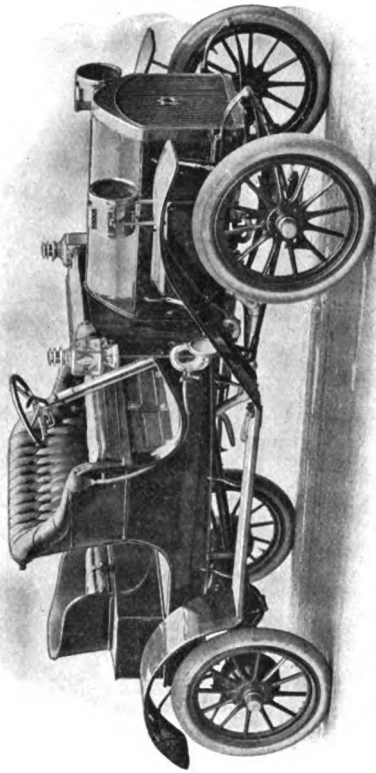
STUDEBAKER LIMOUSINE, MODEL H, 4 CYLINDERS, 27-H.P., PRICE \$4,200.
Studebaker Automobile Co., South Bend, Ind.

A·L·A·M

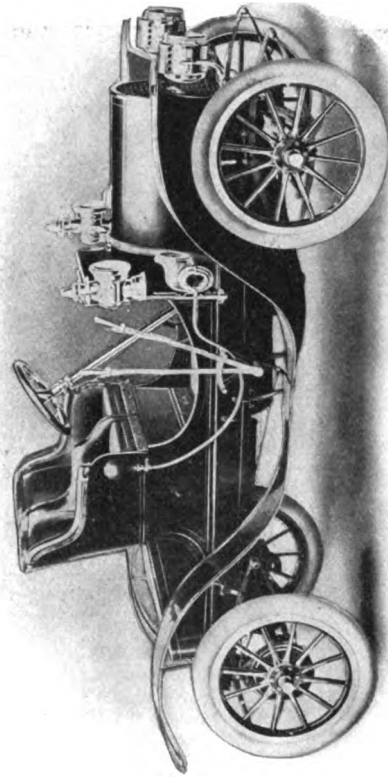
1908



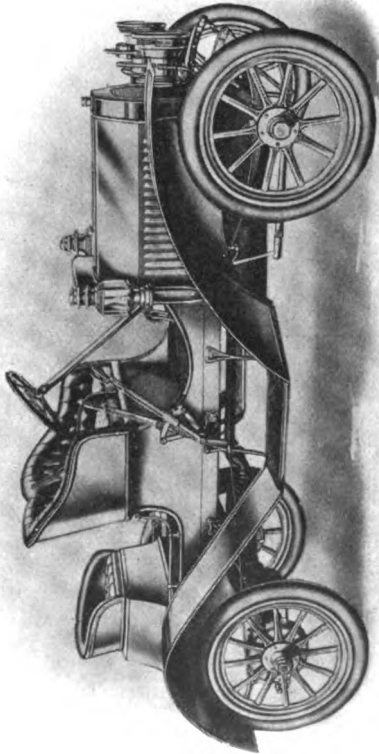
LOCOMOBILE TOURING CAR, MODEL E, 4 CYLINDERS, 20-H.P., PRICE \$2,900.
Locomobile Company of America, Bridgeport, Conn.



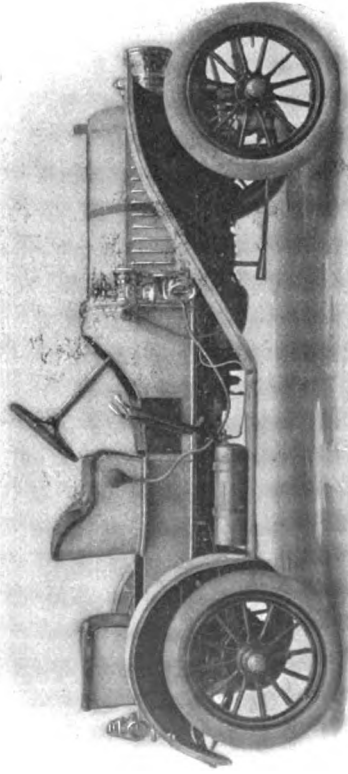
NORTHERN RUNABOUT, 2 CYLINDERS, 24-H.P., \$1,600.
Northern Motor Car Co., Detroit, Mich.



FRANKLIN RUNABOUT, 4 CYLINDERS, 16-H.P., PRICE \$1,750.
H. H. Franklin Mfg. Co., Syracuse, N. Y.

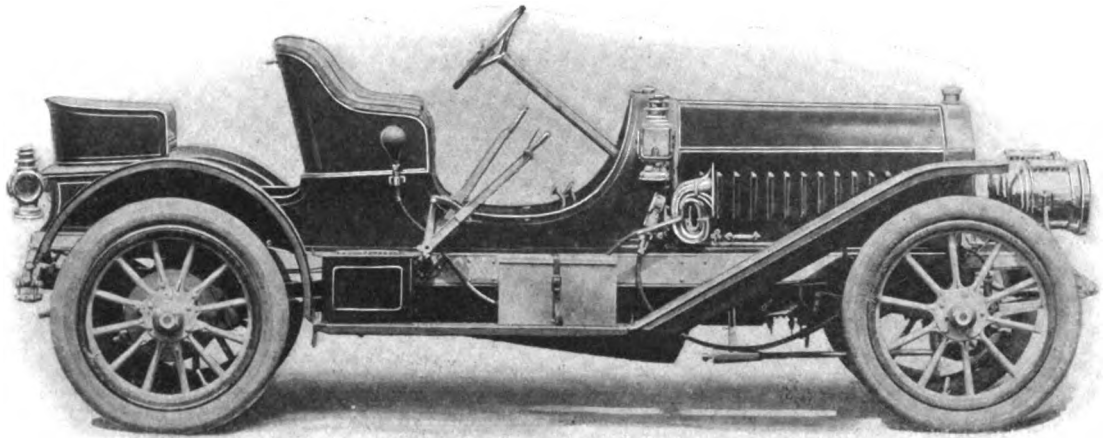


CADILLAC RUNABOUT, 4 CYLINDERS, 25-H.P., PRICE \$2,000.
Cadillac Motor Car Co., Detroit, Mich.

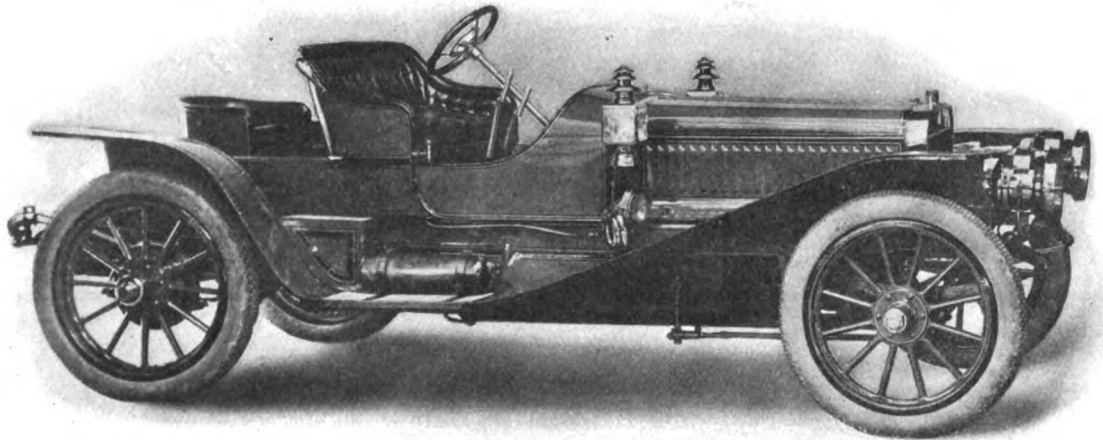


AUTOCAR ROADSTER, 4 CYLINDERS, 30-H.P., PRICE \$2,750.
Autocar Company, Ardmore, Pa.

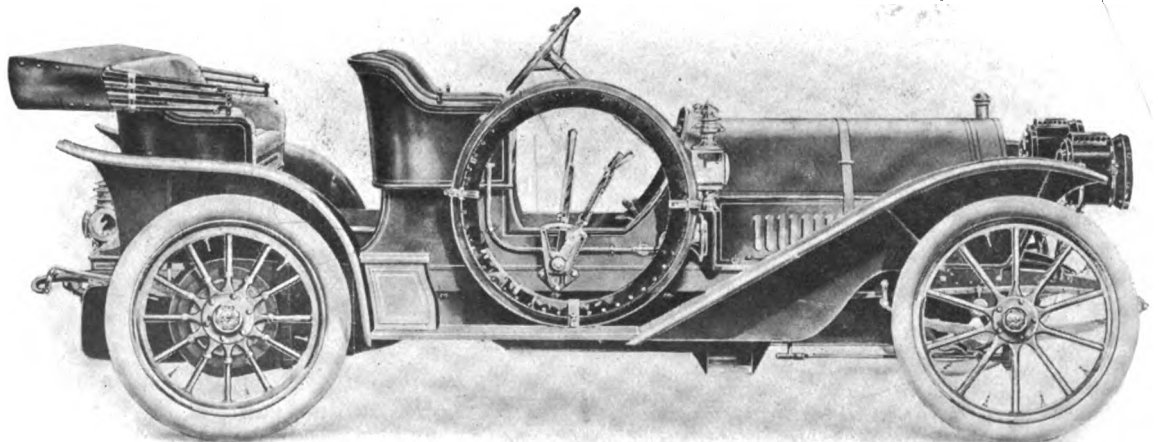
1907 AUTOMOBILES



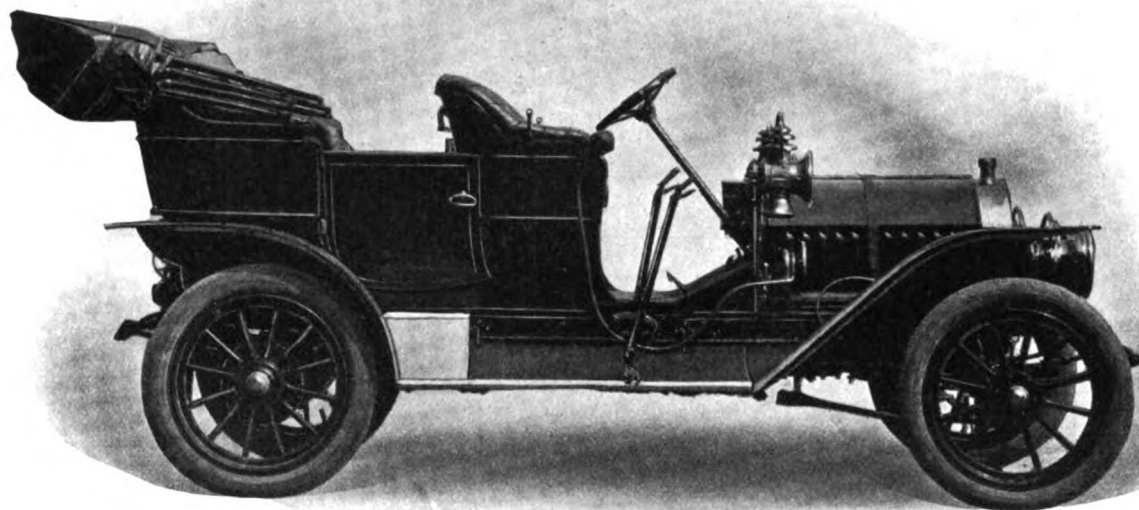
PEERLESS ROADSTER, MODEL XVIII, 4 CYLINDERS, 30-H.P., PRICE \$4,300.
Peerless Motor Car Co., Cleveland, Ohio.



WINTON SIX-TEEN-SIX RUNABOUT, 6 CYLINDERS, 48-H.P., PRICE \$4,500.
Winton Motor Carriage Co., Cleveland, Ohio.



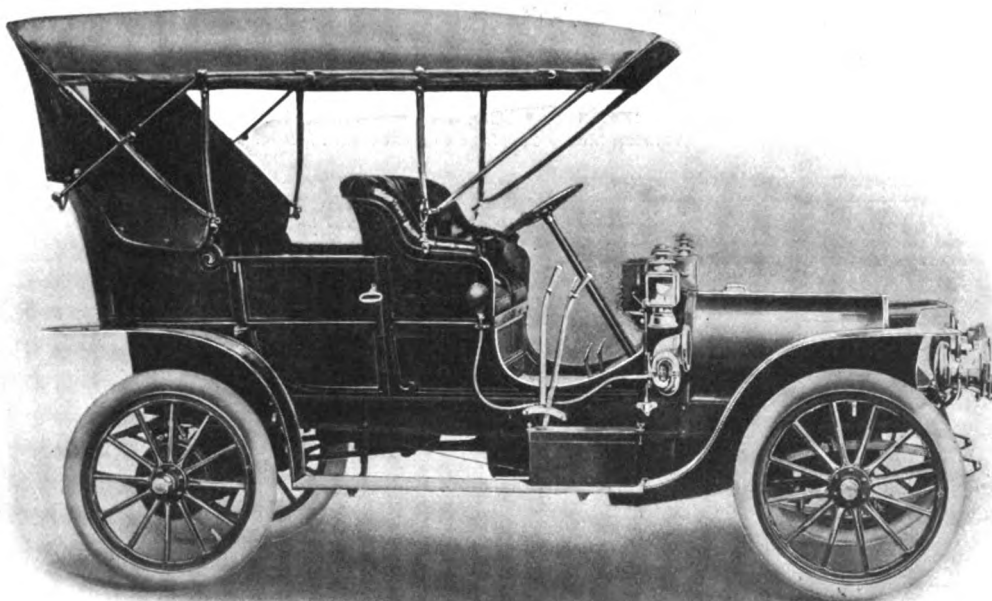
POPE-TOLEDO TOURING RUNABOUT, 4 CYLINDERS, 50-H.P., PRICE \$4,750.
Pope Motor Car Co., Toledo, Ohio.



AUTOCAR TOURING CAR, MODEL XIV, 4 CYLINDERS, 30-H.P., PRICE \$2,750.
The Autocar Company, Ardmore, Pa.

A·I·A·M·

1908



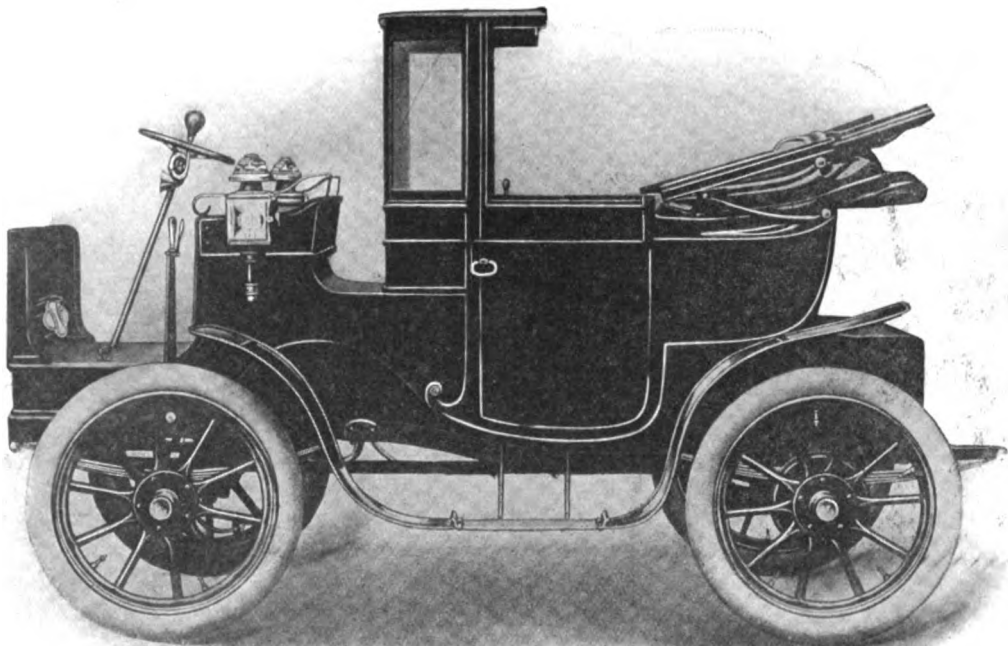
FRANKLIN TOURING CAR, MODEL D, 4 CYLINDERS, 28-H.P., PRICE \$2,850.
H. H. Franklin Mfg. Co., Syracuse, N. Y.



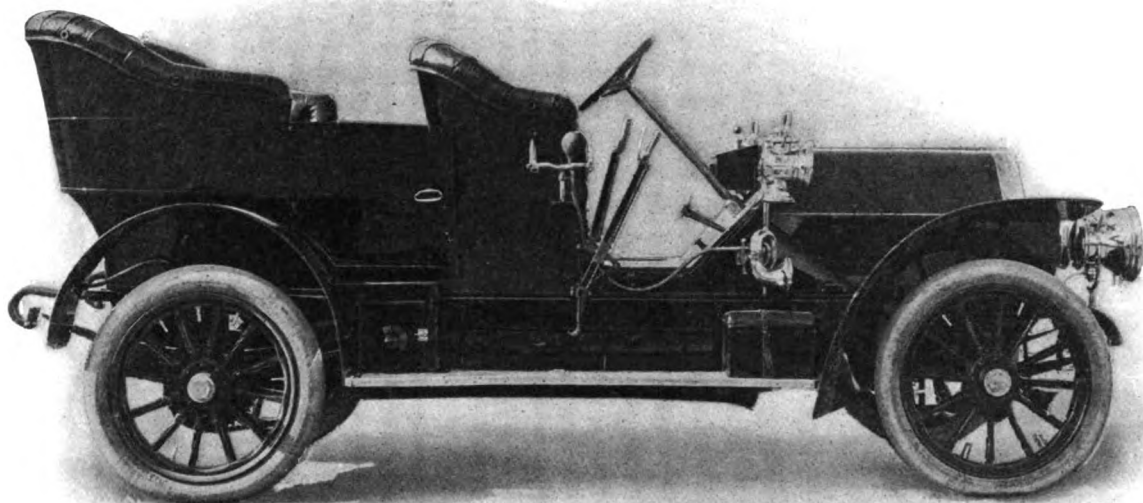
COLUMBUS ELECTRIC SURREY, MODEL 1100, 2 1-2-H.P. ELECTRIC.
Columbus Buggy Co., Columbus, O.

A.I.A.M.

1908



BAKER ELECTRIC LANDAULET, PRICE \$4,000.
Baker Motor Vehicle Co., Cleveland, O.

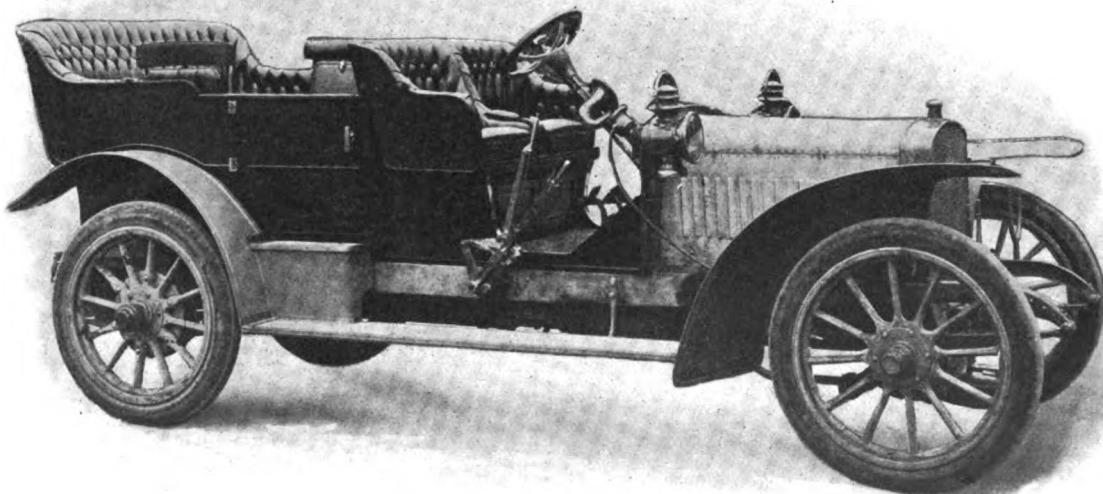


KNOX AIR-COOLED TOURING CAR, MODEL G, 4 CYLINDERS, 25-H.P., PRICE \$2,600.
 Knox Automobile Co., Springfield, Mass.

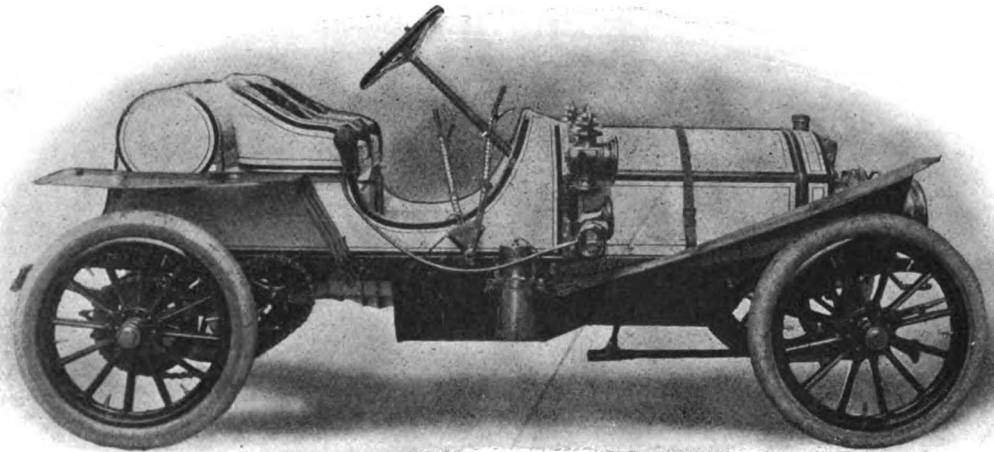
A.I.A.M.



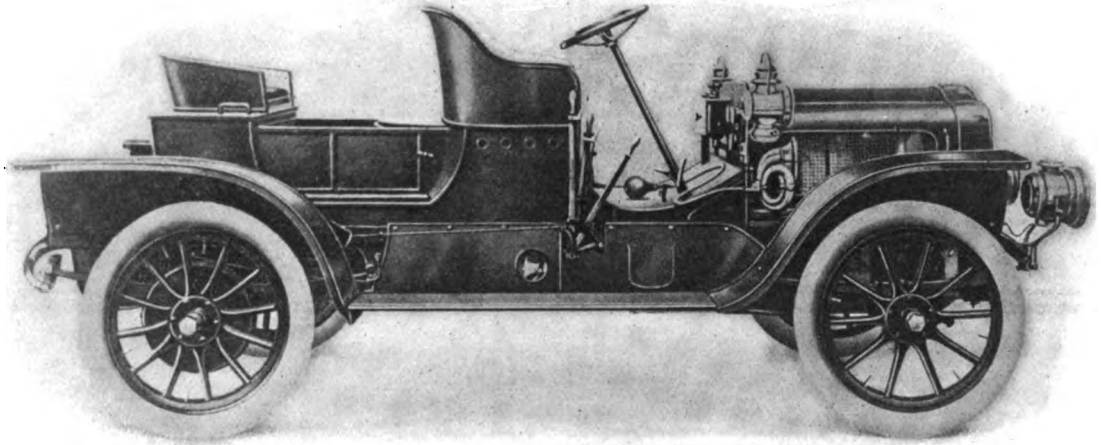
1908



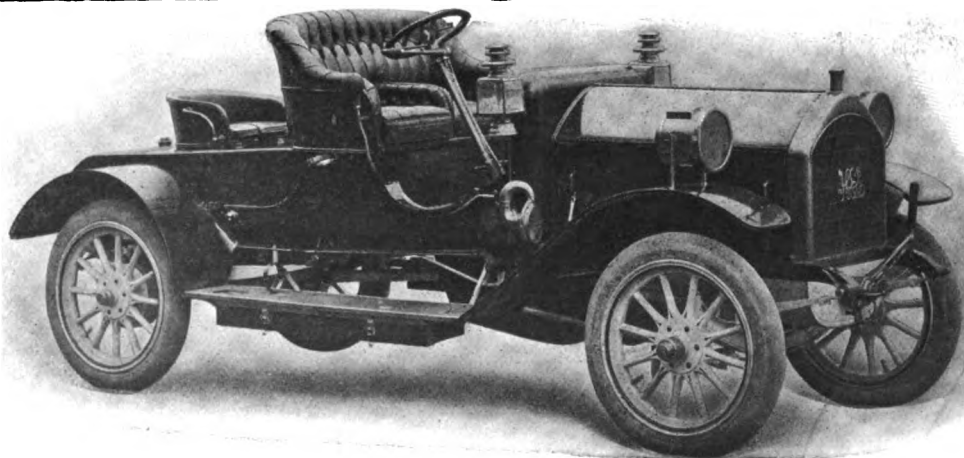
LOZIER TOURING CAR, TYPE H, 4 CYLINDERS, 45-H.P., PRICE \$5,000.
 Lozier Motor Co., New York City.



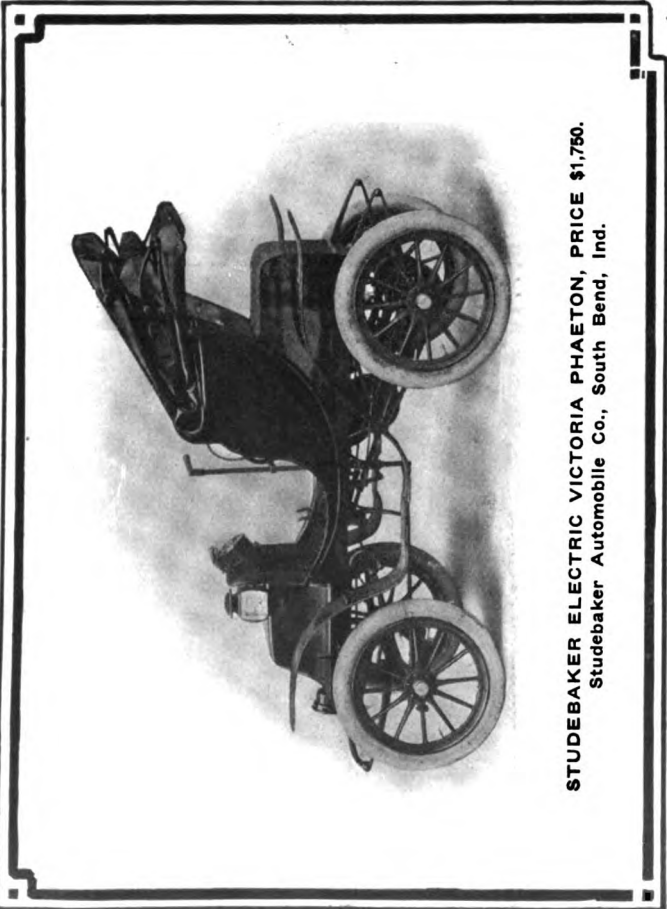
APPERSON JACK RABBIT RUNABOUT, 4 CYLINDERS, 50-H.P., PRICE \$5,000.
Apperson Bros. Automobile Co., Kokomo, Ind.



WHITE RUNABOUT, MODEL K, 30-H.P., PRICE \$3,400.
The White Company, Cleveland, O.



NORTHERN RUNABOUT, MODEL L, 4 CYLINDERS, 40-H.P., PRICE \$3,500.
Northern Motor Car Co., Detroit, Mich.

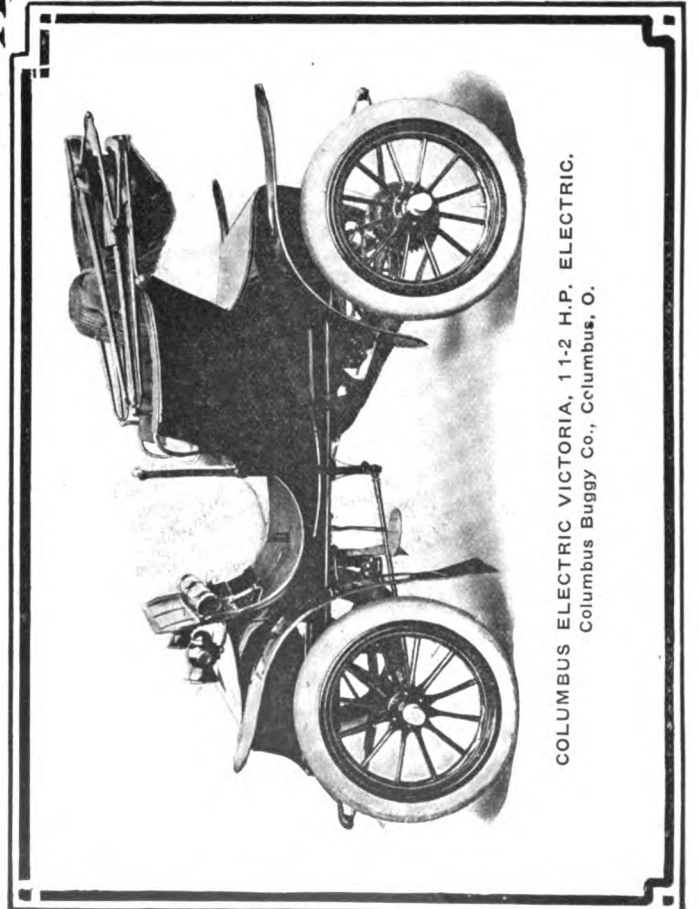


STUDEBAKER ELECTRIC VICTORIA PHAETON, PRICE \$1,750.
Studebaker Automobile Co., South Bend, Ind.



BAKER ELECTRIC QUEEN VICTORIA, PRICE \$1,800
Baker Motor Vehicle Co., Cleveland, O.

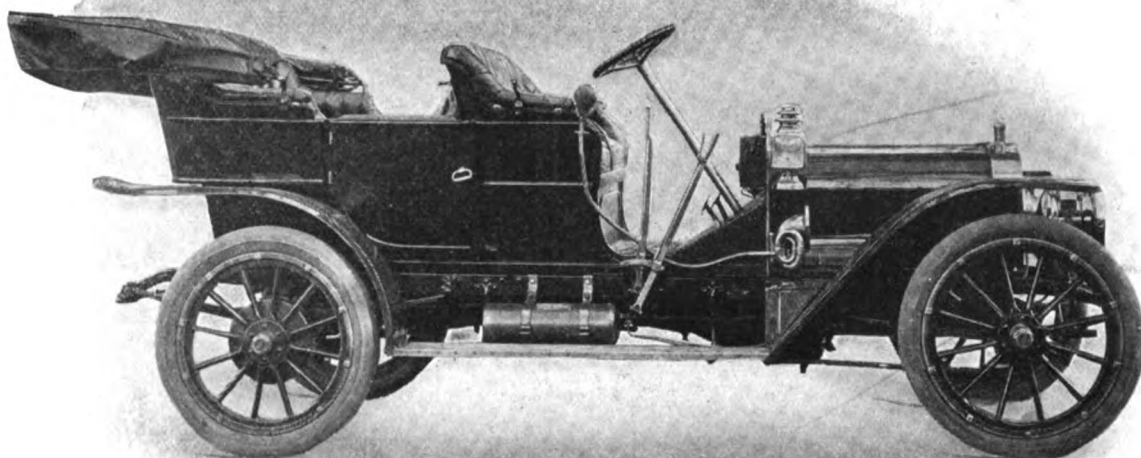
19 A.M. 08



COLUMBUS ELECTRIC VICTORIA, 11-2 H.P. ELECTRIC.
Columbus Buggy Co., Columbus, O.



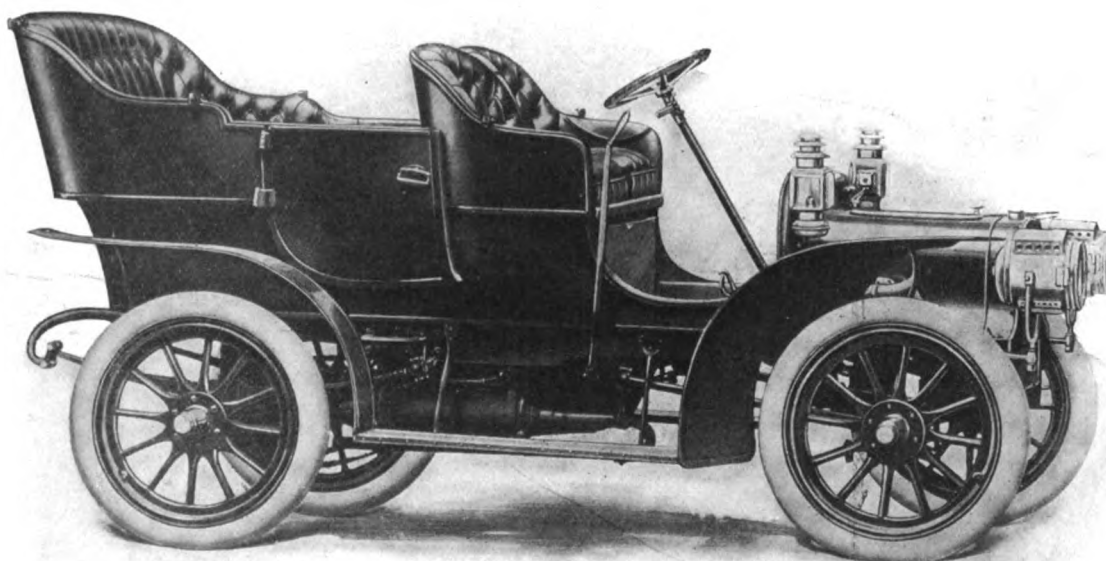
BABCOCK ELECTRIC VICTORIA PHAETON, NO. 6, PRICE \$1,700.
Babcock Electric Carriage Co., Buffalo, N. Y.



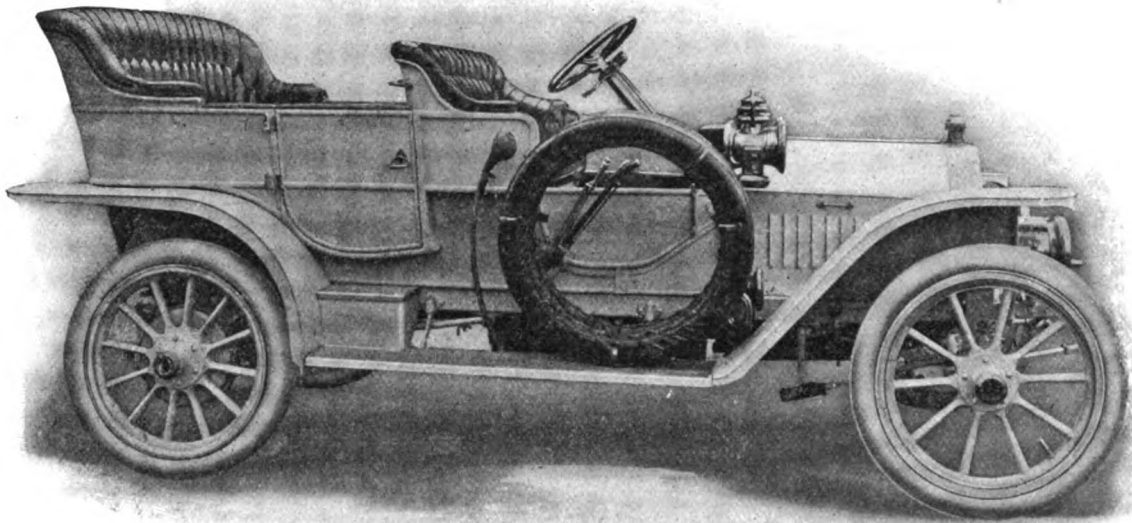
CORBIN TOURING CAR, WATER-COOLED, 4 CYLINDERS, 32-H.P., PRICE \$2,650.
Corbin Motor Vehicle Corporation, New Britain, Conn.

A·I·A·M

1908



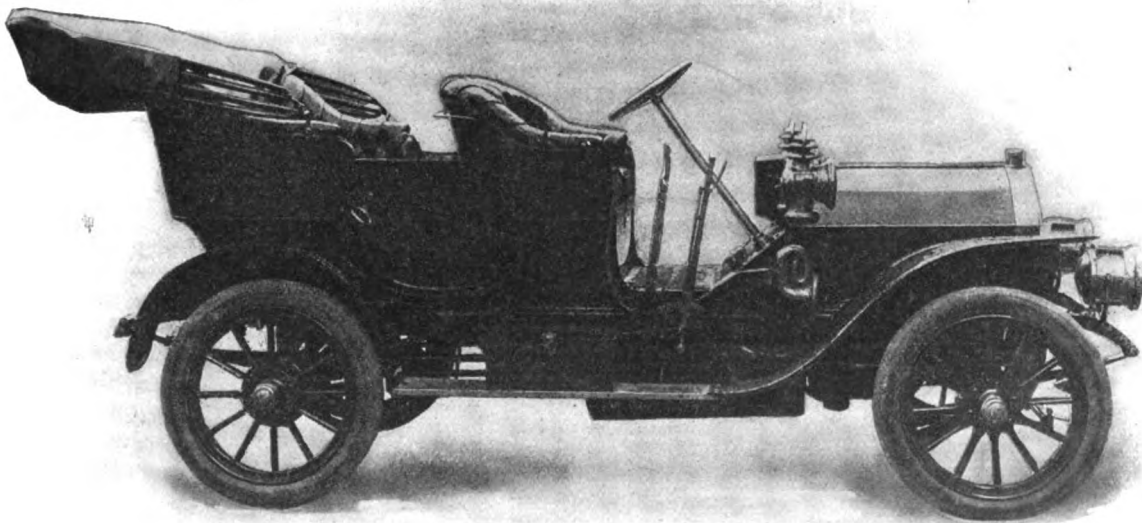
CADILLAC TOURING CAR, MODEL T, 1 CYLINDER, 10-H.P., PRICE \$1,000.
Cadillac Motor Car Co., Detroit, Mich.



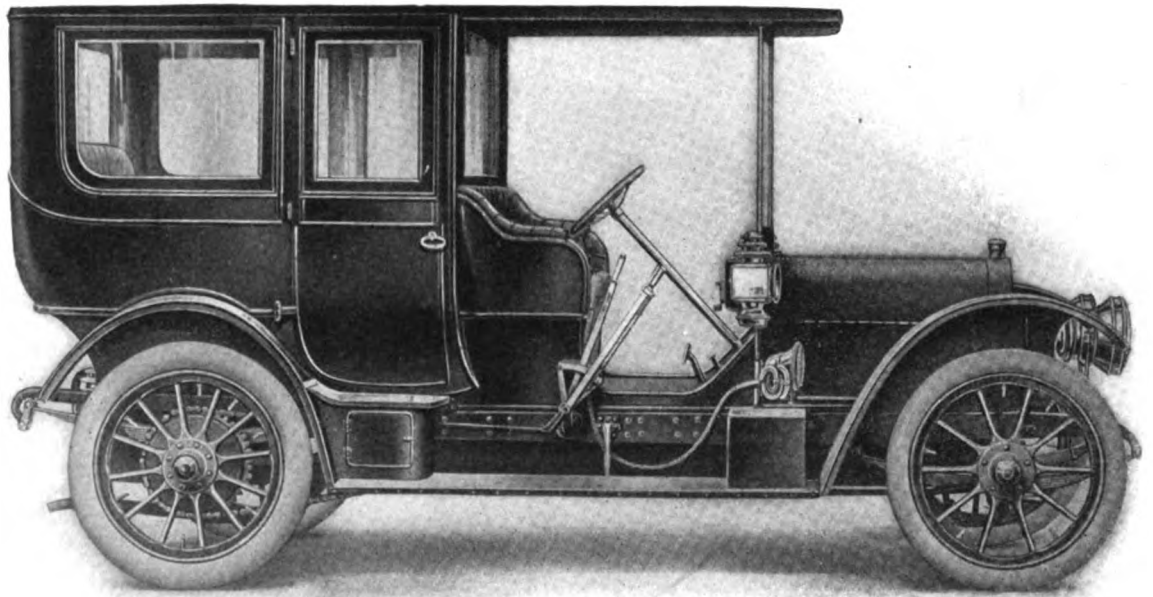
OLDSMOBILE TOURING CAR, MODEL M, 4 CYLINDERS, 36-H.P., PRICE \$2,750.
Olds Motor Works, Lansing, Mich.

A·L·A·M·

1908



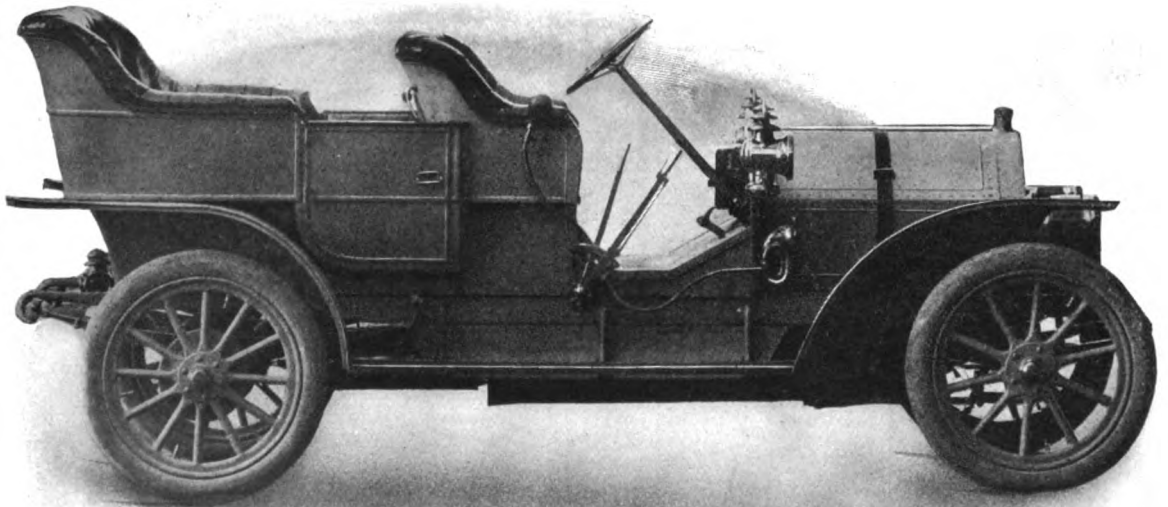
KNOX WATER-COOLED TOURING CAR, MODEL L, 4 CYLINDERS, 30-H.P., PRICE \$2,700.
Knox Automobile Co., Springfield, Mass.



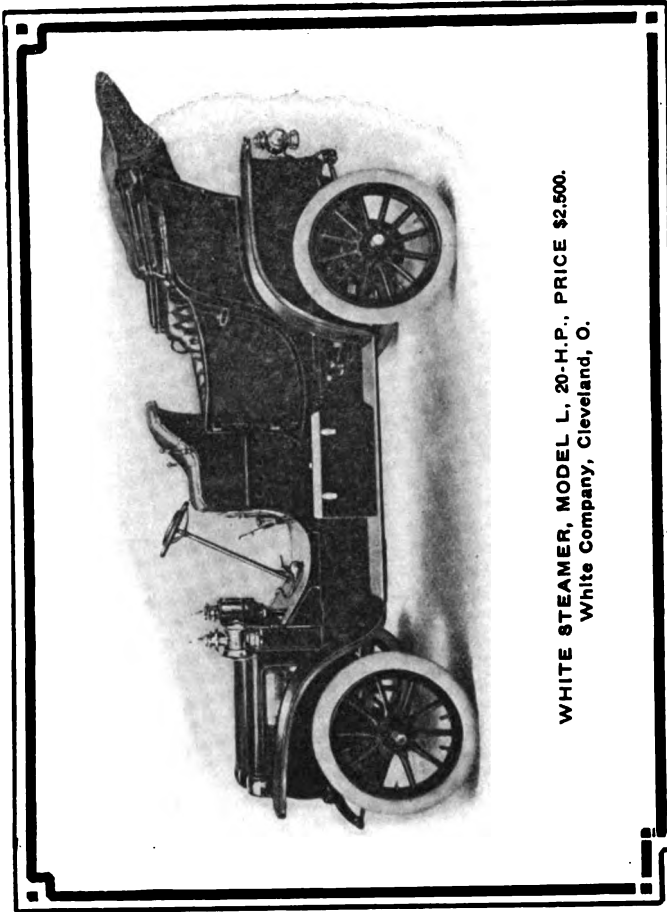
STEARNS LIMOUSINE, 4 CYLINDERS, 30-H.P., PRICE \$5,750.
F. B. Stearns Company, Cleveland, O.

A·L·A·M

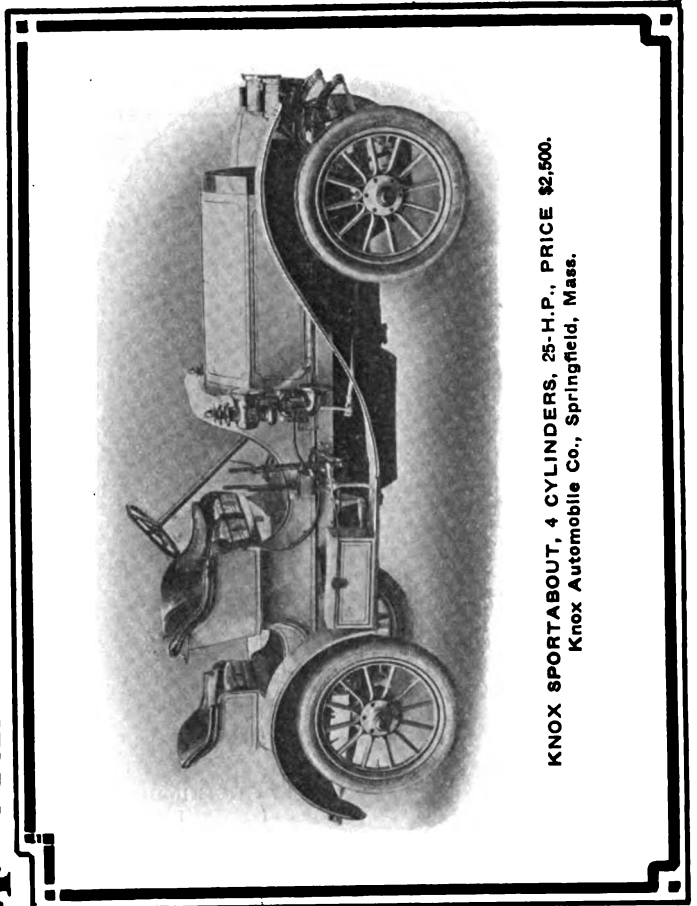
1908



THOMAS DETROIT TOURING CAR, 4 CYLINDERS, 40-H.P., PRICE \$2,750.
E. R. Thomas Motor Co., Buffalo, N. Y.

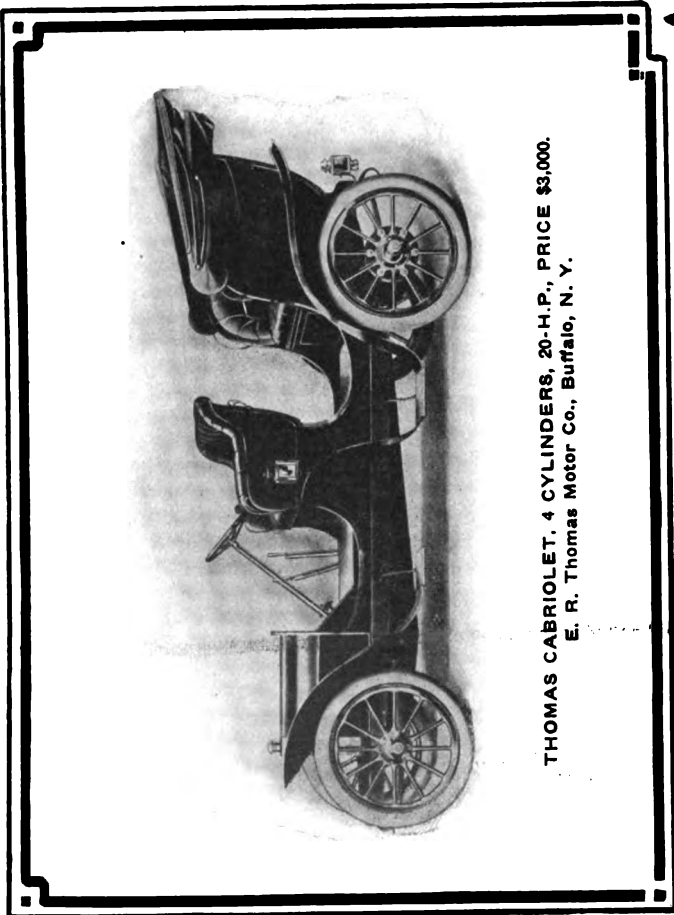


WHITE STEAMER, MODEL L, 20-H.P., PRICE \$2,500.
White Company, Cleveland, O.

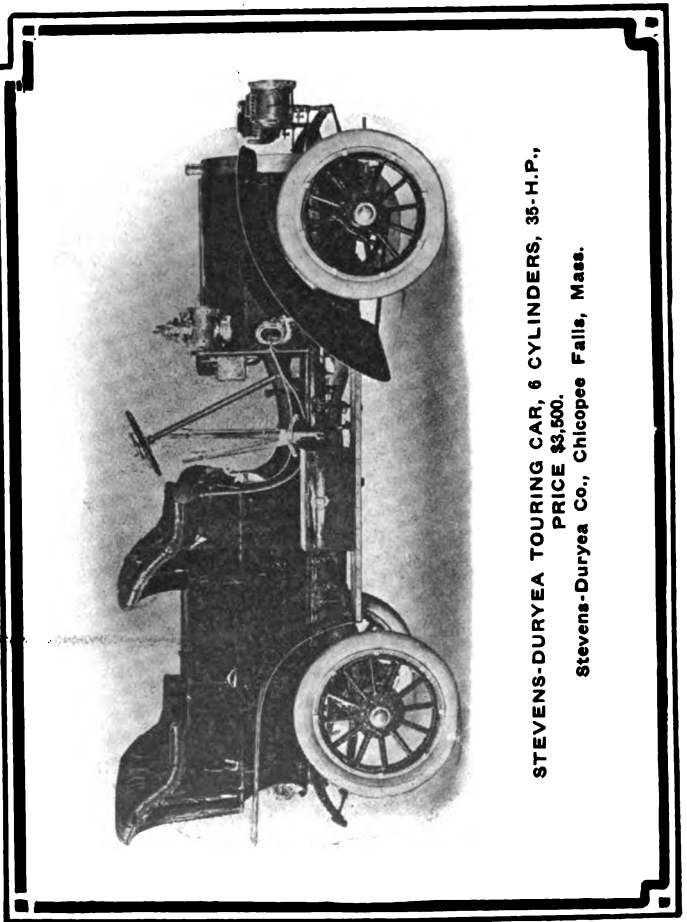


KNOX SPORTABOUT, 4 CYLINDERS, 25-H.P., PRICE \$2,500.
Knox Automobile Co., Springfield, Mass.

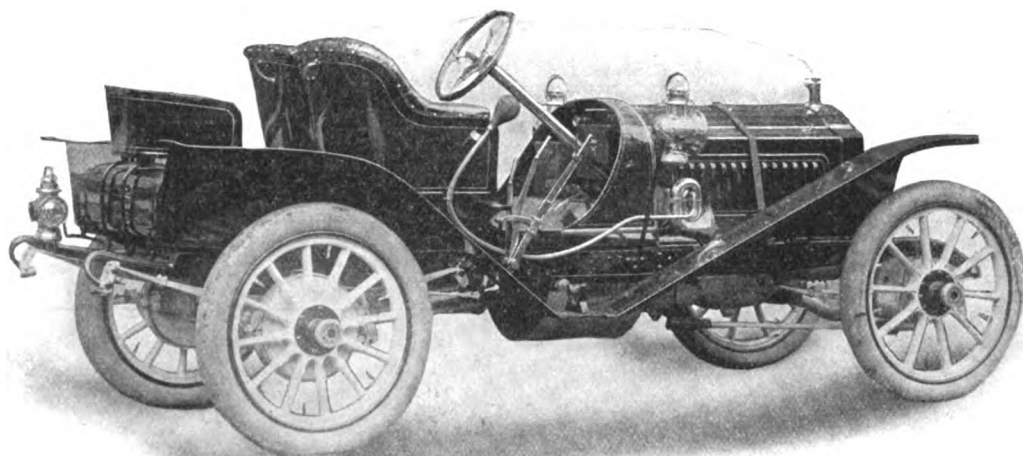
1907 **AJAM.** 08



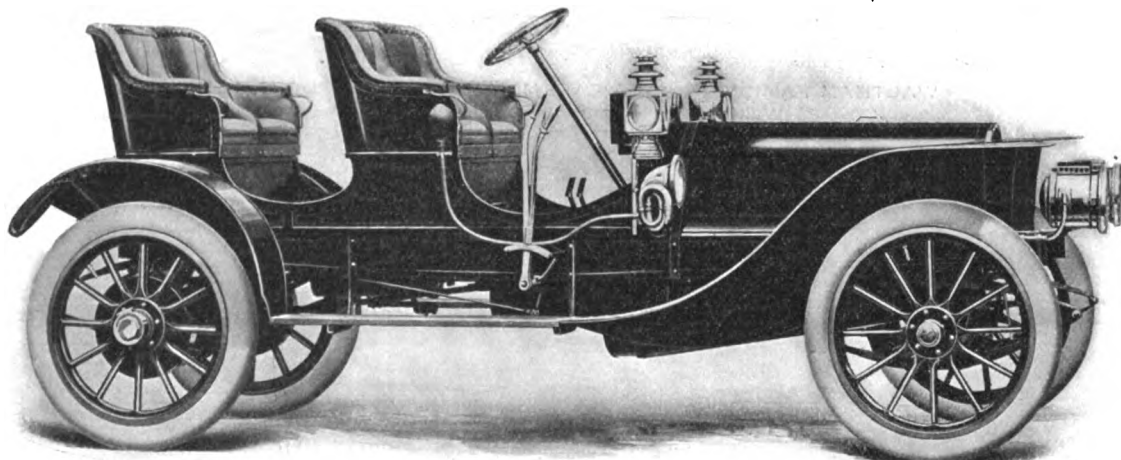
THOMAS CABRIOLET, 4 CYLINDERS, 20-H.P., PRICE \$3,000.
E. R. Thomas Motor Co., Buffalo, N. Y.



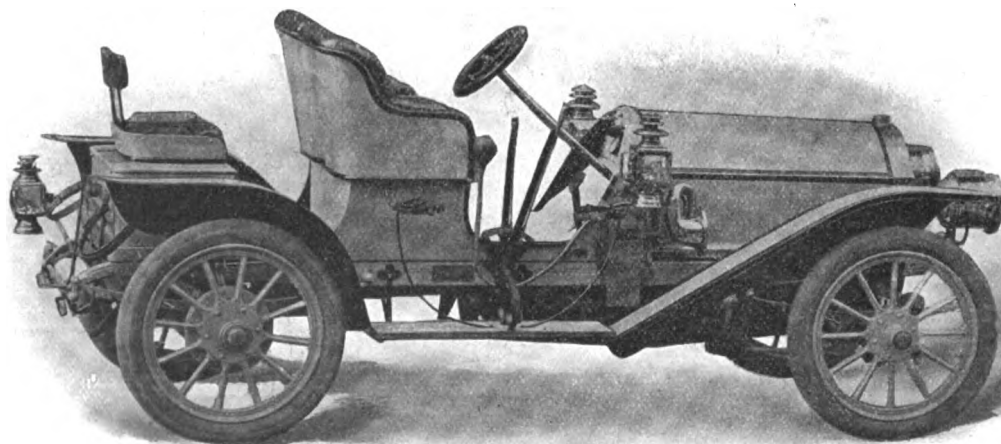
STEVENS-DURYEA TOURING CAR, 6 CYLINDERS, 35-H.P., PRICE \$3,500.
Stevens-Duryea Co., Chicopee Falls, Mass.



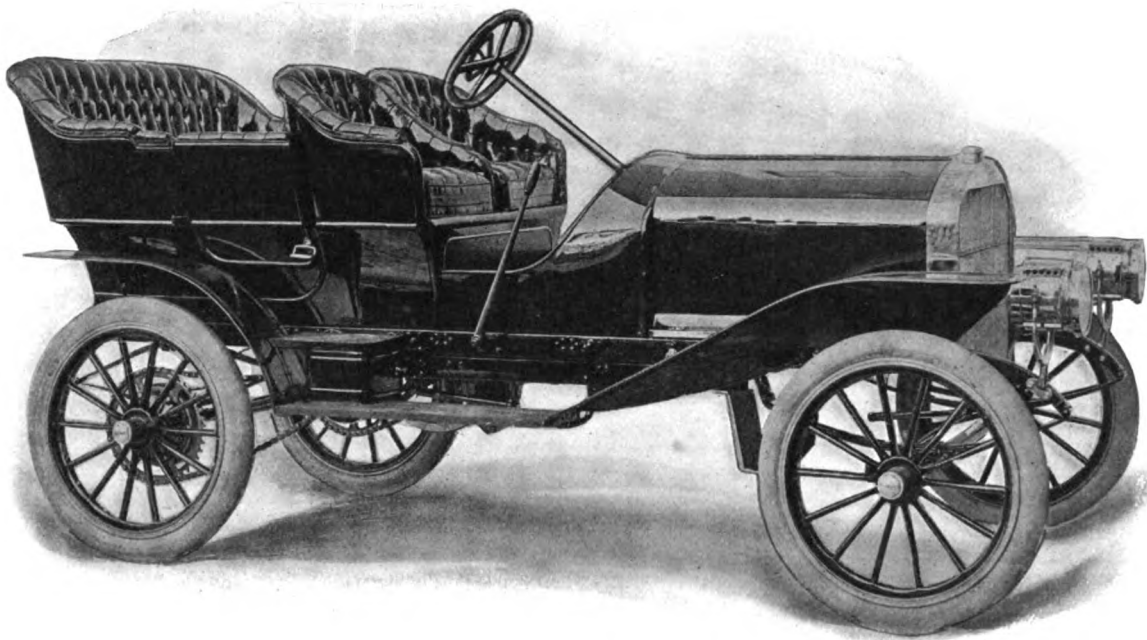
PACKARD RUNABOUT, 4 CYLINDERS, 30-H.P., PRICE \$4,200.
Packard Motor Car Co., Detroit, Mich.



FRANKLIN RUNABOUT, MODEL H, 6 CYLINDERS, 42-H.P., PRICE \$4,000.
H. H. Franklin Manufacturing Co., Syracuse, N. Y.

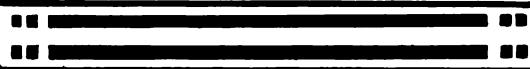


STUDEBAKER SPEEDCAR, 4 CYLINDERS, 27-H.P., PRICE \$3,500.
Studebaker Automobile Company, South Bend, Ind.

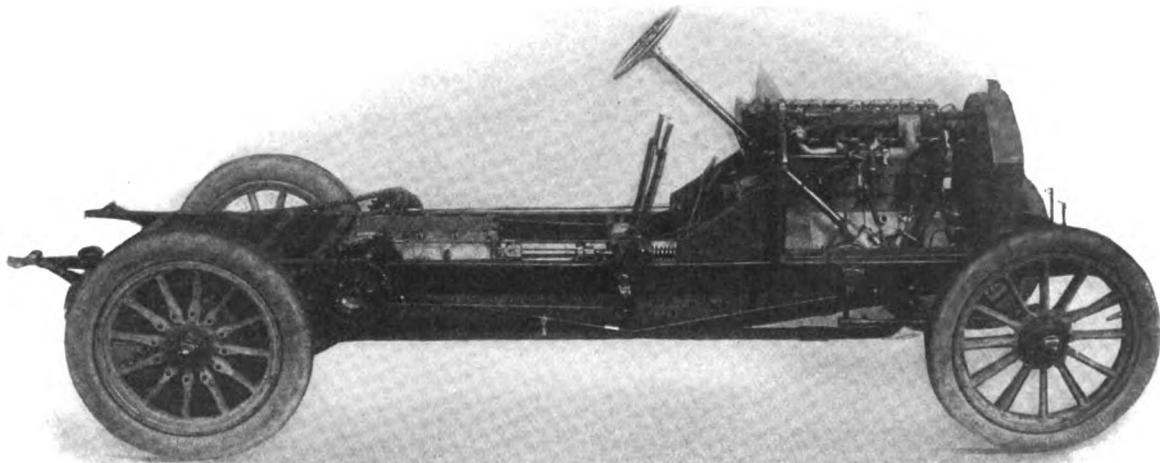


WALTHAM FAMILY TOURING CAR, MODEL 168, 2 CYLINDERS, 14-H.P.
 Waltham Manufacturing Co., Waltham, Mass.

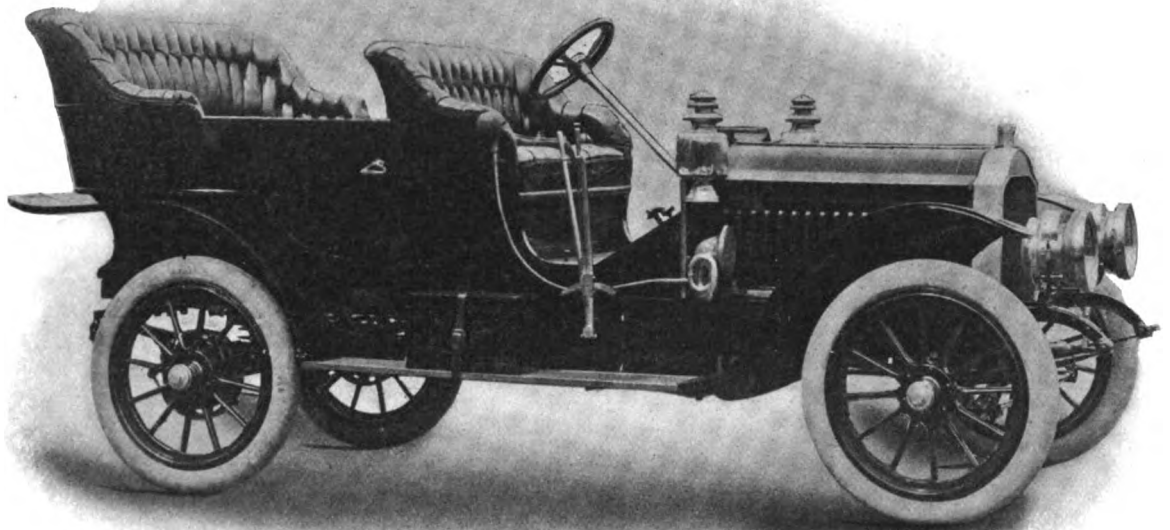
A.I.A.M.



1908



MATHESON CHASSIS, 4 CYLINDERS, 45-H.P., PRICE, TOURING CAR, \$5,500.
 Matheson Motor Car Co., Wilkes-Barre, Pa.

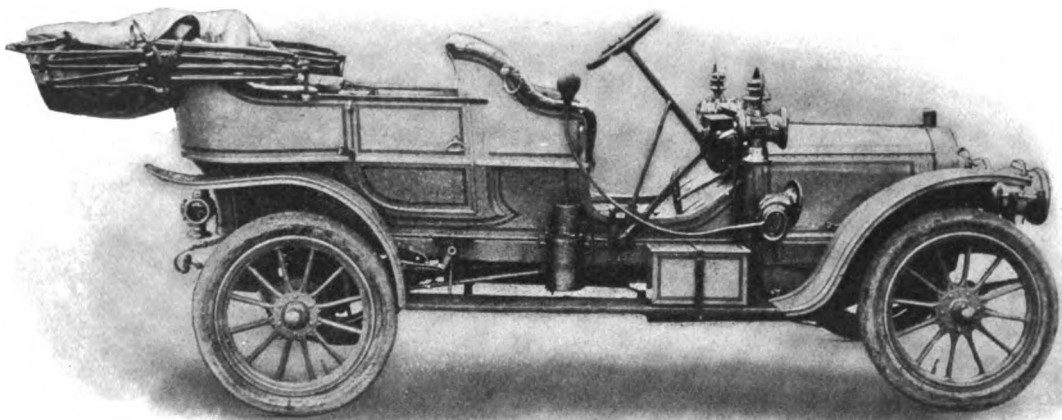


ELMORE TOURING CAR, 4 CYLINDERS, 35-H.P., PRICE \$2,500.
Elmore Manufacturing Co., Clyde, O.

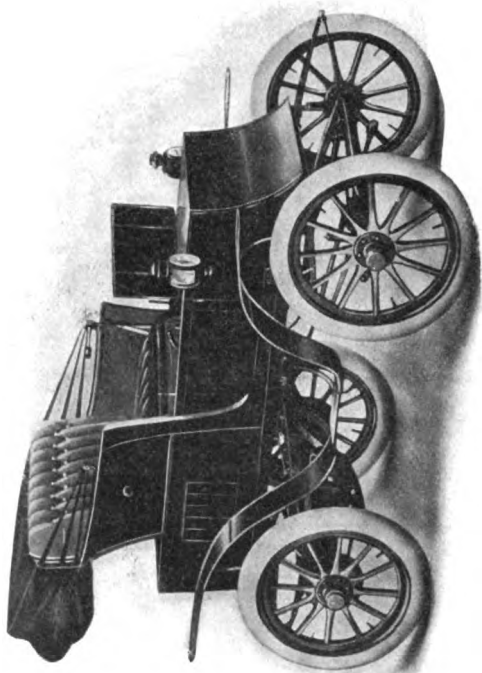
A·I·A·M·



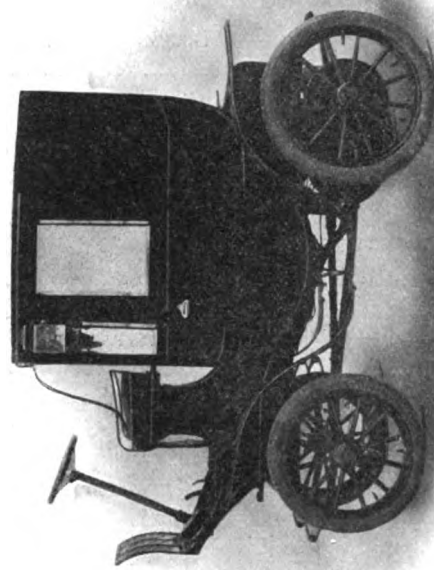
1908



HAYNES TOURING CAR, MODEL W, 4 CYLINDERS, 45-H.P., PRICE \$3,000.
Haynes Automobile Co., Kokomo, Ind.

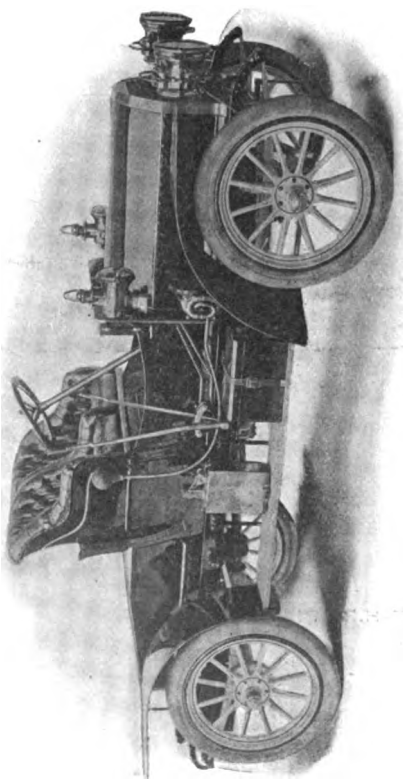


POPE-WAVERLY ELECTRIC RUNABOUT, PRICE \$1,425.
Pope Motor Car Co., Indianapolis, Ind.

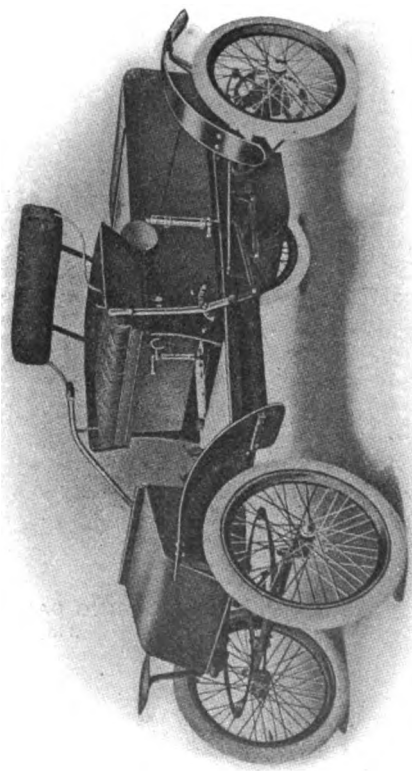


BABCOCK ELECTRIC COUPE, MODEL 10, PRICE \$2,100.
Babcock Electric Carriage Co., Buffalo, N. Y.

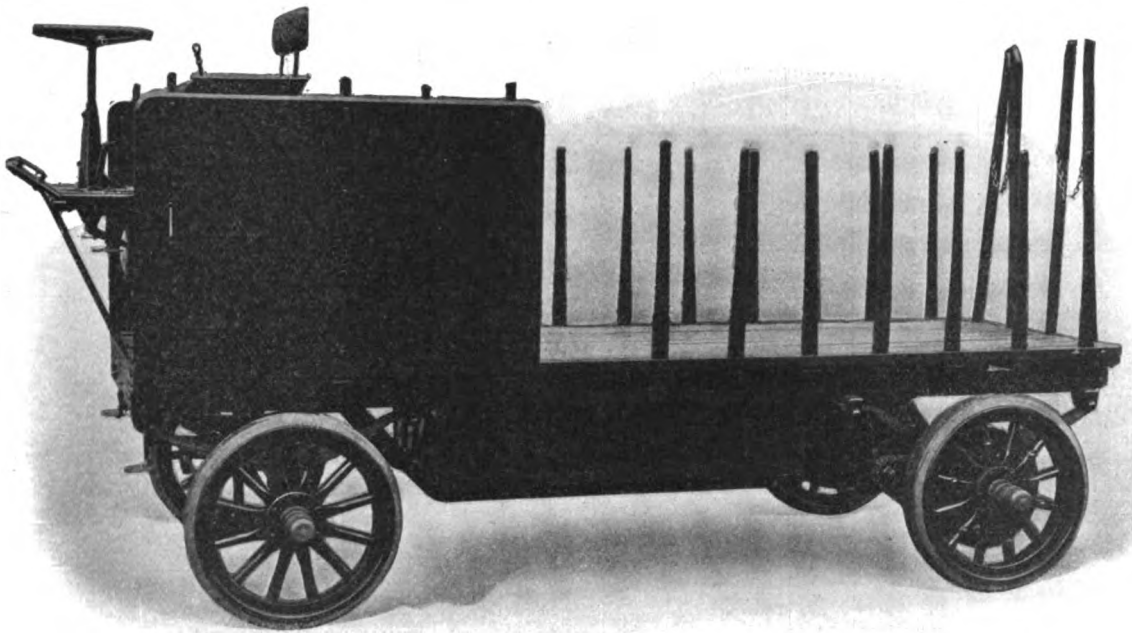
1907 AUTOMOBILES



WALTHAM TOURING CAR, MODEL DLR., 4-CYL., 20-H.P., \$1,750.
Waltham Manufacturing Co., Waltham, Mass.



WALTHAM RUNABOUT, MODEL 18, 2 CYLINDERS, PRICE \$400.
Waltham Manufacturing Co., Waltham, Mass.

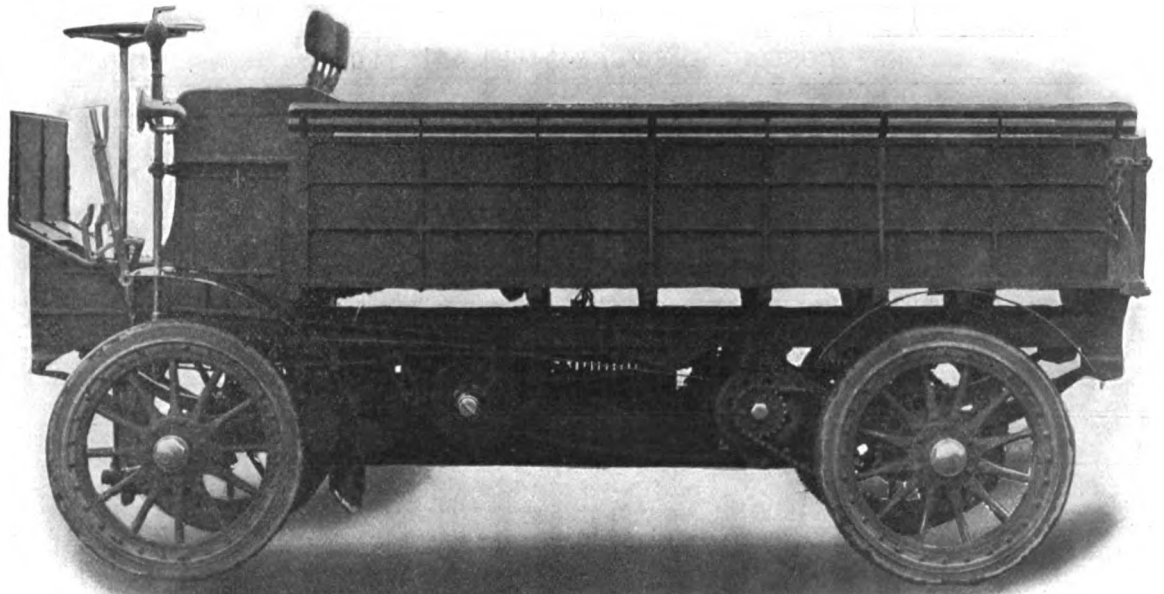


STUDEBAKER ELECTRIC TRUCK, LOAD-CARRYING CAPACITY 7,000 POUNDS.
Studebaker Automobile Company, South Bend, Ind.

A.I.A.M.



1908



KNOX EXPRESS DELIVERY VEHICLE, 2 CYLINDERS, 16-H.P., PRICE \$2,800.
Knox Automobile Co., Springfield, Mass.

A. L. A. M. 1908 MODELS AT GARDEN SHOW

CLASSIFIED ON SELLING PRICE BASIS.

COSTING LESS THAN \$1,000

CAR	Price	H.P.	Cyl- in- ders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheel- base	W'ght
WALTHAM, Model 28.....	\$600	8	2	Runabout.....	.....	Storage battery...	Cone.....	Progressive...	Shaft.....	84	700
COLUMBUS.....	750	10	1	Buggy.....	2	Storage battery...	Disc.....	Progressive...	Side chains...	72	.....
CADILLAC, Model S.....	850	10	1	Runabout.....	2	Storage battery...	Disc.....	Planetary...	Chain.....	82	.....
BUICK.....	850	20	4	Runabout.....	3	Storage battery...	Disc.....	Planetary...	Single chain...	.....	.....

COSTING BETWEEN \$1,000 AND \$2,000

CADILLAC, Model T.....	\$1,000	10	1	Touring.....	4	Storage battery...	Disc.....	Planetary...	Chain.....	82	.....
HEWITT.....	1,000	10	1	Runabout.....	3	Storage battery...	Disc.....	Planetary...	Chain.....	84	1,200
AUTOCAR, Model XV.....	1,200	12	2	Runabout.....	3	Storage battery...	Ring.....	Progressive...	Shaft.....	80	.....
BUICK.....	1,250	22	2	Touring.....	5	Storage battery...	Disc.....	Planetary...	Single chain...	.....	.....
CADILLAC, Model T.....	1,350	10	1	Coupe.....	2	Storage battery...	Disc.....	Planetary...	Chain.....	82	.....
NORTHERN, Model C.....	1,600	24	2	Touring.....	5	Storage battery...	Disc.....	Planetary...	Shaft.....	106	2,200
ELMORE, Model L.....	1,750	24	3	Touring.....	5	Storage battery...	Ring.....	Selective...	Shaft.....	102	.....
FRANKLIN, Model G.....	1,750	16	4	Runabout.....	2	Storage battery...	Disc.....	Selective...	Shaft.....	90	1,400
WALTHAM, Model DLR.....	1,750	20	4	Touring.....	5	Storage battery...	Cone.....	Progressive...	Shaft.....	96	1,600
FRANKLIN, Model G.....	1,850	16	4	Touring.....	4	Storage battery...	Disc.....	Selective...	Shaft.....	90	1,600
OLDSMOBILE, Model X.....	1,900	32	4	Touring.....	5	Storage battery...	Cone.....	Selective...	Shaft.....	106	.....

COSTING BETWEEN \$2,000 AND \$3,000

CADILLAC, Model G.....	\$2,000	25	4	Touring.....	5	Storage battery...	Disc.....	Selective...	Shaft.....	100	2,180
SELDEN.....	2,000	25	4	Touring.....	5	Storage battery...	Cone.....	Selective...	Shaft.....	109	1,850
BUICK.....	2,250	30	4	Touring.....	5	Storage battery...	Disc.....	Planetary...	Single chain...	.....	.....
WHITE STEAMER, Model L.....	2,400	20	2	Runabout.....	3	.....	.....	.....	Shaft.....	104	.....
CADILLAC, Model H.....	2,500	30	4	Touring.....	5	Storage battery...	Disc.....	Planetary...	Shaft.....	102	2,880
ELMORE, Model M.....	2,500	35	4	Touring.....	5	Storage battery...	Expanding ring.	Selective...	Shaft.....	108	.....
HAYNES, Model S.....	2,500	30	4	Touring.....	5	Storage battery...	Band.....	Selective...	Shaft.....	102	2,250
KNOX, Model H.....	2,500	25	4	Stanhope.....	3	Storage battery...	Cone.....	Selective...	Shaft.....	102	.....
STEVENS-DURYEA, Model R.....	2,500	20	4	Touring.....	5	Storage battery...	Disc.....	Selective...	Shaft.....	90	2,000
WHITE STEAMER, Model L.....	2,500	20	2	Touring.....	5	.....	.....	.....	Shaft.....	114	.....
BUICK.....	2,550	40	4	Touring.....	7	H. T. Magneto.....	.....	Selective...	Shaft.....	.....	.....
KNOX.....	2,600	25	4	Touring.....	5	Storage battery...	Cone.....	Selective...	Shaft.....	102	.....
CORBIN, Model S.....	2,650	32	4	Roadster.....	4	H. T. Magneto.....	Cone.....	Selective...	Shaft.....	108	.....
Model R (air).....	2,650	32	4	Touring.....	5	H. T. Magneto.....	Cone.....	Selective...	Shaft.....	108	.....
Model K (water).....	2,650	32	4	Touring.....	5	H. T. Magneto.....	Cone.....	Selective...	Shaft.....	108	.....
KNOX, Model L.....	2,700	30	4	Touring.....	5	Storage battery...	Cone.....	Selective...	Shaft.....	102	.....
APPERSON, Model M.....	2,750	30	4	Roadster.....	4	H. T. Magneto.....	Band.....	Selective...	Shaft.....	106	2,400
AUTOCAR, Model XIV.....	2,750	30	4	Touring.....	5	Storage battery...	Ring.....	Selective...	Shaft.....	112	.....
OLDSMOBILE, Model M.....	2,750	36	4	Touring.....	5	H. T. Magneto.....	Cone.....	Selective...	Shaft.....	112	2,800
POPE-HARTFORD, Model M.....	2,750	30	4	Touring.....	5	H. T. Magneto.....	Cone.....	Selective...	Shaft.....	112	.....
STEVENS-DURYEA, Model X.....	2,750	24	4	Touring.....	5	Magneto.....	Disc.....	Selective...	Shaft.....	124	2,600
THOMAS-DETROIT, 4-40.....	2,750	40	4	Touring.....	5	Storage battery...	Cone.....	Selective...	Shaft.....	112	2,530
NORTHERN, Model C.....	2,800	24	2	Limousine.....	7	Storage battery...	Disc.....	Planetary...	Shaft.....	106	2,800
FRANKLIN, Model D.....	2,850	28	4	Touring.....	5	H. T. Magneto.....	Disc.....	Selective...	Shaft.....	105	2,200
LOCOMOBILE, Model E.....	2,900	20	4	Touring.....	5	L. T. Magneto.....	Cone.....	Selective...	Side chains...	102	2,000

COSTING BETWEEN \$3,000 AND \$4,000

CADILLAC, Model G.....	\$3,000	25	4	Limousine.....	5	Storage battery...	Cone.....	Selective...	Shaft.....	100	.....
COLUMBIA, Model M-K.....	3,000	29	4	Touring.....	5	L. T. Magneto.....	Cone.....	Selective...	Shaft.....	109	2,350
HAYNES, Model W.....	3,000	45	4	Touring.....	5	H. T. Magneto.....	Band.....	Selective...	Shaft.....	106	2,650
THOMAS, 4-20.....	3,000	20	4	Landaulet.....	6	H. T. Magneto.....	Cone.....	Selective...	Shaft.....	100	1,900
SELDEN.....	3,200	25	4	Limousine.....	5	Storage battery...	Cone.....	Selective...	Shaft.....	109	2,000
WHITE STEAMER, Model L.....	3,200	20	2	Limousine.....	5	.....	.....	.....	Shaft.....	104	.....
STEVENS-DURYEA, Model R.....	3,300	20	4	Limousine.....	5	Storage battery...	Disc.....	Selective...	Shaft.....	90	2,300
WHITE STEAMER, Model K.....	3,500	30	2	Runabout.....	3	.....	.....	.....	Shaft.....	105	.....
CORBIN, Model R.....	3,500	32	4	Limousine.....	5	H. T. Magneto.....	Cone.....	Selective...	Shaft.....	108	.....
KNOX, Model H.....	3,400	25	4	Limousine.....	5	Storage battery...	Cone.....	Selective...	Shaft.....	102	.....
NORTHERN, Model L.....	3,500	40	4	Touring.....	7	Storage battery...	Cone.....	Progressive...	Shaft.....	119	3,100
STEVENS-DURYEA, Model U.....	3,500	35	6	Touring.....	5	Storage battery...	Disc.....	Selective...	Shaft.....	114	2,500
STUDEBAKER, Model A.....	3,500	27	4	Touring.....	5	L. T. Magneto.....	Cone.....	Progressive...	Shaft.....	104	.....
CADILLAC, Model H.....	3,600	30	4	Limousine.....	7	Storage battery...	Disc.....	Planetary...	Shaft.....	102	.....
WHITE STEAMER, Model K.....	3,700	30	2	Touring.....	7	.....	.....	.....	Shaft.....	102	.....
AUTOCAR, Model XIV.....	3,750	30	4	Touring.....	5	Storage battery...	Ring.....	Selective...	Shaft.....	112	.....
MAYNES, Model U.....	3,750	60	4	Touring.....	7	H. T. Magneto.....	Band.....	Selective...	Shaft.....	118	3,000
OLDSMOBILE, Model M.....	3,800	36	4	Limousine.....	7	H. T. Magneto.....	Cone.....	Selective...	Shaft.....	122	.....

COSTING BETWEEN \$4,000 AND \$5,000

FRANKLIN, Model H.....	\$4,000	42	6	Touring.....	7	H. T. Magneto.....	Disc.....	Selective...	Shaft.....	127	2,500
LOZIER, Model G.....	4,000	40	4	Touring.....	7	H. T. Magneto.....	Disc.....	Selective...	Side chains...	117	3,150
OLDSMOBILE, Model M.....	4,000	36	4	Landaulet.....	7	H. T. Magneto.....	Cone.....	Selective...	Shaft.....	112	.....
ROYAL TOURIST.....	4,000	45	4	Touring.....	7	H. T. Magneto.....	Cone.....	Selective...	Shaft.....	114	.....
STUDEBAKER, Model B.....	4,000	36	4	Touring.....	7	L. T. Magneto.....	Cone.....	Selective...	Shaft.....	114	.....
APPERSON, Model K.....	4,200	50	4	Touring.....	7	H. T. Magneto.....	Band.....	Selective...	Side chains...	114	3,200
COLUMBIA, Model 48-2.....	4,200	29	4	Limousine.....	5	L. T. Magneto.....	Cone.....	Selective...	Shaft.....	115	2,750
LOCOMOBILE.....	4,200	20	4	Limousine.....	6	L. T. Magneto.....	Cone.....	Selective...	Side chains...	116	2,600
OLDSMOBILE, Model Z.....	4,200	48	6	Touring.....	7	H. T. Magneto.....	Cone.....	Selective...	Shaft.....	103	3,200
PACKARD, "Thirty".....	4,200	30	4	Touring.....	7	H. T. Magneto.....	Band.....	Progressive...	Shaft.....	123	2,950
STUDEBAKER, Model H.....	4,200	30	4	Limousine.....	7	L. T. Magneto.....	Cone.....	Progressive...	Shaft.....	104	.....
PEERLESS.....	4,300	30	4	Touring.....	7	H. T. Magneto.....	Band.....	Selective...	Shaft.....	118	.....
STEVENS-DURYEA, Model U.....	4,500	35	6	Limousine.....	7	Storage battery...	Disc.....	Selective...	Shaft.....	114	2,860
THOMAS-FLYER.....	4,500	60	4	Touring.....	7	H. T. Magneto.....	Disc.....	Selective...	Side chains...	127	3,200
WINTON, Six-Teen-Six.....	4,500	48	6	Touring.....	7	H. T. Magneto.....	Disc.....	Selective...	Shaft.....	120	.....
WHITE STEAMER, Model K.....	4,500	30	2	Limousine.....	7	.....	.....	.....	Shaft.....	116	.....
STEARNS, "Thirty".....	4,600	30	4	Light Touring	4	H. T. Magneto.....	Expanding.....	Selective...	Side chains...	120	2,800
PACKARD, "Thirty".....	4,700	30	4	Touring.....	7	H. T. Magneto.....	Band.....	Progressive...	Shaft.....	123	.....
LOCOMOBILE.....	4,750	20	4	Touring.....	7	H. T. Magneto.....	Cone.....	Selective...	Side chains...	123	3,000
POPE-TOLEDO, Model XVII.....	4,750	50	4	Touring.....	7	H. T. Magneto.....	Disc.....	Selective...	Side chains...	126	.....
STEARNS.....	4,750	30	4	Pullman Tour	7	H. T. Magneto.....	Expanding.....	Selective...	Side chains...	120	3,200

COSTING BETWEEN \$5,000 AND \$6,000

CAR	Price	H.P.	Cyl-inders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheel-base	W'ght
APPERSON JACK RABBIT.....	\$5,000	50	4	Runabout....	2	H. T. Magneto....	Band.....	Selective....	Side chains...	105	2,200
APPERSON, Model S.....	5,000	50	6	Touring.....	7	H. T. Magneto....	Band.....	Selective....	Side chains...		
LOZIER, Model H.....	5,000	45	4	Touring.....	7	H. T. Magneto....	Disc.....	Selective....	Shaft.....	124	3,200
PIERCE.....	5,000	40	4	Touring.....	7	H. T. Magneto....	Cone.....	Selective....	Shaft.....	124	
ROYAL TOURIST.....	5,000	45	4	Limousine....	7	H. T. Magneto....	Cone.....	Selective....	Shaft.....	114	
WALTER.....	5,000	44	4	Touring.....	7	H. T. Magneto....	Cone.....	Selective....	Shaft.....	120	
FRANKLIN, Model H.....	5,200	42	6	Limousine....	7	H. T. Magneto....	Disc.....	Selective....	Shaft.....	127	2,700
MATHESON.....	5,500	45	4	Touring.....	7	L. T. Magneto....	Disc.....	Selective....	Side chains...	128	3,400
PEERLESS, "Thirty".....	5,500	30	4	Limousine....	7	H. T. Magneto....	Band.....	Selective....	Shaft.....	118	
PIERCE, Small Six.....	5,500	40	6	Touring.....	7	H. T. Magneto....	Cone.....	Selective....	Shaft.....	130	
SELDEN.....	5,500	45	4	Touring.....	7	H. T. Magneto....	Disc.....	Selective....	Shaft.....	123	3,500
WINTON, Six-Teen-Six.....	5,500	48	6	Limousine....	7	H. T. Magneto....	Disc.....	Selective....	Shaft.....	120	
PACKARD, "Thirty".....	5,600	30	4	Limousine....	7	H. T. Magneto....	Band.....	Progressive..	Shaft.....	123	
PACKARD, "Thirty".....	5,700	30	4	Landaulet....	7	H. T. Magneto....	Band.....	Progressive..	Shaft.....	123	
STEARNS.....	5,750	30	4	Limousine....	7	H. T. Magneto....	Expanding..	Selective....	Side chains...	120	3,600
PEERLESS.....	5,800	30	4	Landaulet....	7	H. T. Magneto....	Expanding..	Selective....	Shaft.....	118	

COSTING \$6,000 AND ABOVE

LOZIER, Model I.....	6,000	50	6	Touring.....	7	H. T. Magneto....	Disc.....	Selective....	Shaft.....	131	3,425
PEERLESS.....	6,000	60	6	Touring.....	7	H. T. Magneto....	Band.....	Selective....	Shaft.....	134	
STEVENS-DURYEA, Model S.....	6,000	50	6	Touring.....	7	Storage battery..	Disc.....	Selective....	Shaft.....	122	3,700
THOMAS, Special.....	6,000	70	6	Touring.....	7	H. T. Magneto....	Disc.....	Selective....	Side chains...	136	3,500
PIERCE.....	6,250	40	4	Suburban....	7	H. T. Magneto....	Cone.....	Selective....	Shaft.....	124	
STEARNS.....	6,250	45	6	Light Touring	4	H. T. Magneto....	Expanding..	Selective....	Side chains...	133	3,000
COLUMBIA, Model 66-3.....	6,500	48	4	Touring.....	7	H. T. Magneto....	Electric....	Electric....	Shaft.....	124	3,650
MATHESON.....	6,500	45	4	Limousine....	7	L. T. Magneto....	Disc.....	Selective....	Side chains...	128	3,600
PIERCE.....	6,500	60	6	Touring.....	7	H. T. Magneto....	Disc.....	Selective....	Shaft.....	135	
APPERSON, Model X.....	7,500	96	4	Runabout....	2	H. T. Magneto....	Band.....	Selective....	Side chains...	110	
COLUMBIA, Model 66-3.....	8,500	48	4	Limousine....	7	H. T. Magneto....	Electric....	Electric....	Shaft.....	124	3,850

NOTE—Horsepower in nearly every case has been determined according to the A. L. A. M. formula, fractions being ignored; whenever a manufacturer gave a hypothetical horsepower the lower figures have been taken. In many cases where ignition is obtained from a magneto, storage batteries are supplied either as a start-up or as part of another complete ignition system; in such cases magneto only is quoted. Wherever a touring and runabout body or limousine and landaulet body are fitted on the same chassis without any alteration of price, touring and limousine only are quoted in each case.

ELECTRIC PLEASURE VEHICLES FROM \$1,350 TO \$4,000

CAR	Price	Battery	Body	Seats	Drive	Wheel-base	Weight
STUDEBAKER, 22-A.....	\$1,350	28 cells.....	Runabout....	2	Side chains....	67	1,875
22-C.....	1,400	28 cells.....	Stanhope....	2	Side chains....	67	1,875
BABCOCK, Model 5.....	1,425	30 cells.....	Runabout....	2		69	
POPE-WAVERLY, 70-C.....	1,500	36 cells.....	Runabout....	2	Side chains....	78	1,600
BABCOCK, Model 6.....	1,600	30 cells.....	Victoria Phaeton	2		68	
STUDEBAKER, 16-d.....	1,700	36 cells.....	Victoria.....	2	Side chains....	78	1,700
BABCOCK.....	1,750	28 cells.....	Victoria Phaeton	2	Side chains....	68	2,000
BAKER.....	1,800	40 cells.....	Stanhope....	2	Gear and pinion	66	1,900
BAKER.....	1,800		Victoria.....	2	Chain.....	70	1,800
BABCOCK, Model 10.....	2,100	36 cells.....	Coupe.....	2	Side chain....	78	1,950
BAKER.....	2,200		Coupe.....	2	Chain.....	70	2,000
BAKER.....	2,500		Roadster....	3	Shaft.....	95	2,400
BABCOCK.....	4,000	40 cells.....	Brougham....	3	Gear and pinion	72	3,000
BAKER.....	4,000		Landaulet....	4	Shaft.....	89	4,000
COLUMBUS, Model 1000.....			Stanhope....	2	Side chains....	69	
Model 1001.....			Victoria.....	2	Side chains....	69	
Model 1002.....			Coupe.....	2	Side chains....	69	
Model 1100.....			Surrey.....	4	Side chains....	89	
WOODS.....							
GENERAL ELECTRIC CO.....							
RAUCH & LANG.....							

(Continued from page 614.)

ADVANCES REVEALED BY LICENSED CARS.

Advances have not been confined to the power-plant or its accessories, as it is quite evident that the average designer has been keen to discern possible places for improvement and has taken advantage of them. Though but a few years ago, the time when engineers exclaimed with alarm at the enormous increase made in wheelbase lengths has been forgotten and an extra inch or two, even when added on to what was long thought to be a dangerous excess over the point of safety, no longer excites any comment. With one or two special exceptions such as that of the Franklin, practice in frame design appears to have reached an exceedingly well-defined standard even where general frame design is in question, as the sub-frame is now only seen occasionally.

Naturally the thing that will take the attention of the average visitor is the collection of "sixes," but as in the majority of instances they do not represent special designs, they have not been treated in the usual sequence under the head of advances. One striking exception to this is the new Lozier of this type, while others who will stage sixes are the Apperson, Peerless, Oldsmobile, and Winton. These are all new entrants into this field, while those who showed sixes last year were the Stevens-Duryea, Franklin, and Pierce. The first-named again shows both a "Big" six and a "Little," and this is also true of the Pierce, the smaller

model of this type being a new design in which have been incorporated numerous features of merit.

With the Electrics and Commercial Cars.

Electric vehicle design has always closely followed the carriage makers' standards where lines, construction, and finish are concerned, and the first maker to break away from the latter is the General Vehicle Company, which exhibits a line of pleasure vehicles patterned more after those of the gasoline type than ever before, both where design and finish are concerned. The Baker, Babcock, Pope, and Studebaker companies show full lines of their electric cars, about which there is little that can be said under the head of general tendencies, at any rate, as these remain practically the same throughout where both design and construction are concerned.

Where commercial vehicles are concerned, there is a more representative showing than has been the case formerly. The Packard Company has developed a special type of gasoline-driven truck, and this is also true of the Franklin. Quite the most striking development in this field, however, is the appearance of the Alden Sampson gasoline-electric train. Other exhibits are to be the Champion wagons and the Studebaker, Pope and General Electric commercial vehicles, of which as comprehensive a showing as the Garden has ever housed will be exhibited in the basement.

SOMETHING ABOUT THE CARS AT THE GARDEN



ALDEN SAMPSON.—By far the most striking exhibit to be found in the commercial section of the show is that of the Alden Sampson Manufacturing Company, Pittsfield, Mass. This concern has been closely identified with the automobile industry in this country for the past six years, but the present constitutes the first product to be exhibited for several years. It consists of a special form of tractor, which has been given the title of the Gas-Electric Road Train, from the fact that the motive power is originally supplied by a gasoline motor of the standard type, direct coupled to an electric generator. This furnishes current to the tractor's motors and to two trailers, the motors being mounted on an independent truck. All three carry a load aggregating twenty tons. Both the control and steering are centered on the tractor, making the train easily handled by one man. On the level with full load its speed is six m. p. h.

This firm is also building three and five-ton trucks, in addition to which it will devote attention to the manufacture of pleasure cars.

Apperson.—In addition to the standard 50-55-horsepower Apperson touring car, and the well-known "Jack-Rabbit," there is a new Apperson for 1908, rated at 30-35 horsepower, and, to quote the maker's preliminary announcement: "Although this car is offered at a much lower price than that at which any Apperson car has heretofore been sold, this new model will, in every respect, including material, workmanship, style, reliability and low cost of maintenance, come up to the regular standard of Apperson quality." Its specifications are also patterned after those of the standard Apperson type as represented in the other cars of the line, a four-cylinder, 4 3-4 by 5-inch, individual cylinder, vertical, water-cooled motor forming the power plant, while the transmission consists of a three-speed sliding gear of the selective type with final drive by shaft. There will also be included in the Apperson line a six-cylinder 50-55-horsepower touring car along similar lines to those of the four-cylinder car of this power.

Autocar.—Improvement of the substantial, conservative order, which is not heralded with much ado at the opening of each new season, has always characterized the Autocar Company, Ardmore, Pa., and this policy has been strictly adhered to in the planning of the 1908 line. Despite the fact that the multi-cylindered car is now on the crest of the wave, the Autocar designers have neither produced a six-cylindered car nor let the demand of the moment undermine their judgment, and have accordingly continued the popular two-cylinder runabout so long associated with the name. This is the only car of its kind in the entire show. Its construction has been standardized to such an extent that any description of its features would be but a repetition of what has gone before, as ever since its inception the design has been retained intact, improvements being confined to detail. The other member of the line is the 30-horsepower Autocar touring type, which is also fitted with runabout and limousine bodies, and the specifications of which are equally familiar to the average American autoist.

Baker.—After exhaustive study of the problem, supplemented by a great deal of experimenting, the Baker Motor Vehicle Company, Cleveland, O., will bring out for 1908 a one-ton electric commercial vehicle embodying the results of their extensive experience in the building of electric cars, as well as what they have learned from their past two or three years' study

of commercial vehicle needs. It will be fitted with either an open or a delivery body. Another new Baker is an inside-driven coupé, which is mounted on a standard chassis and is interchangeable with a victoria body, while the line is still further supplemented by the addition of a new brougham. The Baker roadster, which created no little interest when shown for the first time last year, has been improved until its maximum speed is now 40 miles an hour, while its touring radius at a 14-mile speed is practically 100 miles. Numerous detailed improvements have been made in the line as a whole, but nothing of a radical nature.

Babcock.—The name Babcock has been synonymous with electric pleasure vehicles ever since it has been connected with the automobile industry, and the makers, the Babcock Electric Carriage Company, Buffalo, N. Y., have done a great deal to enhance the reputation for quiet, easy running, and everyday reliability in all weathers that the electric vehicle has achieved. Five models are listed and will be shown by the New York agents, Wyckoff, Church & Partridge. These are the Model 10, inside-driven coupé; Model 6, Victoria; Model 1, special stanhope; Model 5, long-distance runabout, and a brougham. Models 10 and 6 are practically the same chassis, and the coupé and Victoria bodies are interchangeable. The battery equipment has been divided, and with the motor slung under the center of the body the weight is very evenly distributed. Models 5 and 6 have a maximum speed range of 26 miles an hour and a single-charge radius of 75 miles, the others being slightly less owing to increased weight.

Buick.—Complying with its promises of a year ago, the Buick Motor Company, Flint and Jackson, Mich., will reveal at the show their new four-cylinder offering in the shape of a three-seated runabout listed at \$850, of which a large number are to be turned out during the season of 1908. In making additions to the Buick line, cars have been added at either end so to speak, as the new offerings consist of the popular-priced machine just referred to, and a seven-passenger, 40-horsepower touring car, fitted with Bosch magneto, Michelin tires, and other features only to be found on cars of the highest grade, although this newcomer is listed at \$2,550. It is known as Model 5, while the runabout is Model 10. The latter has a standard four-cylinder motor which is practically a replica of the larger size and is rated at 20-25 horsepower, the transmission consisting of a two-speed planetary gear and single-chain drive. The other cars shown are the Model S, two-cylinder, 22-horsepower, the Model F, four-cylinder, 30-horsepower touring, and the roadster on the last-named chassis.

Corbin.—In order to be in a position to meet the demands of its customers who favor either type of motor, the Corbin Motor Vehicle Corporation, New Britain, Conn., decided to duplicate the air-cooled cars of this name, which it has made so justly popular, with a second line which should be the same in practically every particular except that the engine is water-cooled. This decision was arrived at early last spring, and the new car is known as Model K. Under the new A. L. A. M. formula for horsepower calculation, it is rated at the anomalous figure of 32.4 horsepower, but will naturally show a great deal more than this, and under previous methods would have had a rating at least fifty per cent. higher. Both cars are equipped with the standard four-cylinder motor evolved by this firm, a high-tension magneto having been adopted for ignition. A conical type of clutch forms the first step in the transmission of the power, being coupled to a three-speed selective gear-set with final drive by shaft to a standard type of floating rear axle, which differs, however, in being encased in a one-piece housing of Cramp's bronze. Roadster, touring, and limousine types are listed.

Cadillac.—As has been the case with this car in former years, it is listed in a wider range of types and sizes than probably any other car on the market. In refutation of those who have been so confidently predicting the early demise of the single-cylinder type of car all along, the Cadillac Motor Car Company, Detroit, Mich., show their familiar one-cylinder, 10-horsepower chassis with no less than three different bodies. The first is a two-seated runabout, the second a straight-line four-seated touring type, and the third an inside-driven two-seated coupé. In like manner the four-cylinder 25-horsepower Model G is shown in a similar line of bodies, including runabout, touring and limousine types, while the 30-horsepower Model H, also of the four-cylinder type and well-known through its numerous distinctive features of construction, is listed as a touring car and limousine. The single-cylinder chassis is also listed as a delivery wagon, a body of the usual inclosed type being fitted.

Columbia.—The Electric Vehicle Company, Hartford, Conn., furnishes considerable for the technical expert to ponder and study over in the shape of their Columbia gasoline-electric 60-horsepower car, with its simple and extremely smooth-working transmission, which is characterized by its total lack of gears—or, for that matter, any form of mechanical connection. The latter, so to speak, is "floating," in that the bond between the engine and the driving wheels is of the invisible type set up by magnetism, as the field of an electric generator forms the flywheel of the motor, while the armature of the dynamo is solidly attached to the forward end of the propeller shaft. Directly behind the generator, and with its armature also forming a part of the propeller shaft, is an electric motor in which is utilized all the surplus power put into the dynamo by the motor and which appears as electric energy. This provides five forward speeds, any of which may be thrown in or out without the slightest perceptible jerk in the car's speed, control being similar to that used on a street car, but of smaller size. The standard four-cylinder Columbia car is also shown.

Columbus Electric.—As is the case with the gasoline car, inclosed types predominate where electric vehicles are concerned, and the Columbus line, which is the product of the automobile department of the Columbus Buggy Company, Columbus, O., is no exception to the rule. In fact, the wholly open vehicle, with no overhead protection, is no longer in demand, as evidenced by the Columbus line, which consists of a Stanhope, No. 1,000, having a 69-inch wheelbase and 30 by 3 1-2 pneumatic tires on wood artillery wheels; a surrey with top having an 89-inch wheelbase and 34 by 4-inch pneumatics on the same type of running gear; a station wagon, No. 1,102, of similar specifications, and an inside-driven coupé, No. 1,002, on the same chassis as the Stanhope, the bodies of Nos. 1,000, 1,001 and 1,002 being interchangeable. Battery weight is distributed by placing half of the cells in front and half in the rear; twenty-four cells are used, and the mileage varies from 50 to 65 miles, according to the size and weight of the car.

Elmore.—Numerous improvements mark the two Elmore two-cycle models for 1908, which are made by the Elmore Manufacturing Company, Clyde, O. They are known as Model L, which is the three-cylinder car, and the only one of its kind shown in the Garden, and Model M, the four-cylinder two-cycle car. The well-known Atwater-Kent "spark generator" has been made a feature of both, and the same is true of the new Brown-Lipe type of selective change-speed gear. The pedal brake has been removed from the propeller shaft and an external double-acting brake placed on large hubs mounted on the rear wheels substituted. Speaking of the Elmore ignition, the makers state that they have run their cars 2,000 miles on a single set of 6, six-inch dry cells, with the aid of the Atwater-Kent apparatus. The engines in both models have been refined in numerous details, the pistons have been made much thinner, the connecting rods are now drop-forgings, and the muffler has been improved and made much lighter. Betterments have likewise been made on the other parts of the car, such as the adoption of a new

and improved steering column, new hubs on the wheels, square live axle at differential ends, larger ball bearings in front wheels and similar improvements, which have been made wherever the makers found it possible to do so.

Franklin.—"More horsepower" is the Franklin slogan for 1908, and, incidentally, it is well to add that it means more power without a corresponding increase in weight. In bringing this about, the Franklin Automobile Company, Syracuse, N. Y., has evolved an entirely new type of motor. A dome-shaped or spherical combustion chamber has been adopted, together with a very ingeniously worked-out type of concentric valve, thus providing the maximum valve area with the minimum space, this also greatly adding to the cooling ability of the motor by insulating the exhaust valve from the cylinder head, the inlet valve forming the outer of the two valves. Another improvement, which has been in use since early in the present season, is an oil baffle plate in the crank chamber, one of these being placed between the engine base and each cylinder, and having a slot in it for the free movement of the connecting rod, this method placing the oil exactly where it is most needed. The adoption of phosphor bronze cooling flanges is another innovation—in short, the new Type D fairly bristles with improvements and is bound to prove a center of attraction.

General.—Quite a radical departure from previous standards of commercial vehicle design in the electric field is to be noted in the models put forth by the General Vehicle Company, Long Island City, New York. All of the 1908 models to be shown by this company have long semi-elliptic springs, with an unusually long wheelbase and low suspension, which at once strikes the observer accustomed to seeing business electric vehicles owing to the change in their appearance which this brings about. The exhibit of pleasure vehicles also reveals a radical departure from previous practice, the landaulet, victoria-phaeton, and runabout to be staged, all being built upon pressed steel frames with long semi-elliptic suspension, single motor with differential countershaft, silent chain transmission, and roller bearings. They are also finished in attractive colors in place of the old conservative coach colors so long a feature of such cars. The landaulet is patterned after gasoline car practice to some extent in that the battery is placed under a bonnet forward.

Haynes.—Three distinct types of cars go to make up the Haynes 1908 line, and all are to be included in the exhibit of the makers, the Haynes Automobile Company, Kokomo, Ind. The Haynes is a car of such long standing that it is naturally one of the last in the show on which to look for radical changes of any kind, so that on no one of the three types, rated at 30, 45 and 60 horsepower respectively, is anything of the kind revealed. The 45-horsepower car is a newcomer to the Haynes family, and has been christened Model W; it has been brought out with a view to supplying a lightweight car of ample power and seating capacity, and it has the experience of a great many years of automobile building back of it. It goes without saying that the object of its designers and builders has been achieved in no uncertain manner, particularly as the latter have the entire creation of the car in their hands, making every part from the raw material in their own factory. The motor is of the standard Haynes types and double ignition, using a magneto and accumulators is specified.

Hewitt.—Cars of this make, which are the product of the Hewitt Motor Car Company, New York City, occupy an anomalous position by reason of the fact that they are shown in two extremes where the number of cylinders is concerned, as the Hewitt runabout and town car is equipped with a single-cylinder motor, while the Hewitt touring car is quite at the other end of the line with an eight-cylinder motor, and the only one of its kind to be shown. The latter is of the Renault type, with the cylinders placed at a 90-degree angle, the design being very well worked out, as described in these columns at the time of the car's appearance. This company also devotes considerable of its attention to the production of gasoline-driven

commercial vehicles, from a single-cylinder delivery wagon up to a ten-ton truck, a planetary type of change-speed gear of special design, patented by Mr. Hewitt, being a distinguishing feature of all of them.

Knox.—"Wishing to enjoy the patronage of those who prefer water-cooling, and, at the same time, to allow those preferring water to enjoy the many other desirable and important features of the Knox construction, we have brought out and are now prepared with our Model L, water-cooled car," says the Knox Automobile Company, Springfield, Mass., in one of its preliminary announcements regarding the 1908 line. But except for the fact that its motor is water-cooled, the new Model L is a typical Knox product from bonnet to rear wheels. The motor itself is of far more than passing interest. At first sight it appears to be merely a water-cooled replica of the well-known air-cooling type, but closer inspection reveals the fact that the cylinders are made with separable heads, the valves being in the latter in accordance with Knox practise. This construction is novel and embodies a number of advantages that will be obvious. The regular 30-horsepower Model H air-cooled touring car is continued practically the same and will be pushed with as much energy as ever, the Knox company believing in doing all it can in both lines.

Locomobile.—Steady-going conservatism of the type that is slow to forsake a good thing for something uncertain, but that is always quick to appreciate and take advantage of real improvement, has always marked the design of the Locomobile, so that when its makers, the Locomobile Company of America, Bridgeport, Conn., announce that they have made "improvements" in a new model, the word is meant in its full significance and does not imply that another brand of ignition cable has been adopted, or something equally trivial, but that genuine advances have been made. Chief among those to be found in the 1908 offering are the adoption of a four-speed selective type of change-speed gear for the Type E, 20-horsepower car. This type is also listed with a special form of removable tonneau interchangeable with a rear deck, no tools being required to make the change. A new feature of motor construction is the use of a large bronze plate carrying the water-circulating connection and covering an opening in the top of the jacket, besides which there are other changes of merit.

Lozier.—The three Lozier models comprising the 1908 line of the Lozier Motor Company, New York, will constitute this firm's exhibit. The new Type H, shaft-driven, ball bearing Lozier of 45 horsepower is represented by a stripped chassis and a seven-passenger touring car, and as it is not only the latest addition to the Lozier line, but likewise one which represents an advanced form of design and construction, it will naturally come in for the major share of attention at this exhibit. Although in this respect it must share the honors with the new 50-horsepower, six-cylinder, shaft-driven Lozier, this also forms an entirely new addition to Lozier line, so that the latter now offers quite a range of models, beginning with the 40-horsepower chain-driven type, which is practically the same design and construction as last year, and ending with the six-cylinder model just mentioned. Nickel-steel and chrome-nickel alloy steels are extensively used in the construction of the entire Lozier product for axles, frames, shafts, gears, and the like, while annular ball bearings are used wherever possible.

Matheson.—But one type of chassis comprises the line of the Matheson Motor Car Company, Wilkes-Barre, Pa., which is marketed through the Palmer & Singer Manufacturing Company, New York. This is equipped with a 45-50-horsepower motor of distinctive type, embodying many exclusive features, such as the single superimposed camshaft, oppositely disposed valves in the head, the design of the valve-operating mechanism, low-tension ignition, using Bosch magneto, and others which have characterized it since its inception, improvement in the meantime having been centered upon a refinement of the design rather than radical change. It is shown as a three-passenger

runabout, and a seven-passenger touring car, limousine, or landulet. Transmission is by multiple-disc clutch, with a selective type of change-speed gear and double side-chain final drive, the wheelbase being 128 inches in every case and the weights 3,200 pounds for the runabout, 3,400 for the touring type, and 3,600 for the inclosed types.

Northern.—Adherence to ideals adopted long before the trend of motor design and construction had settled down to the well-defined standards which now characterize them has always characterized the product of the Northern Motor Car Company, of Detroit and Port Huron, Mich., and the fact that the designers have not had to depart from their early conceptions as the result of this settling process speaks for itself. For 1908 the two-cylinder shaft-driven car with the motor placed transversely forward and at an angle to align the crankshaft with the cardan shaft, and which was one of the first of its kind, is listed in three types. It is known as Model C and is rated at 24 horsepower, being shown as a three-seated roadster, a five-passenger tonneau car, and as a seven-passenger limousine. It is equipped with the metal to metal clutch and planetary change-speed gear that have always distinguished it. The other member of the line is the Model L, 40-horsepower, four-cylinder car, which is shown in both runabout and touring types.

Oldsmobile.—A car of this make forms one of the numerous coterie of six-cylinder models to be unveiled at the show, and its specifications are accordingly of more than passing interest. It is known as Model Z and is a 60-horsepower, seven-passenger car, although under the new A. L. A. M. formula its rating is but 48 horsepower, the cylinder dimensions being 4 1-2-inch bore by 4 3-4-inch stroke. The cylinders are cast in pairs and are water-cooled, the radiator being of the vertical tubular fin type—in fact, its distinguishing characteristics are those that have become familiar on the four-cylinder model, except that various modifications and improvements have been made, such as the equipment of a dual system of ignition, using a Bosch high-tension magneto on the running side. The 1908 touring car is known as Model M, and its wheelbase is 112 1-2 inches as compared with 130 inches on the six-cylinder type. Both are fitted with an internal cone clutch with cork inserts, three-speed selective gear and shaft-drive, and semi-elliptic suspension.

Packard.—The forerunner of all the "Thirties" shown by the Packard Motor Car Company, Detroit, Mich., is distinctively Packard in every line of its make-up, and those who are familiar with American cars will realize the significance of the expression. The groundwork of the design is essentially the same as it has been ever since the builders have been devoting their attention to a four-cylinder car. From that time on, the entire process has been one of development, and in the latter so many distinguishing features have been evolved that a Packard can almost be identified in the dark. The standard motor, with its special type of water-jacketed carbureter and hydraulic governor, the expanding band clutch, and the progressive type of sliding gear mounted on the rear axle under the same housing as the bevel-drive and differential are all familiar features which have been constantly improved in detail and incorporated in each successive Packard. Simply to say that it's a Packard suffices to describe it.

Peerless.—As compared with previous models the Peerless cars for 1908 are characterized by few changes, the principal improvements consisting of an increased wheelbase, seven-passenger body, pacing of front axle farther forward, the adoption of 36-inch wheels, flat spring suspension, and a duplicate system of ignition employing a high-tension magneto on the running side, so that, to quote the makers, the Peerless Motor Car Company, Cleveland, O.: "The Peerless cars for the season of 1908 are higher-powered, larger, roomier, and more comfortable in riding qualities." Three standard types will be made, respectively known as Model 15, Model 18, and Model 20—the last named being a six-cylinder type that will not make its appearance on the market until after the first of the year. The first-named is a 45-horsepower, seven-passenger car with a 5 1-4 by 5 3-4 horsepower

motor, the cylinders being cast in pairs as formerly. The wheelbase is 119 inches and the car is listed either as a touring or roadster type. The mainstay of the line, however, will be the Model 18, which is a 30-horsepower car with a 4 7-8 by 5 1-2 inch motor, other features conforming to standard Peerless practise.

Pierce-Arrow.—Four models comprise the 1908 line of the Pierce factory, and the George N. Pierce Company, Buffalo, N. Y., state in their preliminary announcement that special alloy steels have been made a feature of their entire output, being used extensively wherever desirable. The cars listed are a 30-horsepower, 4-cylinder model, with a 4 1-4 by 4 3-4-inch motor; a 40-horsepower, 4-cylinder model with a 5 by 5 1-2-inch motor, and two 6-cylinder cars rated at 40 and 60-horsepower respectively, the engine dimensions of which are the same as those of the two 4-cylinder types just given. In all these models the sub-frame has been dispensed with, the main frame being constructed of chrome-nickel pressed steel of channel section, with four pressed steel transverse members, the forward one of which forms the radiator support. The power plant is directly supported on two I-beam cross girders in place of casting extension arms on the aluminum crankcase, the material of these extra cross pieces having a tensile strength of 65,000 pounds to the square inch.

Pope-Hartford.—As the center piece of the exhibit made by the Pope Manufacturing Company, Hartford, Conn., there will be a Pope-Hartford car with complete equipment, giving an idea of the usual accessories employed on a car of its grade, such as a speedometer, odometer, clock, searchlight, tire irons, wind shield, top, magneto, and the like. This is the new Model M Pope-Hartford touring car for 1908, which, with a few detailed exceptions, follows the lines of this year's Pope-Hartford, that proved itself a success in no uncertain manner. There is a Pope-Hartford of the same model to be included in the show with the regular selling equipment, other models staged being a runabout and a limousine, the former shown with a double rumble seat. The Pope-Tribune line will be shown in connection with the Pope-Hartford, a 20-horsepower touring car and 20-horsepower runabout on the same chassis being shown. The runabout is to be shown with complete equipment, including top.

Pope-Toledo.—A 50-horsepower touring car, officially known as Type XVII, and a touring runabout on the same chassis constitute the Pope-Toledo line for 1908, and in bringing these out for the coming season the Pope Motor Car Company, Toledo, O., has continued the special design of motor and chassis which was brought out last year. The power plant is of the overhead valve type, but differs considerably from others of this class in that the advantages of oppositely disposed valves have all been retained without the necessity of duplicating the camshafts. Large walking beams are employed, actuated at one end by a pushrod from the single camshaft. The D. W. F. annular ball bearings are largely used in the motor. The radiator is the familiar Pope "planatic" type of their own make. A multiple-disk clutch and a four-speed selective type of change-speed gear, both in the same housing, constitute the main essentials of the transmission, final drive being by means of double side chains. Both wheel and transmission bearings are all of the D. W. F. annular type. The tire equipment is 36 by 4 front and 36 by 4 1-2 inches rear.

Pope-Waverley.—Balance, trimness and proportion are the distinguishing features of the Model 71 Pope-Waverley electric runabout, which the designers of the Pope Motor Car Company, Indianapolis, Ind., have changed considerably since last year. The old style box patent body has been done away with, and the battery distribution with its housing has been so effected that the forward and rear projections are well proportioned and give the car an attractive appearance of trimly balanced compactness which is best described as "an air of jauntiness," if such an expression may be applied to something purely mechanical. A closely folding leather buggy type completes the

car's external fitting. A victoria-phaeton with coupé top is another new Pope-Waverley model which was brought out for the first time last year and has been considerably improved since where the matter of body lines are concerned, numerous small conveniences having been added so that this model leaves nothing to be desired.

Royal Tourist.—Numerous improvements mark the 1908 line of the Royal Tourist, made by the Royal Motor Car Company, Cleveland, O., in addition to which two new cars have been included, one of them being a four-cylinder, 60-horsepower type, and the other a six-cylinder car of the same power. There have been a few minor changes in the motor, but, in the main, the power plant is of identically the same type as has always formed a distinguishing feature of the Royal for a number of years past. Where the chassis is concerned, however, the suspension has been altered to conform to the three-point type with transverse spring in the rear, or half-platform. Wheel sizes have also been increased from 34 to 36 inches. The showing will consist of a polished chassis, standard seven-passenger touring car and a fully equipped limousine.

Selden.—The new Selden cars, which are the product of the Selden Motor Vehicle Company, Rochester, N. Y., make their début at the present Garden show, and, in view of the name they bear, their specifications will be a matter of unusual interest to the autoist. Those who have confidently anticipated anything of a revolutionary or radically different nature from that recognized by standard practise will be disappointed, as the design of the car is lacking in either. It is shown in two distinctive models, the smaller of which is rated at 25-28-horsepower, and will be known as the Selden "25." It is equipped with a four-cylinder, water-cooled motor having high-tension ignition, cone clutch, and three-speed selective type of change-speed gear and shaft-drive. On a 109-inch wheelbase it tips the scales at 1,850 pounds as a touring car or runabout, and at 2,000 pounds as either a limousine or landaulet. The Selden "45" is the larger car, and is rated at 45-60 horsepower. With the exception of dual ignition, using a high-tension Bosch magneto, and a four-speed, selective gear set, the design is practically the same throughout, closely conforming to highest standard practise.

Stearns.—There will be a Stearns "30" and a Stearns "45" for 1908, or rather "there are," for both these models have been completed some time since by F. B. Stearns & Company, Cleveland, O., and will be staged at the Garden next Saturday. Though nominally of these low powers, even under the new A. L. A. M. rating, which experience has shown to be unusually conservative, they are credited with 46.22 and 69.3 horsepower, so that under old methods their rating would have been nearer 60 and 90 horsepower. The former is a four-cylinder type, while the latter is the six-cylinder representative of the Stearns line for the coming season. In the main, the same standards of design and construction have been adhered to throughout in both, an internal-expanding type of clutch with selective change-speed gear and double side-chain drive being employed. High-tension ignition by magneto and accumulators is used in both cases. The wheelbase of the smaller car is 120 inches, and the larger 128 inches.

Stevens-Duryea.—As the builders of both four and six-cylinder cars in a number of types, the line of the Stevens-Duryea Company, Chicopee Falls, Mass., will be one of the most complete of its kind in the Garden. Both the "Light Six" or Model U, and the "Big Six," otherwise Model S, are still the most prominent representatives of Stevens-Duryea design and construction, while the popular small car of the four-cylinder type, known as Model R, has been retained, and a newcomer, also of the four-cylinder type and which has been christened as Model X, has been added. Touring and inclosed types are listed in five and seven-passenger bodies, the features of construction being those favored by the designers of this firm for some time past, *i. e.*, multiple disk clutch, sliding change-speed gear and shaft drive. A magneto is a feature of the new Model X, which

in other respects conforms to the same practise, but has a longer wheelbase than the other cars, measuring 124 inches, while even the "Big Six's" dimensions on the ground are only 122 inches, which is moderate for a car of its power and size.

Studebaker.—Two standard types of chassis will be built under the aegis of the Studebaker name, by the Studebaker Automobile Company, South Bend, Ind., for the coming season, and under the new formula adopted by the Licensed Association they have been given the somewhat peculiar horsepower ratings of 27.2 and 36.1 horsepower, quite in contrast to the previous loose designations that placed the output of a motor anywhere within five or ten horsepower of what the designer thought it was. The smaller car is known as Model H, either as a runabout or limousine, and as Model B, as a touring car, while the larger car is entitled Model A, and at present is only listed in the touring type, having a five-passenger body. The most noticeable difference between the two is the fact that the smaller is fitted with a progressive type of change-speed gear, while the latter is equipped with a selective type, all being shaft-driven. Low-tension ignition is one of the distinctive features. The complete Studebaker line of electrics is also shown.

Thomas Flyers.—The exhibit of the E. R. Thomas Motor Company, Buffalo, N. Y., will provide one of the chief attractions of the new season's models and it goes without saying that it will form a center of interest at the Garden. This is the new Thomas cab or town car. In every feature it bears the imprint of an overseas' design, and the fact that those same features represent marked advances of their kind lends them additional interest. Following the initiative set by several French makers, the four-cylinder engine has been made in a single simple casting, this tending greatly to make it much more compact, this being one of the essentials most desired in the power plant of a car intended solely for city use. To the same end the forward part of the frame has been narrowed to a much greater extent than usual in order to have an extra amount of space between it and the front wheels, thus obtaining a particularly small turning radius so that these cars will be able to get around in narrow streets without reversing. Another of their features that will attract unusual interest is the elimination of the pump, thermo-siphon having been adopted.

Thomas Detroit.—In line with the policy adopted by the Detroit factory of the E. R. Thomas Motor Company, of Buffalo, N. Y., at the outset, this end of the Thomas interests will devote its entire attention to the production of a single chassis for 1908 as it did during the present season. Its rating remains the same as that which gave it a distinctive title when first brought out, *i. e.*, 40 horsepower, though its appellation has been altered to that of Thomas Detroit, in order to better distinguish it from the product of the Buffalo works. The same type of power-plant, in fact practically the same lines throughout, characterize the new model as did its predecessor. The cylinders are cast in pairs with liberal water-jackets, the valves, spark plugs, carbureter, circulating pump and magneto all being placed on one side. The crankshaft bearings are of liberal dimensions and are of special alloy. All the timing gears, magneto and the oil and water pump-driving gears are placed in a special oil-tight housing. Ignition is by high-tension magneto and dry cells, the latter acting solely as a reserve. It is shown in both touring and runabout types.

Waltham.—One of the striking features of the Waltham-Orient line for 1908 will be a 14-16-horsepower, two-cylinder chassis, which will be shown by the makers, the Waltham Manufacturing Company, Waltham, Mass., in a number of styles. It will be equipped as a delivery wagon, as a runabout, and also in the latter type with detachable tonneau and rear deck, making it convertible from one to the other. Some of the remaining members of the line are the 8-horsepower, air-cooled runabout, which has undergone considerable improvement and change in appearance since the former model, and the four-cylinder 20-horsepower, air-cooled chassis, which will be shown in both touring and runabout types. One of the chief features of the

Waltham chassis, particularly the water-cooled type referred to above, is the employment of a unit type of power plant and transmission which can be detached from the car in about thirty minutes; it is bolted to a subframe and everything can be removed intact. There are likewise a number of detailed improvements on the various chassis, which in some instances are apparent at a glance, while in others they do not stand out prominently, though a great deal of attention has been paid to detail.

Walter.—In addition to the standard seven-passenger touring car of 40 horsepower that it has built for several years past, the Walter Automobile Company, Trenton, N. J., has added a 30-horsepower model, on which the motor is of somewhat different design. In place of the overhead rocker-arm valve mechanism which has distinguished former models, this is made with a single camshaft operating the valves by the direct thrust method, all being placed on the same side in an outboard valve chamber on each pair of cylinders. This new car will be shown in the shape of a landaulet, while two 40-horsepower types will be shown with touring and runabout bodies, and will be equipped with the same style of motor as the landaulet. The exhibit will be completed by a 40-horsepower limousine which will have the former style of power plant. Considerable attention has been paid to brake design, and the makers claim to have effected great improvements in this essential.

White.—In accordance with its policy in former years, The White Company, Cleveland, O., which is again showing with the licensed cars, will display one of the most complete lines of cars to be seen in the Garden. Both the new models, K and L, will be staged with a number of different types of bodies. The Model K is a 30-horsepower machine patterned closely after the lines of the Model G of the present season; it is shown as a touring car, limousine, landaulet, and runabout. The smaller car, or Model L, is the 20-horsepower car for 1908, and it is shown in touring, limousine, and landaulet types. The most striking change is to be found in the larger car, which is fitted with a straight-line body, this being the first of its kind ever presented by The White Company. The wheelbase of this car has been increased to 122 inches, while that of the smaller car remains at 116 inches, and the runabout's dimensions is 105 inches. The motor of the smaller car is now mounted on an aluminum pan, inclosing it entirely from beneath and thus eliminating the subframe. Numerous other detailed mechanical improvements have been made in the power plants of both cars, and, though small in themselves, in the aggregate they serve to give some idea of the painstaking attention to detail continually being devoted to the improvement of the White by its designers.

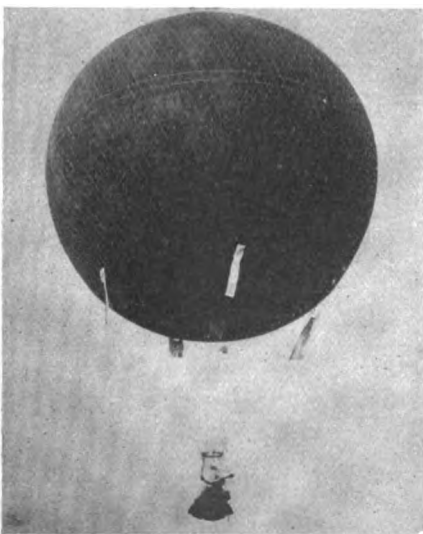
Winton.—"Six-Teen-Six," which is a title expressive of the fact that this is the sixteenth consecutive model turned out by the Winton factory, and is of the six-cylinder type, represents the sole bearer of the Winton standard that the Winton Motor Carriage Company, Cleveland, O., will devote its entire efforts to during the coming year. Though of the six-cylinder type, no attempt has been made to build an extremely high-powered car, but the conservatism that has always marked the Winton line is adhered to, the rating being 40 horsepower. The car embodies numerous features of merit, probably the first of which to strike even the inexperienced eye being the valve mechanism covers and the special self-starting device. The latter works on the compressed-air principle, and, in view of the number of parts necessarily entailed in the successful design of such a device, this has been made exceedingly simple and compact. The capacity of the tank is sufficient to turn the motor over a number of turns, compression being taken only on the firing stroke of the first cylinder. This is accomplished by the use of a check-valve which does not yield to the force of the compression stroke as the pressure of the latter is not sufficient to move it. The distributing valve is simple and efficient and the chief advantage of the starter as a whole is its simplicity and ease of operation, it not being necessary to go through a number of stunts, beside which the process of using the crank would be a simple thing.



AT ST. LOUIS JUST BEFORE THE SKY VESSELS LEFT THEIR MOORINGS—ARRANGEMENTS WERE THOROUGH AND WELL CARRIED OUT.

FROM France the James Gordon Bennett aeronautical cup came to America; from America it will go to Germany, unless, as is exceedingly improbable, it should be found on final measurement that France has a longer mileage than her rival from across the Rhine. Nine balloons, representing America, Germany, France, and England, lined up at St. Louis, Monday, October 21, for the start in the second race for the Bennett trophy, and the first international balloon race ever held in this country.

Promptly at 4 o'clock P.M., in the presence of a crowd which the conservative estimated at 300,000 and which the enthusiastic carried forward to half a million, Oscar Erbsloeh, in the *Pommern*, one of last year's starters from Paris, ascended lazily into the air to the tune of "Die Wacht am Rhein" and the cheers from thousands of throats. Major Henry B. Hersey, in the *United States*, the only American-built balloon in the race, went into the unknown five minutes later. Major Hersey was Lieutenant Lahm's companion last year, when the young American won the cup in a flight of 415 miles from Paris to the north of England. An attack of typhoid fever when on military service in France had prevented Lieutenant Lahm from competing in or even witnessing the start of the second aeronautical contest.



"POMMERN" OF GERMANY, THE CUP WINNER

Alfred Leblanc doffed his hat and swung it around excitedly as the "Marseillaise" pealed forth in honor of himself and the *Isle de France*. On the tick of the clock the *Dusseldorf*, with Herr Abercron in charge, joined the sky brigade, followed by *Lotus II*, the solitary Britisher, manned by Griffith Brewer and Claude Brabazon. Captain C. De F. Chandler and J. C. McCoy, in the big balloon *America*, received a tremendous ovation, especially

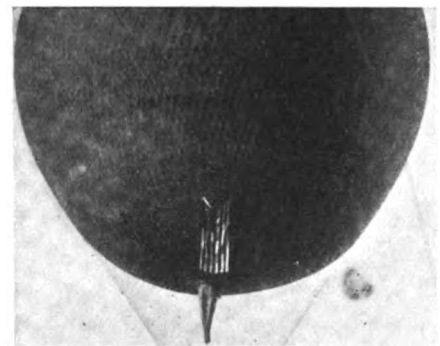
from the officers and men from the barracks and the Signal Corps. René Gasnier and Charles Levée in the *Anjou*, from Paris; Paul Meckel in the little *Abercron*, from Germany; then the *St. Louis*, piloted by Alan R. Hawley and Augustus Pope, closed the march. Forty minutes had been occupied in starting the nine big balloons, each one rising into the air at its appointed time without any delay or the slightest mishap.



WINNER ERBSLOEH.

Inflation of the nine gas bags had begun at 8 o'clock, with such a strong pressure and such an excellent quality of gas that before 11 o'clock the supply had to be shut down and was not turned on again until 2 o'clock. At each balloon twenty-one soldiers in charge of a United States Signal Corps man, and a number of expert workmen, watched the inflation, arranged the netting, attached the sand bags, climbed into the netting to fix national flags and streamers, and gave all necessary attention for the start. At the outer edge of the enclosure troops handled the crowd in an excellent manner, the whole proceedings being a credit to the Aero Club of America and a surprise to the foreigners, few of whom had thought such a high standard of efficiency possible at America's first international aeronautical race.

Oscar Erbsloeh, who came down near Asbury Park, N. J., so near to the sea that further flight was impossible, briefly tells the story of how he won the second contest for the international aeronautical cup. "We started promptly at 4 o'clock, rose to a height of 5,000 feet and there found a current carrying us eastward. All night we remained at this altitude, sailing east, and passing over a great many rivers and cities. On Tuesday morning we rose to a height of 6,500 feet and felt very comfortable. Owing to our



"UNITED STATES," THE CUP WINNER OF 1906



PRES. C. F. BISHOP GIVING INSTRUCTIONS. STARTER C. J. GLIDDEN AND COLGATE HOYT. PLACING THE FLAG ON THE "UNITED STATES."

good charts we nearly always knew where we were. Only once had we to come near earth to ask for information, and that was at Fort Washington, in Ohio. We continued our journey until early on Thursday morning the city of Philadelphia appeared in sight. Wishing to get a current which would carry us into Massachusetts, we lowered to 300 feet, then rose to 10,000 feet, but failed to find any other current but that which took us east, so resolved to descend at the mouth of the Shark river. We decided to go as close to the ocean as possible and finally made a successful descent in an open lot at Asbury Park. We had covered 876 miles."

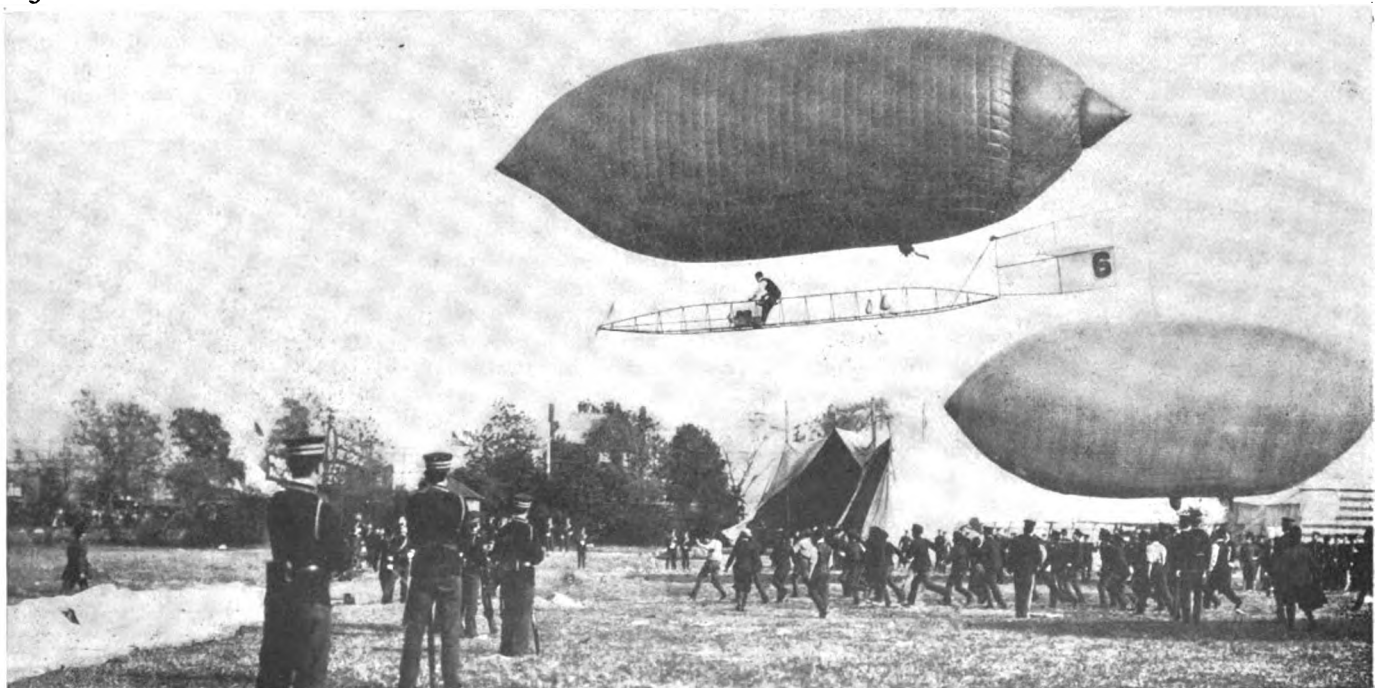
Alfred Leblanc and E. W. Mix, the former a Parisian technical expert, and the latter a native of Ohio, came second, only six miles behind the German team, by ascending at Herbertsville, N. J. The *Isle de France* crew declare that had their guide rope not caught in a tree at Orange county, N. J., they would have gone straight on and descended at the water's edge. Anxious to ascertain exactly their position in the race, they have asked that the flight be measured. This will be done, awards being held until after this official announcement, expected in thirty days.

Von Abercron, in the *Dusseldorf*, secured third prize by a de-

scent at Dover, Del., approximately 780 miles. The *America* and the *St. Louis* took fourth and fifth places, with 720 and 710 miles, both descending in Maryland. Meckel's *Abercron* and René Gasnier's *Anjou* both drifted down to Virginia, the German having 700 miles and the Frenchman 680. Major Hersey's *United States* struck out an independent course and after a journey of 650 miles came to earth at Caledonia, Ontario. *Lotus II*, the English representative, found a landing at Sabina, O., after completing a journey of 375 miles.

Beachy Wins the Dirigible Prize.

Quite as much interest was displayed in the three-mile race for dirigible balloons on the last day of the St. Louis aeronautical carnival as had been manifested in the start for the Bennett cup. There were four contestants and three heats, but only in the last was there any sharp contest. In the final heat Lincoln Beachy, of Toledo, O., drove his dirigible balloon *Beachy* round the three-mile course, part of the distance against a head wind, in 4:40, descending on the very spot from which he had started. Jack Dallas, of Texas, had a record of 6:10; Captain Thomas S. Baldwin, of New York, had the next best time in the *Arrow*, in 7:05.



LINCOLN BEACHY, OF TOLEDO, O., AND HIS DIRIGIBLE BALLOON "BEACHY," WINNER OF THE EVENT FOR STEERABLE AIRSHIPS.

BATTLE OF THE CYLINDERS: SIX VERSUS FOUR

By F. B. STEARNS.

WHILE a few of the automobile manufacturers of the country are to-day building the six-cylinder car, there is grave doubt in the minds of the leading designers and engineers as to whether this new demand for cars of enormous power is not but a passing craze, and many of the highest grade manufacturers will have nothing to do with sixes. At this time many manufacturers who are building six cylinders are doing so against their will, not because they favor such a type, but because they have been forced into it. Take them large and small, here, there, and everywhere, and without exception the leaders of the American automobile industry are continuing their four-cylinder cars, building as many as usual, and constructing but a small number of sixes because they have been forced into it.

The claim of some manufacturers, who are strongly in favor of six cylinders, is the fact that their present six-cylinder cars run smoother and easier than their fours—in technical terms, the torque is much more continuous. "In our four-cylinder cars," say these manufacturers, "we were utterly unable to overcome this difficulty, but the addition of two more cylinders obviates this entirely."

This is very plausible on the face of the matter, but how different are the real facts. The best four-cylinder cars made to-day, and by the word "best" I mean the very few who have no superiors, run as smoothly as any six-cylinder cars, with the motor running at anything over 200 revolutions. Above that it is utterly impossible to notice any difference.

While the Stearns Company have had wonderful success with their six-cylinder car, as is evinced by its records in races, hill-climbs, etc., at the same time we are firm believers in the four-cylinder type of car, for many years of experimenting have taught us that the four-cylinder motor, conscientiously made by skilled workmen under expert supervision, is good enough for any car. This does not apply to those manufacturers who have had more or less trouble with their fours, and at last thankfully to the sixes as a way out of their difficulty, but to the best manufacturers in the business.

The basic argument in favor of the six cylinder is, as noted above, the continuous torque—but let us carefully dissect this argument for a moment. A six-cylinder motor geared, say 2 to 1, delivers 12 impulses to the rear axle for every revolution of the wheels. Acting on precisely the same principle, a single cylinder motor geared 12 to 1 will also deliver 12 impulses to the axle for every revolution, and the forward movement of the car is just as smooth as though six cylinders were employed.

It has been claimed that six cylinders of given size will develop 50 per cent. more power than four cylinders of equal dimensions, all other things being equal. But is this really the case? I think not.

Years of experimenting have shown us that with all other things equal the addition of two more cylinders does *not* produce 50 per cent. more power. In fact, a much smaller percentage than that was all that could be noticed after over a year of expert testing. While the same result may not have been achieved by a few other makers, years of conscientious study and application to this problem have conclusively proven the above results, due almost entirely to the high state of efficiency at which our four-cylinder motors have arrived.

The principal difficulties with the six cylinder, which no one can deny, are that it requires 50 per cent. more mechanical parts, 50 per cent. more ignition apparatus, 50 per cent. more gas apparatus, has 50 per cent. more valves to grind, has 50 per cent. more weight, and requires 50 per cent. more radiating surface than a four-cylinder motor of equal power, and consequently requires 50 per cent. more care, and last, but not least, 50 per cent. more repair bills.

The statement is continually made that gasoline engines as they now have been perfected cause practically no trouble, and that by putting in 50 per cent. more parts it means no more trouble because there is no trouble at all. This may be true when the car is new, and all the six-cylinder cars in this country are in their first and second years, but what about them when the time *does* come to have the car overhauled? There is no question but that the repair man's bills will be 50 per cent. greater because there are 50 per cent. more parts to look after and re-adjust and refit.

Another difficulty about the six cylinder is the enormous length of hood that the motor occupies. The result is that in order to get a wheelbase under 135 inches the constructor must place a large portion of the motor directly over the front axle, which necessarily makes hard steering, is hard on tires and springs, and is extremely hard on the delicate adjustments in the motor. The aim of all designers is to get the passengers and mechanism between the axles, and this has become standard motor car construction in the best cars the world over. Except with an excessively long wheelbase this is impossible with the six cylinder, and the addition of a long wheelbase makes the car so long that it is impossible to handle it readily in traffic or even to turn around in the wide streets.

Because the principal cost of a motor car is in the skill required to machine, assemble, and adjust the delicate parts of the motor mechanism, the cost of a six-cylinder car must necessarily be greater in order to produce an equal grade of workmanship with the four-cylinder car. The carburetion difficulties increase because there are two cylinders taking in gas at the same time, and great care must be used to distribute this evenly to all cylinders. Think of an ordinary chauffeur attempting to grind in 12 valves and to time a double system of ignition, or to adjust the valve timing! This means that when the six-cylinder motor does get into trouble, which unfortunately the best motors of any kind are apt to do, it will require more skilled experts to properly adjust a six-cylinder motor than a four.

Throughout the world it is almost invariably the case that racing machines are four cylinders. We ourselves build six-cylinder cars for one purpose, and that is to give the speed and power that a few drivers demand. In other words, if an automobile owner is not satisfied with 60-70 brake horsepower, which our four-cylinder motor gives, and wants something between 90 and 100 horsepower for speed contests, special hill-climbs, etc., the easiest way to give him this is to build a six-cylinder motor. This is absolutely the only use we can see for a six-cylinder motor—that is, extreme power—and for this extreme high power the six-cylinder motor is practically suited.

It is probably not out of place to state that we claim to obtain in our four-cylinder motor the gradual and even application of torque that is talked so much about in the six. This we accomplish by means of a superior carbureter, which we have developed after ten years of constant experimenting to get a perfect gas-making apparatus.

We can best illustrate this by comparing our perfected double carbureter—which turns raw gasoline with a mixture of air into a constant gas—to a steam boiler and steam engine. The supply of gas is always constant, no matter what speed, and by opening the throttle the amount of gas can be so regulated as to get a range of power from one to between 60 and 70 brake horsepower by a simple manipulation of the throttle. The result obtained is equivalent to a constant supply of steam being utilized in a four-cylinder steam engine.

Why, then, is it necessary to use six cylinders if the torque in a four is practically constant, the supply of gas being even and steady at all speeds?

(Continued from page 616.)

MOTORCYCLES: TWO-WHEELERS ARE GROWING IN FAVOR

American Motor Co., Brockton, Mass.....	Basement 215B
Armac Motor Co.....	Basement 249
Aurora Automatic Machine Co., Aurora, Ill.....	Concert Hall 168
Consolidated Manufacturing Co., Toledo, O.....	Basement 250
Curtis Mfg. Co., G. H., Hammondsport, N. Y.....	Basement 240
Excelsior Motor & Mfg. Co.....	Basement 248
Hendee Mfg. Co., Springfield, Mass.....	Basement 237
Light Mfg. & Foundry Co., Pottstown, Pa.....	Basement 241
Merkel Motor Co., Milwaukee, Wis.....	Basement 251

N. S. U. Cycle & Motor Co., 148 East 49th street, New York	Basement 247
Ovington Motor Co., 2208 Broadway, New York.....	Basement 245
Pope Mfg. Co., Hartford, Conn.....	Basement 243
Reading Standard Co., Reading, Pa.....	Basement 244
Reliance Motorcycle Co.....	Basement 239
Thomas Auto-BI Co., Buffalo, N. Y.....	Basement 242
Shirley, Amos, 935 Eighth avenue, New York.....	Basement 216

IGNITION: EMBRACES MANY CONCERNS

PRIMARY AND SECONDARY BATTERIES.

American Electrical Novelty Mfg. Co., 308 Hudson street, New York	Balcony 130
Dayton Electrical Mfg. Co., Dayton, O.....	Mezzanine Plat. 60
Eastern Carbon Works, Jersey City, N. J.....	Balcony 118
Electric Storage Battery Co., Philadelphia, Pa.....	Concert Hall 174
Gelszler Bros., 316 West 42d street, New York.....	3d Tier Boxes 280
Gould Storage Battery Co., 341 Fifth Ave., New York.....	Basement 218
Kitsee Storage Battery Co., Wilkes-Barre, Pa.....	3d Tier Boxes 275
National Battery Co., 1606 Broadway, New York.....	Balcony 123
National Carbon Co., Cleveland, O.....	Mezzanine Plat. 67
Stackpole Battery Co., St. Mary's, Pa.....	Concert Hall 173
Vesta Accumulator Co., 1336 Michigan avenue, Chicago, Ill.	Balcony 139
Witherbee Igniter Co., 519 West 33d street, New York.....	Balcony 115

HIGH AND LOW-TENSION MAGNETOS.

Bosch, Robert, Inc., 160 West 56th street, New York.....	Basement 212
Bretz Co., J. S., Times Building, New York.....	Balcony 183
Champion Co., Albert, Boston, Mass.....	Basement 223
Holley Bros. Co., Detroit, Mich.....	Balcony 146
Lavalette & Co., 112 West 42d street, New York.....	Basement 220-221
Pittsfield Spark Coil Co., Pittsfield, Mass.....	Mezzanine Plat. 103
Remy Electric Co., Anderson, Ind.....	Mezzanine Plat. 60
Spiltdorf, C. F., 1669 Broadway, New York.....	Mezzanine Plat. 57

DYNAMOS.

Dayton Electrical Mfg. Co., Dayton, O.....	Mezzanine Plat. 60
Motsinger Device Mfg. Co., Pendleton, Ind.....	Mezzanine Plat. 97

TIMERS AND COMMUTATING DEVICES.

Atwater-Kent Mfg. Works, Philadelphia, Pa.....	Mezzanine Plat. 65
Connecticut Telephone & Electric Co., Meriden, Conn.	Concert Hall 179
Hardy Co., R. E., 86 Watts street, New York.....	Balcony 120
Heinze Electrical Co., Lowell, Mass.....	Basement 268
Herz & Co., 187 Lafayette street, New York.....	Balcony 143
Mosler Co., A. R., 163 West 29th street, New York.....	Balcony 119
Uncas Specialty Co., Norwich, Conn.....	Balcony 126

HIGH-TENSION IGNITION COILS.

Auto Coil Co., Jersey City, N. J.....	Mezzanine Plat. 72
Connecticut Telephone & Electric Co., Meriden, Conn.	Concert Hall 179
Heinze Electrical Co., Lowell, Mass.....	Basement 268
Pittsfield Spark Coil Co., Pittsfield, Mass.....	Mezzanine Plat. 103
Spiltdorf, C. F., 1669 Broadway, New York.....	Mezzanine Plat. 57

SPARK PLUGS AND OTHER IGNITION DEVICES.

Benford, E. M., New Rochelle, N. Y.....	2d Tier Boxes 196
Delta Mfg. Co., Bloomfield, N. J.....	2d Tier Boxes 202
Hardy Co., R. E., 86 Watts street, New York.....	Balcony 120
Jeffery-Dewitt Co., 217 High street, Newark, N. J.....	2d Tier Boxes 205
McCord & Co., Chicago, Ill.....	Balcony 144
Peerless Igniter Co., 947 Marcy avenue, Brooklyn, N. Y.	3d Tier Boxes 276
Witherbee Igniter Co., 519 West 33d street, New York.....	Balcony 115

COMING EVENTS AS SHOWN BY THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

Nov. 2-9.....	New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
Nov. 9-16.....	Philadelphia, First Regt. Armory, Automobile Show, Philadelphia Automobile Trade Association.
Nov. 16-23.....	Baltimore, Third Annual Automobile Exhibition, Automobile Dealers' Association. B. R. Johnson, manager, Piper Building.
Nov. 30-Dec. 7.....	Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
Dec.	Detroit, Riverview Park Auditorium, Detroit Automobile Dealers' Association. (Exact date to be announced.)
Dec. 14-21.....	St. Louis, Mo., New Coliseum, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
Dec. 23-Jan. 4.....	New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, manager.
Feb. 3-8, '08.....	Buffalo, Convention Hall, First Annual Power Boat and Sportsmen's Show, auspices of Buffalo Launch Club. Dal H. Lewis, manager.
Feb. 10-15.....	Detroit, Light Guard Armory, Tri-State Automobile and Sporting Goods Association, Seventh Annual Show.
Feb. 20-Mar. 7.....	New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsmen's Show.
Mar. 7-14.....	Boston, Mechanics' Building and Horticultural Hall, Boston Automobile Dealers' Association. Chester I Campbell, manager, 5 Park Square.

Mar. 9-14.....	Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dal H. Lewis, manager.
Mar. 21-28.....	Toronto, Canada, St. Lawrence Arena, Automobile Show. R. M. Jaffray, manager.
Apr. 5-12.....	Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Races, Hill-Climbs, Etc.

Nov. 15-16.....	Newark, N. J., 24-hour Endurance Run, Automobile Club of New Jersey.
-----------------	--

FOREIGN.

Shows.

Nov. 11-23.....	London, Olympia Motor Show.
Nov. 12-Dec. 1.....	Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
Nov. 22-30.....	London, Agricultural Hall, Stanley Show.
Dec. 5-22.....	Berlin, Germany, Automobile Show.
Dec. 21-Jan. 2.....	Brussels, Show, Palace of the Cinquantenaire.
Jan. 18-Feb. 2, '08.....	Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.
Mar. 21-28.....	London, Agricultural Hall, Cordingley's Show.
Races, Hill-Climbs, Etc.	
Nov. 1-15.....	France, Voiturette Contest near Paris.
May 16, 1908.....	Sicily, Targa Florio, Automobile Club of Italy.
June 20-July 5.....	Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
July 14, 1908.....	Paris to London, Aerial Race.
August, 1908.....	France, Coupe de la Presse, Automobile Club of France. (Exact date to be announced.)



NIGHT SCENE IN GRAND CENTRAL PALACE, WHERE PHOTOGRAPHY WAS ACCOMPLISHED WITH DIFFICULTY.

THE A. C. A.-A. M. C. M. A. combination to-night closed its third successful show—an exhibition held too early, in the opinion of some, and even too late, according to the ideas of others. Unquestionably there is going to be more or less revision of the show problem, for, candidly speaking, it doesn't seem to fill quite the necessities of the industry as at present developed. But the Grand Central Palace show has been beneficial to the industry as a whole, and while the volume of business transacted did not exceed that of former years, for reasons which are apparent and varied, a balancing of expenditures and receipts will show a profit to the greater number of Grand Central Palace exhibitors. In some instances it meant little more than the introduction of a new name, which must become better known before its possessors realize appreciably upon their investments.

In the buying of automobiles, it should be kept in mind, the public approaches the proposition with more carefulness than was the case a year or more back, when anything that moved under its own power seemed to attract at least a limited number of buyers. But the buyer of to-day is inclined to use greater discrimination, and it has become a case of "show me," convincingly and even economically. Recognizing this condition of affairs, the experienced maker is prepared to meet the revised requirements. The hurrah business is being disregarded, for it doesn't sell cars any more.

Doubtless the most noticeable feature of the Palace

show, to the seasoned rounder who has taken them all in ever since there has been such a thing as an automobile show, was the absence of this hurrah business and the quiet air of dignity that characterized the thing as a whole. There was entirely lacking that feverish bustle and haste that was long an ear-mark of the Garden show in its earlier years and which was transferred in all its virility to the first holding of a similar affair by the independent makers. It took the Garden exhibitors three or four years to wear off that air of extreme activity which, in the last analysis, was only a feverish pretense of doing a tremendous volume of business, and for the show as a whole to acquire an atmosphere of dignified reserve quite in keeping with the character of the product. It seems only fitting that the business of selling automobiles should be placed on a somewhat higher plane than that of developing a real estate boom section in which lots are disposed of on the installment plan, but the process was somewhat akin to this in the early days. Every maker in the show had "disposed of his entire product for the coming year"—long before he got there, in fact—and his presence was merely



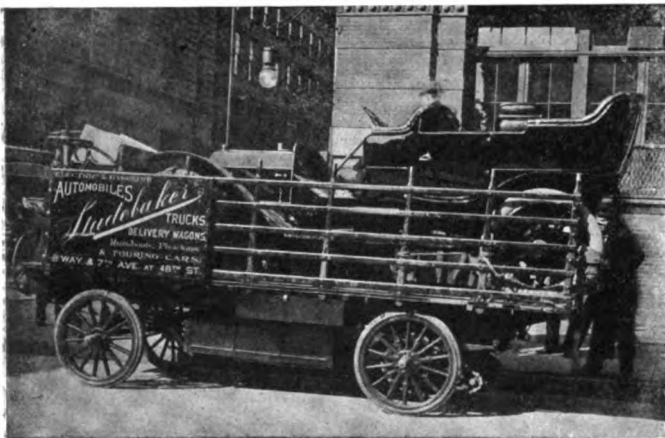
ANOTHER VIEW IN THE PALACE, WHICH COULD BE IMPROVED UPON FOR EXHIBITING PURPOSES.



STAND OF ONE OF THE NEWCOMERS TO THE LIST: THE GARFORD MOTOR CAR COMPANY.

due to a desire to see and be seen—to let his competitors know that he was still on top. But with an inconsistency that ill-accorded with his statement he was continuously chasing the itinerant sign-painter to placard his exhibit with the names of new buyers as fast as cars were sold.

Bearing this in mind, as well as the fact that the American Motor Car Manufacturers' Association, the members of which



STURDY STUDEBAKER CONVEYS ITS LITTLE BROTHER TO THE SHOW.

form the virtual foundation of the show, have not had the advantages of co-operation for more than a few years, and the result as exemplified by the long lines of cars was something of which they may justly be proud. During the past week there was gathered in the Palace a very substantial percentage of the backbone of the American automobile industry as a whole, and



LANSDEN, WHICH EMPLOYS MUCH EXPLOITED EDISON BATTERY.

anyone who is conversant with prevailing conditions to-day could hardly fail to recognize this. It has been evident all along that ultimately the medium and low-priced cars must naturally constitute the bulk of the annual output, whether here or abroad, and the American makers who are numbered among the members of the A. M. C. M. A., as well as not a few of those who have not become affiliated as yet with any of the organizations in the field, have not been slow to realize and take due advantage of that fact.

To be more explicit regarding the show itself, it is safe to say that it represented as successful an affair of the kind as either of the

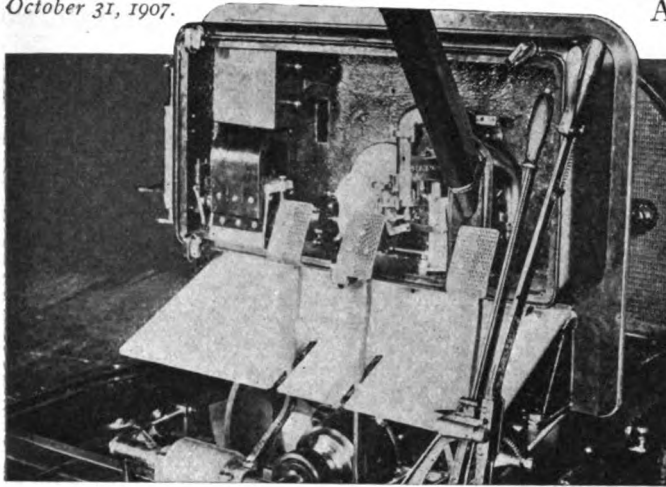
associations in question have ever been responsible for, and that is saying a great deal, as both last year's Palace show and the opening event of the kind in the Sixty-ninth Regiment armory were affairs that forcibly demonstrated what the independent makers were capable of in no uncertain manner.

Whether a mistake was made in setting the date of the show too far ahead, despite the evident demand for early shows, is something that cannot be answered at the moment, besides being a matter on which there is considerable difference of opinion. Involving as it does the question, "Do people now come to shows to actually place orders for cars?" it is difficult to say that a show held at any time near the closing of one season or the opening of another is premature. Those who uphold the view that the date was too early point to the fact that the attendance was not as great this year as last on the opening or the first three or four nights, to substantiate their opinions, but the peculiar conditions prevailing were largely accounted for by the fact that out-of-town autoists timed their visits in a great many instances so as to be in New York during the closing days of the Palace show and the opening of the Garden, so that there was considerable of an influx of new visitors as the show drew to an end. Besides this, there is another thing to be considered. Automobiles are so numerous on the streets nowadays that it is hardly necessary for the merely curious to attend a show.

Briefly summed up, however, the New York shows may or may not be longer necessary for the placing of agencies; that's a question for the makers to decide, and they ought to be able to answer it without any vast amount of figuring, for facts should exist, and facts are stubborn things. New York shows, like the shows in all other cities, are certain to help the retailing of cars, and if the metropolitan exhibitions are held for this particular purpose there isn't any doubt whatever but that they are too far ahead in the calendar.



SIX-CYLINDER COLT RUNABOUT, ONE OF THE SHOW'S FEATURES. 3



UNIQUE DASH ARRANGEMENT OF THE NEW ELLSWORTH.



WHERE THE GREAT CHADWICK SIXES WERE ARRAYED.

SOME OF THE THINGS SEEN AT THE PALACE

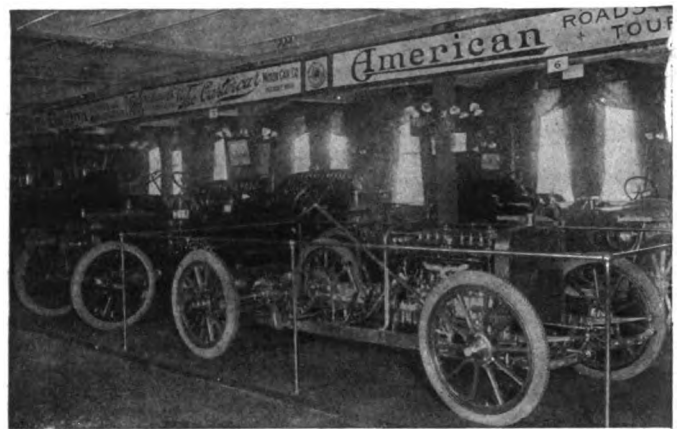
By CHARLES B. HAYWARD.

TO the man with no eye for detail, be he technically inclined or otherwise, most four-cylinder and six-cylinder cars look alike, and as models of those types constitute the bulk of the cars shown, there is more or less sameness about the entire aggregation that leads the man in the street to the conclusion that all automobiles are alike. To a certain extent this must naturally be the case, but it does not require an unusually observant eye to note scores of points of difference that merit remark. For instance, such a very apparent exception to current practise in motor design as the placing of the flywheel at the forward end of the engine which characterizes the Maxwell product, is something that can hardly fail to draw the attention of the visitor with the least perception of detail, but as even such a very noticeable feature as this frequently escapes a great many of the would-be motor wise, it is hardly strange that finer points of design and construction should be overlooked entirely. This Maxwell characteristic has been perpetuated in the new 26-horsepower four-cylinder model which, owing to its low price, has come in for a great deal of favorable comment. Then there is the double-elliptic form of suspension which is also a feature of these cars as well as numerous others of the lighter types, such as the Ford and Reo, also of the medium weight class, as the Premier.

Varying Standards of Suspension.

Speaking of springs, it does not take a great deal of observation to learn that makers generally have become divided into two or three well-defined schools where the matter of suspension is concerned. One of the most noticeable things in this connection is the vogue of the platform type or three-point suspension for medium and heavy cars, instances of this being found in the Garford, the Cleveland, American Mors, Pennsylvania, Dorris, Mora, National "little six" and the Great Chadwick, while the Austin is unique in having three-quarter rear or "demi-pincette" springs. The new Ellsworth, which combines so many novel and interesting features, is also noteworthy in this respect in that it is equipped with a special three-quarter type of forward spring, the upper half portion of the latter being riveted directly to the frame ends and taking the place of the usual dumb irons. Another special type is to be found in the American under-slung suspension which was first brought out last year, but which

always attracts a great deal of favorable attention owing to the unusually attractive lines it gives the car. Quite the most novel thing to be noted in this field is the combined helical spring and shock-absorber suspension of the Brush cars, while another car using this type of springs is the Lansden electric

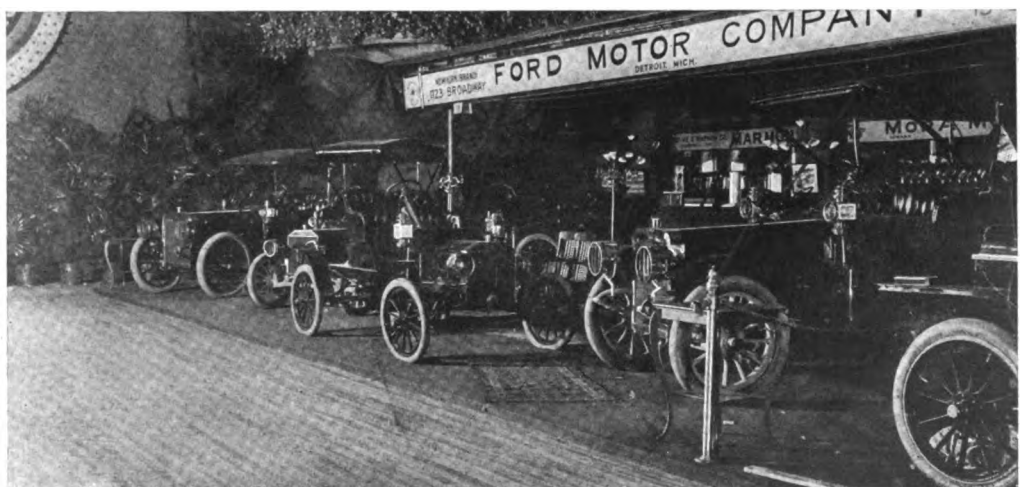


EXHIBITION CHASSIS OF THE UNDERHUNG AMERICAN.

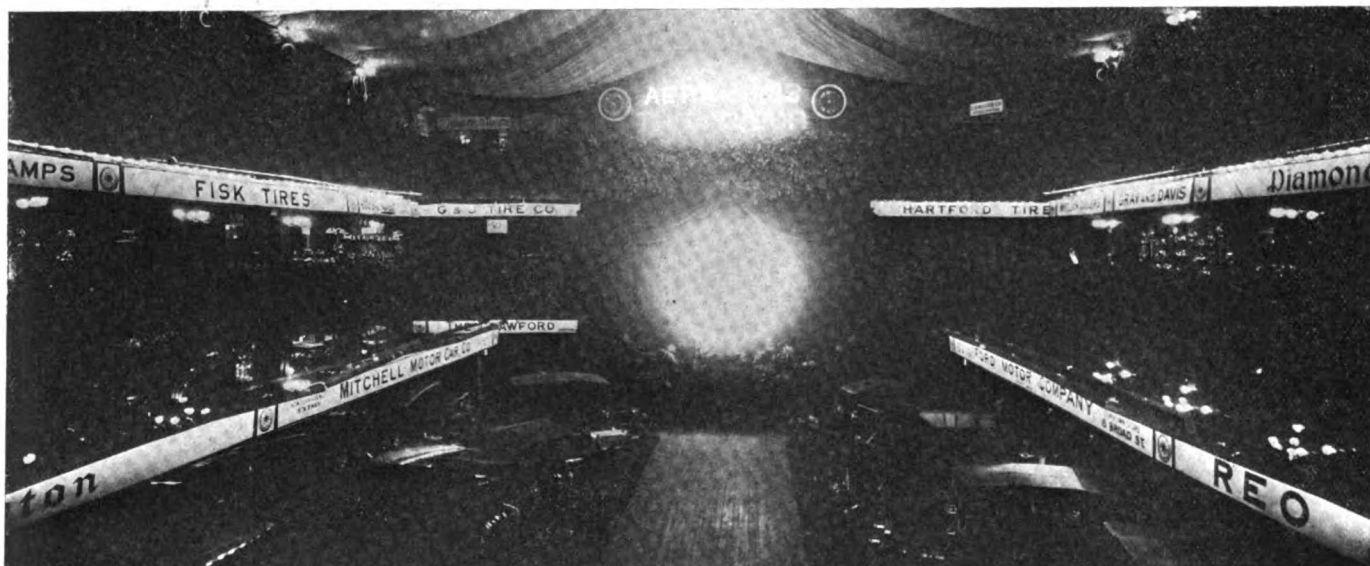
touring car in which they are employed to advantage together with solid tires of the twin type, providing unusually easy riding.

Some Transmission Tendencies.

It was thought a few years ago that the planetary type of change-speed gear would soon cease to be a factor, but it requires very little observation to show that this is far from being the



HERE THE BIG AND LITTLE FORDS MET AN UNENDING STREAM OF ADMIRING FRIENDS.



NIGHT VIEW OF THE MAIN AUDITORIUM WHICH SHELTERED PROMINENT CAR AND ACCESSORY EXHIBITORS.

case. In fact, the planetary gear is a feature of cars of both extremes, for it is found on the Reo single-cylinder runabout and on the Ford six-cylinder cars, as well as the new Gearless six-cylinder, although it is of a special type that is attracting a great deal of attention. The Gearless transmission is practically a friction drive type of planetary change-speed gear consisting of but three simple and substantially made parts, a cup, cone and cage of fiber-faced tapered rolls. The planetary gear is also a noticeable feature of the new Overland car, particularly owing to the radical departure made in its installation. This newcomer is a shaft-driven car, but instead of placing the gear-set directly back of the four-cylinder Rutenber motor which forms its power-plant, it is located at the rear end of the propeller shaft, just forward of the differential housing and in a separate inclosing case of its own, the high-speed clutch being made readily accessible for adjustment by means of a handhole. In all there are about twenty cars shown with planetary gears, representing eight or nine different makes, of which the Maxwell runabout, Moline and Atlas two-cylinder cars, Holsman and Kiblinger runabouts are some further instances. Exceptions to the practise of using this type on light cars and buggyabouts are to be found in the case of the Reliable Dayton with its sliding gear and the Schacht and Hatfield with a friction type. In the larger cars the friction drive finds its best examples in the Lambert, Cartercar and the Gearless. With these exceptions, the use of the selective type of sliding gear is almost universal on all except the lighter of the four-cylinder cars on which the only difference is the method of operation, such cars as the lower-priced models of the Mitchell, Moline, Dragon, Grout, Eagle and Maxwell, working on the progressive system. Cone and disk clutches and final shaft-drive are the predominant notes where the remaining essentials of the transmission are concerned, when taken in the aggregate.

Magneto Ignition Becoming Universal.

It takes but a glance to show the prevailing use of the magneto, and when it is considered that this is on cars where it was virtually unknown up to two years ago, suffices to indicate the extent to which mechanical generation is being adopted. The Dorris, Glide, Ellsworth, Frontenac, National, Welch, Allen-Kingston and Chadwick are a few on which the Bosch high-tension type is shown, such makes as the Rainier, Gaeth, Cleveland, Garford and Premier—the last-named an entirely new convert—using the same make in the low-tension type, while the Eise-mann is to be found on the Moon, De Luxe and a number of others, the Gianoli on the Frayer-Miller and the American Napier, the Remy on the Marmon, and the Holley on the Ford, all

these being of the high-tension order. In practically every case the standard form of high-tension ignition using accumulators or dry batteries as a current source, a primary timer and a four-unit coil is employed as a standby, and in the last-named rôles, the Splitdorf, Connecticut, Pittsfield, Kingston, Heinze, Autocoil and other makes figure prominently. The Ellsworth is a noticeable exception where its ignition arrangements are concerned, the Bosch high-tension magneto being placed in the hollow dash of the car which also shelters a twin-unit coil for the reserve side of the system. Despite the cost of a high-grade magneto of either type, they are now included as a part of the regular equipment of cars on which it was thought impossible to supply anything more ambitious than dry cells but a few years ago.

Some General Observations on New Things.

Considering as new cars all those which have never participated in a show, it is surprising the number to be seen in the Palace that can be included in this category, both those that are new in name and make as well as those that are entirely new designs by old-line makers. Under the latter heading must be included such productions as the new six-cylinder Premier with low-tension ignition, though of course most of the sixes are new in one sense, but in this case the design is entirely novel, which likewise applies to the showing of the Stoddard-Dayton with its specially designed motor, the water-cooled Marmon, the Great Chadwick Six, the Atlas three and four-cylinder, two-cycle cars, the Lansden electric touring car, the Jackson four-cylinder and one or two others. Then there are the new cars that have been out for several months, such as the Brush line, the Gearless, the Overland, the Allen-Kingston, and the like, as well as those that are brand new in both design and title, such as the Ellsworth. One of the noticeable things to the man who takes the trouble to look down at tires and rims is the general adoption of the detachable type of the latter, of which some prominent instances are the Goodrich on the Frayer-Miller and the Klink, the Goodyear on the Reo and Great Smith, the Midgley on the Mitchell, the Fisk on the Lambert and others, the adoption of Michelin tires by some American makers as regular equipment also being worthy of note. Of course, there are a number of instances in which some of these newcomers combine so many novel and interesting features that they can only be done justice to by a complete description, which is necessarily out of the question in any such casual review as this is intended to be. One or two instances of this that come to mind are the new Ellsworth, the Premier six-cylinder model and some medium-priced cars such as the Overland. Then there are the unusually low prices—but that is a story in itself.

MEDIUM-PRICED CARS ARE INCREASING

By W. F. BRADLEY.



It is but natural that, in the automobile field, America should have found her widest field of activity in the production of vehicles intended for the man of average means. European constructors laid themselves out from the commencement to capture the wealthy who would take up their successive annual models without looking too closely at the price demanded for their acquisition. On this side of the Atlantic there was an early tendency to cater to the medium class trade and produce low-priced cars in big series which would find a ready market because of their democracy. The tendency has become such a national trait that when a European constructor decides to market a popular vehicle it is introduced as "American method." At the democratic show in the Grand Central Palace the popular automobile was not only much in evidence, but attracted attention because of its uniform excellence and the good value offered for a medium sum.

Prices, it is true, range all the way from \$250 to \$7,000, but it is in the class between \$1,500 and \$2,750 that the many attractive vehicles are to be found.

In view of what has been done by a few firms making a specialty of this class of business and the known activity of others to enter the low-price market, it would not be safe to predict that touring cars will never be built successfully and in any great numbers for less than \$1,500. Nevertheless, below this sum profitable construction becomes difficult and can only be successfully undertaken when it is possible to construct in exceptionally large series and market with the minimum expense. Automobile buggies must not be included in these generalities, for it is certain that within two or three years these vehicles will be in use in thousands in every rural district. In view of the special work they are built to perform, it would be more correct to classify them as commercial than pleasure vehicles.

At less than \$1,000 a dozen firms offer about twenty models, more than half of which are of the buggy type and only four are really four-seated touring cars. From \$1,000 to \$1,500 there are again a dozen firms with a score of models, four and five-seated touring cars predominating over two-seated runabouts. With a few exceptions, notable among them being Ford, Mitchell, Overland, and Jackson, the power plant consists of a single cylinder or a double opposed engine. Ignition invariably is jump spark with current obtained from storage batteries, magnetos unfortunately not yet being procurable in this country and the imported article being too costly to fit to a low-priced vehicle.

It is from \$1,500 to \$2,500 that the best value in the show is to be found, the cars between these two figures including some thirty makes, which, for general excellence and proportionate value for money, surpass both the lower and the highest priced classes. Striking an average, for \$2,200 there is a choice of nearly a score of four-cylinder touring cars which should appeal strongly to the man desiring a reliable, economical automobile sufficiently simple for him to attend to all its ordinary wants himself, powerful and roomy enough to carry four or five people at a moderate rate over average roads, and sufficiently light in construction to be economical in the use of tires.

There is a general uniformity in the mechanical features of the cars comprised in this class, four-cylinder engine; forward, sliding gear transmission, generally of the selective type, and shaft drive. Two-cycle engines, planetary and friction transmission, have their share of supporters, but are really only a small part of the whole. As in the lower priced vehicles, electrical source is almost in-

variably obtained from storage batteries. The value of a magneto as a standard equipment is no longer doubted by any maker, but circumstances make it difficult to adopt this article for any car selling at less than \$2,500. Even at this figure more than 50 per cent. of the makers adhere to storage batteries, and only one \$1,500 car is listed with a magneto. As soon as the \$2,500 class is reached the prospective purchaser has the choice of ten different cars fitted with a reliable make of high-tension magneto.

Of equal interest to the amateur automobilist not overburdened with cash is ease of maintenance and accessibility of every mechanical part. The wages of a hired chauffeur being altogether out of proportion to the cost of a \$2,000 car, it is imperative that the popular machine should be of such simplicity that its owner can keep it in order with the minimum of labor. Where a skilled mechanic is engaged to tend an automobile, the matter of freedom from complications is of lesser importance, but for any popular machine simplicity must be developed to the utmost. Generally this has been realized by the manufacturers in their 1908 models, all the more glaring defects of a couple of years ago being remedied in the latest productions. Lubrication has been simplified and better provision made for attending to such parts as rear axle, differential, steering gear, and transmission. Although it is not anticipated that dismantling the engine will be a weekly occupation, design has been so simplified that in the majority of cases almost any part of the machinery can be examined with little trouble. There is still room for further development along this line, but when one remembers the models of a few years ago—some of them considered the best of their time—in which it required an hour's labor to open the gear box and the task of examining the main bearings were not to be undertaken unless one had an entire day to spare, the improvements of the 1908 popular models, as shown at the Grand Central Palace, are most satisfactory to the man who drives and cares for his own car.

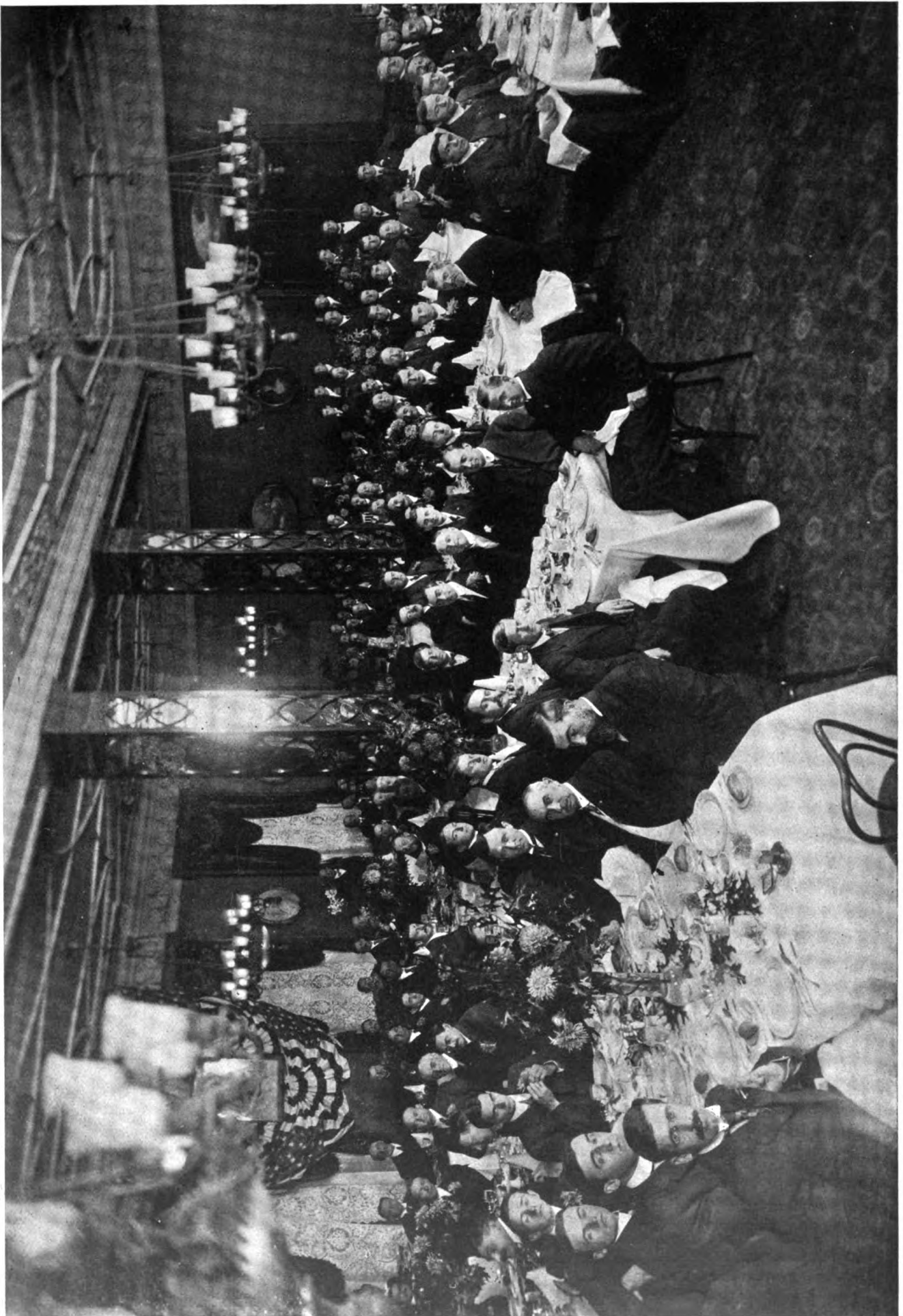
CANNOT BUILD A CAR UNDER \$1,500,

PARIS, Oct. 23.—Gustave Clément, one of the largest automobile constructors in France, and who has been prominent in the industry since the bicycle days, declares that there is not much to fear from the contemplated American invasion. The announcement was made on receipt of the news that a four-cylinder American car was to be placed on the French market at \$600.

"Not only is French workmanship superior to American, but we possess the same tools, and it is utterly impossible to construct a good touring car for less than \$1,500. Light machines built in America are good, perhaps, for the city, but never for the roads."



WHERE THE POPULAR-PRICED BRUSH WAS EXHIBITED.



ANNUAL SHOW LUNCHEON OF THE AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION, HELD AT THE HOTEL MANHATTAN, NEW YORK CITY, TUESDAY, OCTOBER 29

A. M. C. M. A. AUTOMOBILE SHOW LUNCHEON

It was a notable array of automobile interests represented in the annual show luncheon of the American Motor Car Manufacturers' Association, held at the Hotel Manhattan, Tuesday, beginning at 1 P.M. Job E. Hedges filled the toastmaster's rôle in his usual brilliant manner, his vein of seriousness being meagerly interjected into his infectious humor. Benjamin Briscoe, chairman of the A. M. C. M. A. Committee of Management, was the chief spokesman of the "Independents," and H. O. Smith, chairman of its Show Committee, also contributed words of wisdom. In the absence of President Colgate Hoyt, who was said to be busy down in Wall street, ex-President Winthrop E. Scarritt spoke for the Automobile Club of America. General George Moore Smith, chairman of its Show Committee, said that illness had kept him from doing much work for the exhibition, and he generalized more or less about the kind of an automobile that he considered ought to be manufactured. T. F. Moore had something to say about the stock chassis race, which he is endeavoring to promote for a spring event.

Alfred Reeves, general manager of the A. M. C. M. A., came in for a generous amount of credit in connection with the affairs of the association and the success of the show. Secretary S. M. Butler, of the A. C. A., was among those at the speakers' table, and one who realized the enormous amount of labor which devolved upon his shoulders in connection with the show commented upon the lack of public mention of such an excellent soldier, whose work equaled that of a chairman. Telharmonic music and a flashlight photograph were included in the function, which also had souvenirs in the form of scarf pins.

In the course of his remarks, Chairman Briscoe said:

"I wish to welcome you to this our second annual luncheon, and thank you for the encouragement that your presence here lends. This association feels that it has many blessings. The friendliness of the Automobile Club of America; the kindly consideration of the daily press and the trade press; and the well wishes of the trade at large. We believe also that we have the personal friendship and respect and well wishes, perhaps not in a business sense, of those who are not of our particular household of faith. I presume that in an address of this kind one should stick closely to glittering generalities, but permit me to indulge in a few little association statements that tell why we are leaders in the industry. This association is the largest organization in the manufacturing industry. It has done much for its members and for the trade at large, for it has, with a true American spirit, fought for an independence in this particular industry which has undoubtedly done much to bring about a better development for the American automobile. This association bears no ill will toward any; it harbors no malice; and goes along attending to its own business and, if press reports are to be relied upon, its business constitutes a very large proportion of this particular industry. Of course, if it has any time left over, it attends to those who attend to its business. It believes that all the brains and all the ability are not even yet developed to the full benefit of the American motor car, and it also believes that not the only ones are those of the bluest blood or the purest aristocracy who maintain in their headquarters pieces of antique furniture, as it has been demonstrated that much of the antique is but a replica with many evidences of modern handiwork. It believes that success in the automobile business can only be attained by modern methods, and that every movement forward must feel fresher initiative and invention and it opines that the sequestered idol must needs be rejuvenated and renovated constantly to be maintained as a contributory shrine. Now I trust that I may have said nothing the least discourteous or that to it may be taken the slightest umbrage, for there is no class that we admire more, whose friendship we esteem more highly, than that of our friends, the stalwarts, who stick to their principles, even though they are parties to a contract. Our association is open to them and to any legitimate manufacturer in the industry.

"I desire to thank our eminent friend, Mr. Hedges, who so kindly consented to act as chairman of the steering committee on this occasion, and I desire to say to him that this association owes much to his advice and to his counsel. We thank him for it, and thus I pay him his retainer for another year."

The guest list included the following:

- | | | |
|-----------------------|-----------------------|-----------------------|
| Benjamin Briscoe, | Gen. George M. Smith, | William H. Hotchkiss, |
| James Couzens. — | Winthrop E. Scarritt, | Jeff. deM. Thompson, |
| H. O. Smith, | S. A. Miles, | A. R. Pardington, |
| W. M. Lewis, | R. A. Parker, | Robert Lee Morrell, |
| Henry Ford. — | James Joyce, | Frederick H. Elliott, |
| R. E. Olds, | P. S. Steenstrup, | E. V. Stratton, |
| J. B. Bartholomew, | Percy Owen, | H. M. Swetland, |
| A. C. Newby, | C. A. Mabley, | A. G. Batchelder, |
| C. E. Duryea, | H. E. Raymond, | Frederick A. Harris, |
| John Kane Mills, | H. T. Dunn, | H. H. Rice, |
| Paul Gaeth, | C. W. Kelsey, | C. T. Vance, |
| C. D. Rainier, | J. W. Gilson, | J. S. Draper, |
| S. H. Mora, | J. N. Willys, | B. A. Cramm, |
| Job E. Hedges, | Frank Briscoe, | W. A. Woods, |
| Alfred Reeves, | A. M. Bartholomew, | W. M. Remphis, |
| C. G. Stoddard, | L. P. Moores, | W. H. Burchell, |
| C. S. Johnston, | R. A. Whitney, | Horace DeLisser, |
| G. D. Wilcox, | C. G. Luthy, | M. W. Mack, |
| R. Harry Croninger, | Joseph Tracy, | W. Hurlbert, |
| C. B. Hatfield, | R. E. Graham, | W. N. Freeman, |
| W. C. Marmon. — | W. C. Allen, | Earney Everitt, |
| H. C. Marmon, | F. E. Moscovics. — | W. M. Sweet, |
| R. B. McMullen, | E. J. Moon, | Isaac B. Potter, |
| R. M. Owen, | Henry A. Holman, | II. S. Smith, |
| R. E. Renshaw, | W. H. Harrison, | F. R. Dreisbach, |
| J. F. Klink, | K. C. Pardee, | Robert A. Patterson, |
| Fred P. Brand, | Charles Lewis, | Harry P. English, |
| Thomas P. Bailey, | Walter Law, Jr., | F. A. Austin, |
| L. A. Hopkins, | W. N. McIntyre, | W. H. Brinkerhoff, |
| Gaston Plaintiff, | H. M. Woodrough, | H. A. Bubb, |
| A. R. Welch, | W. I. Glasby, | Nicholas Johnatgen, |
| L. H. Perlman, | W. A. Austin, | E. G. Allen, |
| Henry Rawle, | Mr. Robinson, | M. Clemons, |
| A. L. Kull, | C. B. Judd, | W. G. Morse, |
| J. M. Ellsworth, | Charles Barnes, | E. P. Blake, |
| Thomas J. Fay, | W. H. Scott, | R. M. Bates, |
| W. Hildreth, | W. H. VanDervoort, | W. L. Gorton, |
| Paul Lineberger, | Max Grabowsky, | F. G. Goadby, |
| David J. Post, | Morris Grabowsky, | T. P. Myers, |
| Mr. Moeller, | Mr. Hale, | H. G. Edwards, |
| C. S. Jameson, | R. A. Palmer, | George D. Wilson, |
| G. D. Louderback, | F. I. Tone, | Thomas Forbes, Jr., |
| C. J. Meegan, | Neal VanDervoort, | H. W. Nicholson, |
| Charles J. MacIlvain, | A. E. Kennedy, | George C. John, |
| A. D. VanDyke, | E. L. Ovington, | F. J. Peil, |
| C. A. Matthews, | F. L. Holmes, | W. H. Blodgett, |
| Mr. Duncan, | Dr. Clement Smith, | C. E. Alexander, |
| J. F. Billings, | E. W. Gans, | F. L. Loomis, |
| Stewart McDonald, | J. K. O'Brien, | R. E. Hawkins, |
| C. V. Powers, | S. C. Lindorfer, | B. F. Stevenson, |
| S. H. Tucker, | Allen Miller, | W. Horner, |
| James Laughlin, Jr., | James Laughlin, 3d, | Mr. Walburg, |
| John C. Wetmore, | A. N. Jervis, | Duncan Curry, |
| J. C. Kerrison, | R. B. Johnston, | J. T. Sullivan, |
| H. W. Beane, | W. Murphy, | L. C. Boardman, |
| F. A. McAllister, | E. C. Ward, | Lloyd Humphreys, |
| Howard G. Reynolds, | H. F. Donaldson, | G. A. Wahlgreen, |
| G. A. Blanchard, | N. H. Van Sicken, | David Beecroft, |
| Fred J. Wagner, | F. Ed. Spooner, | Charles S. Wells, |
| N. Lazarnick, | A. S. LeVino, | E. E. Schwarskopf, |
| S. Wallis Merrilhew, | W. E. Baldwin, | C. A. Musselman, |
| James Artman, | G. H. Busby, | A. B. Tucker, |
| H. P. Burchell, | W. G. Pierson, | Joseph Goodman, |
| F. W. Roche, | R. G. Betts, | Roy Drake, |
| T. B. Creamer, | J. K. Hiscock, | Frank Crane. |
| L. M. Bradley, | R. B. Johnston, | |

MR. STEENSTRUP ON EUROPEAN SITUATION.

Peter S. Steenstrup, sales manager of the Hyatt Roller Bearing Company, of Harrison, N. J., returned recently from an extended European trip in the interests of his firm. According to Mr. Steenstrup, the foreign outlook could be more promising than it is, though the results of his trip were uniformly successful. According to Mr. Steenstrup, there has been some overproduction, and the foreigners are considerably disappointed at their inability to hold as much of the American market as formerly. Nevertheless, they profess no fear whatever from the possible invasion of Europe by American makers.

A CHAPTER OF GOSSIP OF THE PALACE SHOW

Ever since the Automobile Club of America was organized there has been a persistent worker in the background, one who never seeks the limelight, one ever willing to share with others the credit for things accomplished, and to whose untiring efforts is unquestionably due a vast amount of the success of this great big club with its palatial home in West Fifty-fourth street. Secretary S. M. Butler is the hidden mainspring in the works, a master of detail, patient and diplomatic, seldom ruffled, and treating all comers with uniform courtesy. Were it not for "Sam" Butler the A. C. A. would not have been the powerful factor which it is in automobiling, nor would the organization have continued in the show business after the severance of its connection with the Garden affairs. Butler it was who argued, and successfully too, that the club could not afford to relinquish its work in the direction of show promoting, and, forcing the issue, there came the arrangement with the "Independents" and the notable exhibition of 1906 in the Sixty-ninth Regiment Armory. It will be a day of sorrow for the A. C. A. if it should ever lose the services of its secretary. Presidents are made; good secretaries are born.

* * * *

There is another organization the burden of whose success also traces back to a persistent worker, whose skilful direction of affairs has brought order out of chaos and caused the adoption of a consistent policy which has been of great benefit to the membership. "Al" Reeves has accomplished much for the American Motor Car Manufacturers' Association since he took the office of general manager less than two years ago. The results of his labors were apparent in the January, 1907, show, and they have been even more apparent in the October exhibition which closes to-night. Reeves never seems to weary, and he is always on the job from early in the day until well into the night, if it be necessary. Understanding the value of publicity and knowing how to obtain it, he has made the A. M. C. M. A., from something that was scarcely more than a name, into an association which has caused the "other camp" to be on its mettle and carefully watchful of the moves of the "Independents." Reeves ought to be able to size up the European situation accurately and bring back information upon which the members of his association should realize profitably.

* * * *

Benjamin Briscoe (Maxwell-Briscoe).—"It is the finest show we have ever held. We never did better business and we never had more reason to be satisfied. The class of trade represented at this show has not been affected by the financial disturbance."

* * * *

H. O. Smith (Premier).—"We need one big national show, in which all questions of creed and doctrine shall be dropped; a show of such magnitude that the public will be able to realize what a big industry this is. Probably the best time would be August, the date being arranged to suit the rural populations, which are becoming more and more interested in automobiles. For the good of the industry it would be desirable as far as possible to obliterate the definite marking of the various seasons. The automobile is a practical conveyance, and as such is useful all the year around. The financial disturbance is only temporary and local; we should act cautiously, but without fear."

* * * *

J. B. Bartholomew (Glide).—"There is no doubt that the show has been an excellent one. I should prefer an outdoor show in August, with important races as an attraction. There is nothing to fear from the financial disturbance. Wall street is not the whole country."

* * * *

R. E. Olds (Reo).—"It was unfortunate that a financial disturbance should have arrived at the opening of the show season, for the newspapers have had no space to spare for our do-

ings. October is too much in the fall to be the most satisfactory show date. January would suit best of all. Shows are no longer useful as a selling force. I should like to see a huge outdoor exhibition in summer. At present the public does not realize what a stupendous industry this is."

* * * *

S. H. Mora (Mora).—

"Is the early show satisfactory?"

"Well—have you had your dinner?"

"Yes."

"Will you have another?"

"No, thanks."

"Just the same with the shows. We have been handling automobiles all the summer and we have no appetite for another feed. I voted for an early show, but now think December the finest proposition. The financial situation won't harm. Nineteen hundred and seven was a slow year; numbers of people kept their old cars; next season there will be a proportionate boom."

* * * *

A. C. Newby (National).—"Early shows are good, but this one is not early enough. The best proposition is an outdoor show in August. Before the Long Island parkway was proposed I was interested in a five-mile race course on Long Island, which would have been an ideal spot for a national summer outdoor show; an attractive race program would have guaranteed huge crowds. We have still need of such a track, and if the East does not build it the West will. There is an excellent site for such a course in Indiana, in which a number of us are interested. Next year the show will probably be in September, and the following year will see it in August, and outdoors."

* * * *

R. Harry Croninger (Pennsylvania).—"Shows do not now sell automobiles. They are valuable as a means of publicity, but the actual selling is done by agents, who come directly to the factory and have no real need of a show. I am not an advocate of a yearly show, nor of a yearly model; thus date is immaterial to me. Sales have been few, for the public is waiting for the Garden show, and the financial disturbance has had a bad influence. But the trouble is only local and has not even been felt in a city so near as Philadelphia."

* * * *

H. B. Larzelere (Chadwick).—"An excellent show in every respect. Sales on the whole have been poor, though we have no complaint to make. A number of small firms from the West, exhibiting for the first time, have forgotten to reckon with the big manufacturers of cheap cars, and will have to go under. There will be a weeding out next season, and during the following year more money than ever will be made in the automobile business. Shows are now of minor importance as a retail selling factor."

* * * *

Howard Marmon (Marmon).—"We have had to hustle to get ready for the earlier show, for it was necessary to gain a couple of months. The new date is satisfactory from a manufacturing standpoint, for it gives more time to produce the year's models. Two shows in close succession are good. Hundreds who would have had to decide between one or the other can now visit both."

* * * *

N. A. A. M. Had Small Amount in Knickerbocker.—A rumor came to the surface during the week that the N. A. A. M. had a considerable amount deposited in the Knickerbocker Trust Company. The report was erroneous, and General Manager S. A. Miles said that the amount was comparatively small, for the National Association has its funds deposited elsewhere.

BROOKLANDS RACING SATISFACTORY.

LONDON, Oct. 24.—Last Saturday's meet at Brooklands—the fifth and final for this season—proved to be the most interesting that has yet been held. There was an entire absence of the interminable waits between events so characteristic of previous meets, and a new rule requiring all cars to be filled with exhaust boxes greatly added to the comfort of the spectators.

Prompt to time the Medium Handicap Sweepstakes was run off, the limiting cylinder dimensions (D³N) being 104-122. Of the nine entrants, the most interesting—the Brasier which won the last Gordon-Bennett—was unable to start; nevertheless, plenty of excitement was provided by the race, which led to a win by the 48-horsepower Metallurgique, with an average speed of 62 miles an hour over the five-mile course. A Pipe was second and Huntley Walker's Darracq was third.

Without any delay the 26-horsepower cars were lined up for the next event. A close race between a Metallurgique and a Napier proved a narrow victory for the latter, third place falling to the Arroll Johnston. The winning Napier was originally a six-cylinder model, but to bring it within the prescribed limits the two front cylinders were removed, a new crankshaft and valve gear fitted, and a fast and efficient four-cylinder car was thus evolved.

The October Handicap was won by Fry's new 75-horsepower Mercedes (really one of the 135-horsepower racers). This car also won the race for 90-horsepower cars with an average speed of 92 miles an hour for the 21 miles. In this latter race a 120-horsepower Fiat should have taken second place, but at the entrance to the finishing straight the driver mistook the signal and kept to the outer course, allowing the Hotchkiss 130-horsepower car to come up meanwhile and gain second award.

The 60-horsepower race brought out another Napier as a winner, as before closely followed by a Metallurgique. A higher powered Napier than the winner only managed to take third place.

The best race of the day was seen in the following event, a

private match between a Napier and an Iris—a Dennis car, which also ran, being out of it from the first. Right at the start the two cars got together and at half way but three yards separated the Napier from the Iris, which followed it. Nearing the finish the Iris made a sudden spurt (presumably oxygen), but just failed to win by the length of the Napier's bonnet.

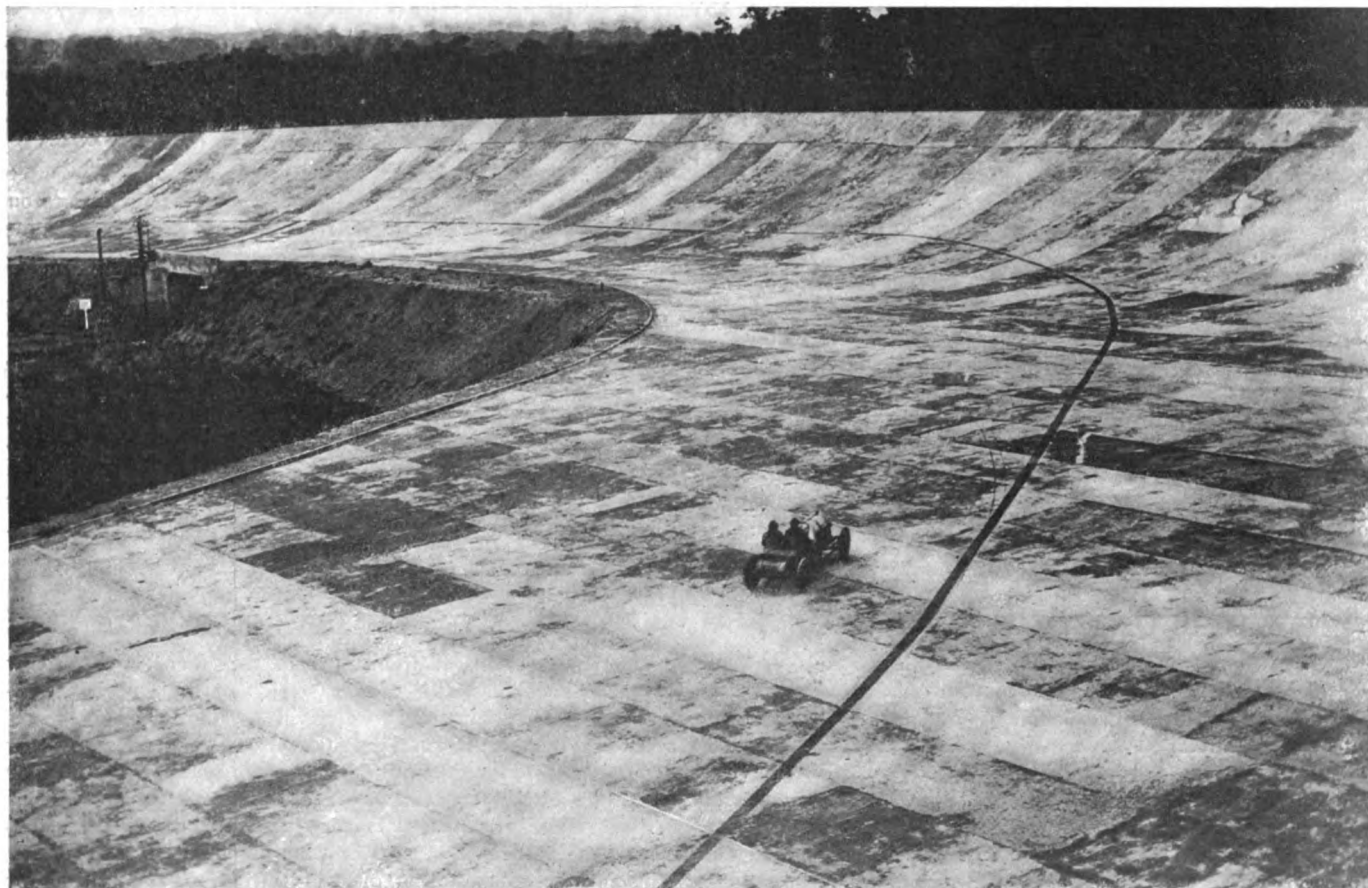
No further race meeting will be held on the track this year, for, although a big meet was planned for the time of the Olympic show next month, the trade rather objected to such a diversion from serious work and the scheme was in consequence abandoned.

EDGE TO BEAT RAILWAY RECORDS.

LONDON, Oct. 24.—The ubiquitous S. F. Edge is not at all satisfied with his recent 24-hour record and proposes to startle the world with another big achievement. The fastest express train between London and Edinburgh travels over the North Western and Caledonian lines and is booked through in eight hours, an average speed of just 50 miles an hour. Edge has wagered a big sum with the Hon. Dudley Carlton that he will cover this 400 miles in five and one-half hours in a 60-horsepower Napier, equipped with flanged wheels to run on the railroad tracks. If the necessary permission can be obtained the run will shortly take place. The loser will pay the amount of the wager to the Railwaymen's Orphanage.

U. S. A. INTERESTED IN PARIS CONFERENCE.

PARIS, Oct. 21.—Alcohol, touring and motor boats are the three subjects for special international conferences during the three weeks of the Paris Salon. Most important results are expected from the conference on denatured alcohol. Frank Rutter, of the United States Department of Agriculture, has written to Gustave Rives asking for information on the matters to be discussed at the denatured alcohol conference, and declaring his intention of being present.



BROOKLANDS COURSE AS SEEN FROM THE MEMBERS' ENCLOSURE, SHOWING VAST EXPANSE OF TRACK SURFACE.

TO SECURE GOOD ROADS: MAKE FARMER AN AUTOIST

PHILADELPHIA, Oct. 28.—Many of the more prominent local automobilists journeyed out to Swarthmore last Saturday afternoon, where fully 250 enthusiasts had gathered at Strath Haven Inn, as guests of the Good Roads Association of Delaware county, to discuss the various phases of improved highways. First, however, they discussed a bountiful banquet, after which, without moving from their places at the table, the convention was called to order. Besides the local lights, there were several prominent good roads enthusiasts present from New Jersey, Delaware, New York, and other States. One of the headliners, State Highway Commissioner McDonald, of Connecticut, failed to reach Swarthmore in time, but sent a telegram.

The president of the Automobile Club of Delaware county, J. W. Weeks, was in the chair, and after announcing the objects of the gathering introduced "Good Roads" Sproul, the State Senator after whom the present good roads law of Pennsylvania is named. The Senator urged the people—the townships and the boroughs—to take hold of the problem at once and not wait for help from the State, although he admitted that Pennsylvania would eventually be forced to follow the example of New York in the building and maintenance of main highways.

R. J. Baldwin, road supervisor of Birmingham township, made quite a hit when he urged the automobilists to endeavor to interest the farmer in the motor vehicle. "Get in touch with the makers of \$350 and \$400 cars," he said, "and find some means of introducing these machines among our farmers, and it would not be long before the latter would be anxious to co-operate with us. And the result would be such that there would be no difficulty in carrying on the work after a start had been made. Improve our pike roads and the \$30-an-acre farms would soon command

\$100 an acre. As an instrument in promoting the good roads cause there is nothing in the same class with the automobile. I urge you to make automobilists of our farmers."

So impressed was President Weeks by Mr. Baldwin's suggestion that before introducing the next speaker he promised to introduce the matter at the next meeting of his club.

William I. Schaffer, official reporter of the Supreme Court of Pennsylvania, said that "as a Delaware countian, Senator Sproul had begun the agitation that had resulted in the passage of the present good roads law, it was eminently fitting that our county should lead the State in interest, enthusiasm and the fight for proper legislation on the subject. The State," continued Mr. Schaffer, "should build great highways from Philadelphia to Pittsburgh, from the latter city to Erie, thence to Wayne county and along the western border of the State."

Highway Commissioner Joseph W. Hunter expressed himself in favor of a \$25,000,000 or \$50,000,000 loan, as the project was much too vast for the township to handle properly. He called attention to the fact that since he took charge of the State's good roads work over 300 miles of improved highways had been built. "The mere building of good roads, however," said the commissioner, "is the easiest part of it. The real problem is the future maintenance of these improved highways."

Addresses were also made by Isaac B. Potter, of New York; District Attorney McDade, of Delaware county, and J. R. Robinson, chairman of the Law Committee of the Automobile Club of Delaware county. Before adjournment President Weeks announced that another meeting would be held in a few weeks to take initial steps for the improvement of the Wilmington and the Baltimore pikes.

SENSIBLE MASSACHUSETTS PLAN OF OBTAINING NEW LAW

SPRINGFIELD, MASS., Oct. 28.—At the suggestion of former State Senator M. A. Morse, of Belchertown, now a lecturer of the State Grange, a committee of the State Grange, representing the farmers, and a committee representing the automobile clubs of the State will hold a joint conference for the purpose of agreeing upon a new automobile law to be introduced into the Legislature during the next session.

By means of the conference former Senator Morse hopes to overcome the prejudices that exist among the farmers against the automobile, owing to ignorance, and to show the automobilists wherein they have transgressed against the farmers' rights. Such a conference, he believes, will result in a State law which will be more satisfactory to both sides than any of the present legislation.

For the automobilist, it will be the purpose of the conference to inculcate into the new law an article permitting the autoist to go as fast as he pleases on an open straight road where there is

absolutely no danger to pedestrians, and to do away with the closed road situation existing in a large number of the towns in the Commonwealth, notably Nantucket.

For the farmers, it will be the desire of the grange committee to get fair, equitable restrictions on speed near crossroads and on curves, and general rules of the road that will reduce to a minimum the chances of the farmer's horse taking fright at the passing of an automobile.

Mr. Morse will place his scheme before the annual meeting of the State Grange in Pittsfield in December, and he has already received assurances from members of the granges all over the State that the plan will be considered favorably at that session. Interviews with leading autoists in the different parts of the State have convinced him that the automobilist will be quick to embrace the scheme, and the prospects are now that a first-class State law will be drafted at that time which will receive the support of the farmers and autoists throughout the entire State.

NEW YORK OFFICE FOR REGISTRATION.

A convenience to metropolitan automobilists who desire to tour in New Jersey and Pennsylvania and find it necessary to secure their registration in something of a hurry, will be found at 197 Fulton street, New York City, where the president of the Brooke Automobile Supply Company acts as an agent for the New Jersey Commissioner of Motor Vehicles, and also as a representative of the Pennsylvania State Highway Department. This makes it possible to accomplish registrations and at the same time have your car equipped with hangers and lamp numbers five minutes after signing the necessary applications.

RESTRICTIVE LEGISLATION IN ONTARIO.

The report emanates from Toronto that there is to be war on the automobile at the coming session of the Ontario Legislature. The initiative will be taken by the members representing a number of rural constituencies. It does not appear to be a party question, for those planning action are seated on both sides of the House, though the large majority are Conservatives. It is reported that an authenticated list of casualties during the past eight months is being prepared for presentation. This includes the ditching of over thirty farmers' vehicles on rural roads.

REEVES TO LOOK INTO EUROPEAN MARKET

LONDON'S annual automobile show at Olympia and the Automobile Club of France's tenth annual salon in the Grand Palais are to be visited by Alfred Reeves, general manager of the American Motor Car Manufacturers' Association. The visit is the result of a decision arrived at at Monday's meeting of the Committee of Management of the association, its manager being charged to inquire into the European situation with a view to a possible invasion of the foreign field by the fifty-one manufacturers holding membership in the A. M. C. M. A. The London show being held from November 11 to 23 and the Paris exhibition from November 12 to December 1, Mr. Reeves will sail for Europe soon after the closing of the Palace show.

In addition to visiting the two national exhibitions, Mr. Reeves will make inquiries as to the best methods of selling cars, whether through agents or branch houses, the best plans of advertising for foreign countries, and other matters. In view of the entirely different methods of selling in most of the countries of Europe, and the small amount of attention which has

hitherto been paid to this matter by American firms, it is expected that the report of investigations which Mr. Reeves will present before his association will be of considerable interest. It is also proposed to consider the advisability of a joint American exhibition at the Paris and London shows next year to be participated in by all members of the A. M. C. M. A.

At the same meeting of the association it was decided to work further on the matter of admitting gasoline trucks to the docks and piers of New York, and to start a campaign in other seaboard cities. About half the docks in New York now permit their use.

The idea of a stock chassis race in the spring under proper management was strongly endorsed. It was recommended that it be held early in May.

B. F. Everitt of the Wayne Automobile Company was elected a member of the Committee of Management. In attendance at the meeting were Benjamin Briscoe (Maxwell), Chairman; R. E. Olds (Reo), W. H. Van Dervoort (Moline), Charles Lewis (Jackson), C. C. Hanch (Marmon), J. H. Bartholomew (Glide), A. C. Newby (National), and Charles E. Duryea.

BRITISH MAKERS AFTER AUTOIST OF MODERATE MEANS

LONDON, Oct. 24.—With the approach of the Olympia Show, the usual rumors of immense price reductions are in evidence, but direct inquiry reveals the fact that, for the most part, these reductions are merely nominal, and in cases where a distinct drop in prices is to be made it is occasioned by the production of a lower powered model. Napier started the list of 1908 announcements with the news of their 30-horsepower six-cylinder car, to sell at \$2,875, chassis with tires. This is undoubtedly a big drop for Napier, whose previous six-cylinder models have been listed in the region of \$5,000, but by complete standardization this lower powered but high grade model becomes a commercial proposition at the low figure mentioned. Daimlers, too, are credited with the production of a new model of about 20 horsepower, to have live axle drive, and selling at \$2,250 or so. Lower down the scale Humbers, at their immense new

Coventry factory, plan to turn out 4,000 cars of 10-12 horsepower at \$1,375, and it is around this power and price that the keenest competition will center. Some of the highest grade French makers are reported to be busy with cars of this type, and the exclusive manufacture of high-powered cars will be abandoned. The Mercedes people themselves were supposed to be bringing out a medium priced car, but this plan will probably not mature until 1909 season, though the Austrian branch of the Mercedes company is straightway putting on the British market a 25-horsepower car at a moderate figure.

Full details of the new season's productions of most of the makers are not yet available, but there is no doubt that attention is now everywhere turned to the "autoist of moderate means," and it is for his favor that the manufacturers and their agents will struggle next year.

"ISOLATED" EXHIBITS DURING SHOW SEASON.

While the fortnight of shows is in progress the Waldorf-Astoria and the Breslin hotels each invite to a one-firm exhibition. At the former the American Locomotive Automobile Company exhibits its 1908 models built under the French Berliet license. Prominent in the series is the new six-cylinder touring car and a new shaft-driven four-cylinder town car fitted with closed body.

In the public room on the ground floor of the Breslin the Atlas runabout is being exhibited during the Palace show week and will be replaced during the Garden show by a new Oldsmobile.

The Rambler cars, unable to secure all the space their manufacturers wished for them in the Palace show, are being exposed at the showrooms of Homan & Schulz Company, West Sixty-second street. Three cars and one polished chassis are on view.

GEARLESS NOT MAKING TWO-CYCLE MOTORS.

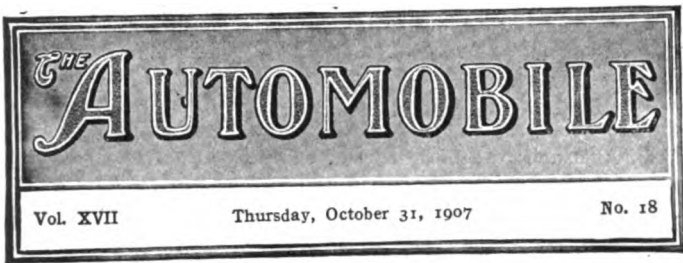
In the last issue of THE AUTOMOBILE, under date of October 17, it was erroneously stated, in giving a description of the exhibit of the Gearless Transmission Company, Rochester, N. Y., that this concern was devoting its attention to the manufacture of four and six-cylinder cars equipped with two-cycle engines. The error was due entirely to a misunderstanding, as this firm only builds four-cycle engines in the four and six-cylinder sizes.

ANOTHER AUTOMOBILE FROM NEW HAVEN.

NEW HAVEN, CONN., Oct. 28.—The Connecticut Automobile Works, a stock company of out-of-town capitalists, has leased one of the largest factories in this city, formerly occupied by the National Folding Box & Paper Company. This factory is to be equipped with new modern machinery for the manufacture of automobiles and commercial vehicles and will start operation early next month. The company will manufacture three distinct styles of automobiles, touring cars, runabouts, and trucks. The entire building, which is one of the largest in this city, will be occupied by the new concern, and on the first floor will be a large showroom and a demonstration room.

BERLIET "SIX" SELLING PRICE IS \$7,500.

Owing to an error in the caption under the illustration of the six-cylinder American Locomotive car, manufactured under Berliet license by the American Locomotive Automobile Company, and appearing in our last week's issue, the price of the latest production of this firm was made to appear ridiculously low. Instead of \$4,500, it should have read \$7,500. The car was not exhibited at the Grand Central Palace show, but during the fortnight of shows is forming the center of attraction at the company's special salesrooms in the Waldorf-Astoria.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor

R. T. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT

A. B. SWETLAND, Business Manager

LOUIS R. SMITH FRANK B. BARNETT

W. I. RALPH, 1035 Old South Building, Boston, Mass.

C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico	- - - - -	One Year, \$2.00
Other Countries in Postal Union, including Canada	- - - - -	One Year, 3.00
To subscribers—Do not send money by ordinary mail. Remit by Draft, Post-Office or Express Money Order, or Register your letter.		

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hilffe & Sons, Limited, 20 Tudor Street, London, E. C
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.
The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903, and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905	- - - - -	730,000
“ “ in 1906	- - - - -	791,000
“ “ This issue	- - - - -	18,000
“ “ Since January 1	- - - - -	726,650

American Makers Fill the Garden for the First Time. Though the show which has held the boards at the Grand Central Palace during the past week will go down into history as the first to have the honor of being an “all-American” show, the fact that Saturday the Madison Square Garden will be thrown open to the public to view an aggregation of cars and accessories also of purely American manufacture seems of more considerable import, due to the fact that much of the history of American automobile shows clusters about the Garden. Our British cousins have taken an immense amount of patriotic pride in referring to cars assembled in toto from French and German parts as “all-British,” but this is not the case with this all-American show, as it is everything that the name implies, and as such cannot fail to mark an epoch in the history of the industry. The early struggles of the American maker, both in building and showing a practical automobile, are all inseparably associated with the Garden, so that the fact that American makers are now filling it from top to bottom with products in the shape of cars and accessories is of far greater significance than may appear at first sight. In all previous years foreign cars have formed a very appreciable part of the showing, gradually dwindling until now, when they have been eliminated entirely. As the number of exhibitors is greater than at any previous affair of the kind, it bears striking testimony to the successful growth of the American industry during the few short years that mark the period of its existence.

Adjusting the Rights of All Users of the Road. In an article carefully prepared, giving the automobile its full meed of consideration and setting forth the rights of other vehicles of the road, Henry B. Anderson, in the November *Century*, presents the problem concisely in this sentence:

“The manner of use is the important consideration, and it is plain that there is a nice balance to adjust between the rights of those endeavoring to benefit by this means of transportation and those who are unwilling or unable to do so.”

Mr. Anderson says the right to use the road “is a common one,” and further on remarks that “what is done in the way of regulation should encourage the most efficient methods of transportation.” A point is made of the difference between technical speed violation and driving to the public danger, and reference is made to the practice of “trapping” on measured stretches where traffic is not congested and giving no heed to reckless driving in crowded thoroughfares as long as it is within the legal speed.

Mr. Anderson contends for the licensing of drivers, calling attention to the fact that “An inexperienced man may buy a car and at once go forth to experiment upon the public.”

The dust nuisance, Mr. Anderson thinks, and other minor evils of automobiling is awakening the whole country to an interest in the improvement of the roads. The benefits of better highways “will not be wholly to those who motor for pleasure or transport, for ultimately will come a local cheap and rapid distribution which may render communities largely independent of railways.”

The comments of this writer are eminently fair and well worth the perusal of the owner, the man who hopes some day to own and those who have the desire and not the means to consummate their wish. But some day everyone, in some form or another, will benefit by motor-driven transportation.



To What Extent Does the Auto Damage the Roads?

“Give a dog a bad name and hang him” has seldom been better exemplified than in the case of the accusation against the automobile in the matter of road damage. It must be conceded once and for all that the automobile does wear out the roads—the very best of roads—but whether it does so to anything like the extent that those road supervisors who can only view the matter through prejudiced eyes would have the rest of the world believe, is a horse of quite another color. But it has become quite the fashion to blame the automobile for anything and everything, from the spread of the gypsy moth to a falling off in church attendance, and so it is that on it falls the entire onus of utterly ruining roadways, which, it must be inferred, would otherwise last forever. Both the automobile and the road damage it does are new things, and, as a consequence, there has been too much of heated accusation on one hand, with retort in kind on the other, and far too little calm consideration to have made any progress possible.

The roadbuilder and local taxpayer point with wrath to newly corrugated surfaces and disintegrated top dressings that bear the tell-tale imprint of pneumatic tires, and, in kindred spirit, the autoist resorts to the *tu quoque* argument, calling attention to the road-destroying ruts made by narrow tires and holes dug by sharp iron hoofs. It is high time to recognize the fact that roads cannot be used without wearing out, and everything passing over them contributes to the wear to some extent. But we have been accustomed to the unsightly and destructive ruts and holes of horse traffic ever since there has been such a thing as a road; the damage created by the automobile is something novel. Hence, the primal cause of the road's rapid disintegration is overlooked. Unfortunately, however, the automobile takes up the work where the horse leaves off, and, the evidences of its crime being so different, it is accused of being responsible for the entire damage. It does not take an expert road-builder, to show the fallacy of such a theory, and any unbiased observer must admit that the automobile's share of damage does not exceed that of the horse. But a moment's consideration is necessary to show that the automobile has advanced the art of road-building and the spread of good roads more than any other single agency.

TO RACE OR NOT TO RACE; ON CIRCULAR HORSE TRACKS?

It would appear from the suggestions of the special commission asked to consider the question of continuance of sanction granting by the A. A. A. Racing Board for competition on tracks originally constructed for horse racing, that such future competition will be so hampered with restrictions as to make it more or less prohibitive in many cities where such tracks exist.

The special commission, consisting of S. A. Miles, of the N. A. A. M.; Benjamin Briscoe, of the A. M. C. M. A.; Percy Owen, of the Importers' Automobile Salon, and President William H. Hotchkiss and Racing Chairman Jefferson deMont Thompson, of the A. A. A., held a prolonged session at No. 437 Fifth avenue, Tuesday morning. Charles Clifton, of the A. L. A. M., was unable to be present.

After a thorough and exhausted discussion, it was the opinion of the committee that no definite action on the subject be taken until the various suggestions below embodied should be referred to the several organizations represented on the committee. The suggestions will at once be submitted for action to the various organizations, and another meeting will be held at an early date. In specifying the conditions under which sanctions should be granted, the commission put forth these propositions:

- 1.—That the application be made through or by a club or organization which is a member of the A. A. A.
- 2.—That such application be so made at least six weeks before the date set for the contest; provided that in case a sanction has been granted for a contest on such track prior to the date of such application and after the investigation and under the conditions here outlined, such second or other application can be made within a shorter time before the date set for the contest.
- 3.—That such application be accompanied by a photograph or photographs, showing the turns of such track and the location of the grandstand and public enclosures thereon, and also by an accurate drawing and specifications of the track, fences, and structures adjacent.
- 4.—That such application be also accompanied by a certificate of such club or organization, that it has examined such track and the fences and buildings adjacent, and that, in its opinion, the contest or contests for which sanction is asked can be held thereon with reasonable safety to spectators and participants; which certificate must contain an agreement upon the part of such club or association that the public will be limited to certain portions of such buildings or grounds (specifying them), and excluded from all other portions thereof.
- 5.—That such application include the nomination of a person or persons whom or from whom the Racing Board may appoint a referee, who, at such contests, shall be the official representative of such Board, and charged with the duty of compelling the observance of all stipulations specified in such application and sanction, as well as the rules of the Racing Board in particular as to the competency of drivers and the mechanical condition of cars.
- 6.—That sanctions on such applications be granted by the Racing

Board only after an investigation of the track, fences, buildings, and adjacent grounds, to be made by such Board or a member of it or a competent engineer appointed by it for that purpose.

- 7.—That all sanctions granted by the Racing Board specify
 - (a) The number of cars which may take part in any heat, and
 - (b) The upward limit of the horsepower of such cars, the same to be fixed by a formula to be subsequently announced, as to which limit of horsepower and as to which formula the Committee requests the advice of the various organizations represented.
- 8.—That applications for sanctions be accompanied by a sufficient fee, to be fixed by the Racing Board, to cover all its expenses in connection with the examination of the track and its surroundings, as well as the reasonable compensation and expenses of any referee it may appoint as its representative.

As a part of the proceedings, a report was presented summarizing the vote of the A. A. A. clubs which have, thus far, taken action for or against the granting of future sanctions on horse tracks as now constructed:

In Favor of Sanctions Unqualifiedly.

Milwaukee A. C. Motor Car Racing Association of Baltimore.

In Favor of Sanctions but with Restrictions.

Chicago A. C. Quaker City Motor Club of Philadelphia.
Bay State Automobile Ass'n.

Against Such Sanctions.

Cincinnati A. C. Cass County (Ind.) A. C.
Massachusetts A. C. Central Pennsylvania A. C.
Pittsburg A. C. Janesville (Wis.) A. C.
Rhode Island A. C. Auburn (N. Y.) A. C.
Rochester A. C. Grand Rapids (Mich.) A. C.
Buffalo A. C. Schenectady (N. Y.) A. C.
Cleveland A. C. Worcester (Mass.) A. C.
Wilkes-Barre A. C. Long Island A. C.
Albany A. C. Weld County (Col.) A. C.
Wilkesburg (Pa.) A. C. St. Louis A. C.
Springfield (O.) A. C. Owatonna (Minn.) A. C.
Detroit A. C. N. J. Auto. and Motor Club.
Brockton (Mass.) A. C. Lima (O.) A. C.
Peoria (Ill.) A. C.

Against Sanctions in Opinion of Secretaries (No Action).

Oswego (N. Y.) A. C. Bloomington (Ill.) A. C.
Springfield (Ill.) A. C.

No Action Either Way.

Springfield (Mass.) A. C. New Britain (Conn.) A. C.
Malden (Mass.) A. C. Adirondack A. C., Sandy Hill, N. Y.
Washington (D. C.) A. C. Binghamton (N. Y.) A. C.
North Jersey A. C.

A majority of the clubs so voting, however, expressed the belief that automobile racing should be continued on either specially constructed tracks, or, under restrictions and supervisions which would make such racing safe to spectators and participants. The call for this vote was not sent out until October 7, hence many clubs have not yet taken official action.

TRADE DIRECTORY IMPROVED AND ENLARGED.

Keeping pace with the extraordinary growth of the automobile industry, "THE AUTOMOBILE Trade Directory," published quarterly by the Class Journal Company, Flatiron Building, New York City, has increased in size and importance with each succeeding issue. The October number, which has just made its appearance, has been completely revised and rearranged and contains a number of new features, among them being the listing of trade names as well as manufacturers' names in alphabetical order. The book thus comprises practically a double index of every automobile manufacturer, maker of accessories, and all firms connected with the operation and maintenance of automobiles. As an example of the completeness of this issue it might be mentioned that even such subjects as putty, thread, lamp wicks, etc., are listed. Steel alone has been covered by a dozen classifications, which include all the alloy steels, such as chrome nickel, nickel, manganese, and vanadium steels. The listing of the manufacture of special machinery and machine tools used by manufacturers and repair men alone requires eight pages and over fifty headings.

The growth in size of the publication will best be seen by a comparison with earlier numbers. In April, 1904, "THE AUTOMOBILE Trade Directory" contained 66 pages, 19 advertising pages, and 240 classified headings. The latest number contains a total of 296 pages, 144 advertising pages, and nearly 500 classified headings, and lists about 4,000 companies.

A. A. A. ISSUES A YEAR BOOK.

The A. A. A. has issued its first "Year Book," containing all sorts of information about the national organization of automobilists. There is a brief history of the association since its formation in 1902; chapters on legislative, touring, good roads, and racing boards; lists of officers and club members of the various State associations; copies of the Federal registration bill, and also of the uniform State motor vehicle measure; information as to the plan of forming State associations and clubs; a table of existing State laws; list of road and track racing records, as well as half tones of the officers, and other material. President William H. Hotchkiss is really responsible for the issuing of the "Year Book," the work having been accomplished under his immediate direction. All members of the association will receive a copy of the book, and the first edition will consist of 20,000 copies.

A. A. A. MEETINGS DURING GARDEN SHOW.

- Meeting of the A. A. A. Touring Board, Wednesday, Nov. 6, 2 P.M., No. 437 Fifth avenue.
- Annual meeting of the A. A. A. Board of Directors, Thursday, November 7, 10 A.M., No. 437 Fifth avenue.
- Meeting A. A. A. Racing Board, Thursday, November 7, 3 P.M., No. 437 Fifth avenue.
- A. A. A. Good Roads Convention, Friday, November 8, 10:30 A.M., No. 437 Fifth avenue.
- Meeting New York State Automobile Association, Friday, November 8, 2:30 P.M., No. 437 Fifth avenue.

EVENTS ARE NOW MULTIPLYING IN CLUBDOM

WORCESTER CLUB BEGINS WINTER SEASON.

WORCESTER, MASS., Oct. 28.—Worcester Automobile Club opened its indoor entertainment season Thursday night, when Colonel Fergus A. Easton told of his 2,140-mile trip through Massachusetts, New Hampshire, Vermont, Canada, and New York the past summer. He was followed in the smoketalk by Captain W. J. H. Nourse, who accompanied him a portion of the trip. This was the longest single trip taken by a Worcester club member this season. Colonel Easton told of the first motor-driven carriage he ever saw, in Glasgow, Scotland, in 1849, and of a previous 1,300-mile trip into Virginia last year in a single-cylinder Cadillac. The last trip of which he told was in a four-cylinder Stevens-Duryea. He ran 1,868 miles before he got a puncture. He found it easier to get a broken spring replaced in Canada than in Albany. He found no roads worthy his commendation outside of Massachusetts. Colonel Easton spoke highly of the information which he received in advance of his trip from the Worcester Automobile Club and the touring board of the A. A. A., both as to rates and customs necessities.

President John P. Coghlan has returned from his trip to London and other British cities. The primary object of the trip was to get the benefit of a sea voyage. C. Leslie Chamberlain, of the club's board of governors, also returned Wednesday from a trip to Europe. J. J. Quinn, of the club, and Mrs. Quinn started last week on a six weeks' tour of Great Britain.

President Arthur D. Van Dyke, of the company which makes the Hatfield buggyabout at Miamisburg, Ohio, a member of the Worcester club, last week registered the first car of that type to be registered in the State. This, with a Holsman registered by John H. Bennett, are the first motor vehicles of this type to be registered in Worcester.

Assistant Secretary Robert M. Pratt, of the Worcester club, has the past week been planting warning signs for motorists on the main route between Worcester and Springfield.

YORK CLUB PROSPEROUS AND OPTIMISTIC.

YORK, PA., Oct. 28.—With a view to promoting interest in the York Automobile Club, the officers have announced that a series of spring tours will be held. The club is in a good financial condition, and the pastime was never more encouraging to the patrons and dealers alike, than at the present time. Announcement has been made that each one of the members of the club will be presented with an official York A. C. flag. This flag will be red and white, with the red body and white lettering, bearing this inscription: "York Automobile Club." A busy winter season is planned by the auto members, and a series of lectures along the general auto line has been suggested.

Local autoists cannot help but look with a sense of pride to the popularity of the York built "Pullman" car, which has sprung into prominence within the past year or two. Extensive improvements are being made at the local plant, and it is hoped by the promoters that next season's output will be nearly doubled.

CONSOLIDATION OF CHICAGO AUTO CLUBS.

CHICAGO, Oct. 28.—There is a possibility that the Chicago Automobile Club and the Chicago Motor Club may be consolidated, and negotiations to this effect are in progress. Probably half of the 140 members of the Motor Club belong to the other organization, which possesses a thoroughly up-to-date clubhouse in Plymouth place and some 500 members. It is understood that the Automobile Club approached the Motor Club in regard to amalgamation, since the latter body appears to have a most energetic contingent of enthusiasts who have conducted several successful events of a competitive nature. The Motor Club will hold a special session, November 12, to vote upon the proposition.

A. C. OF PHILA.'S FIFTH REGULARITY RUN.

PHILADELPHIA, Oct. 21.—Saturday, November 2, the fifth annual regularity run of the Automobile Club of Philadelphia for the H. Bartol Brazier cup will be decided over a cross-country course measuring something over 80 miles in length. Starting from the clubhouse at 8 A.M., the route lies out the Lancaster Pike to Paoli, across to West Chester, thence to the Schuylkill river at Phoenixville, and on through Jeffersonville and Kennett Square to the starting point. The Tours and Runs Committee, which is in charge of the affair, has laid out a time schedule which embraces the best possible time that can be made without fracturing the town and State speed laws. The driver coming nearest to the schedule will be awarded the cup. To prevent over-speeding secret checking stations will be established at various points along the route. As the schedule adopted is well within the powers of any present-day car, there will be no handicaps allowed; the usual two-minute variations allowed for arrival at checking stations will also be cut out. The affair is, to all intents and purposes, a legal speed limit run, and, although not so announced, any competitor who comes in ahead of his schedule may lay himself open to prosecution by the authorities.

GOOD ROADS PRIZES BY MONTREAL CLUB.

MONTREAL, QUE., Oct. 28.—The directorate and several members of the Automobile Club of Canada (Montreal) journeyed this week to St. Genevieve in order to be present at the distribution of prizes offered to the land owners of that municipality through the Council of St. Genevieve in June last for the improvement of the roads in that district. The sum of \$200 was divided in three classes of prizes. The first class prizes were for roads over three arpents, second class for roads between one and three arpents, and third class prizes for roads of less than one arpent. The winners were much pleased with the result, and a large number of landowners who had not taken part stated that they were in favor of the movement and that next year they would compete.

Duncan McDonald, president of the club, remarked that the present success has not only made a better feeling between the farmers and autoists in general, but will have the effect of creating more interest next year in improving the roads.

BUFFALO CLUB TO ADMIT WOMEN AS MEMBERS.

BUFFALO, N. Y., Oct. 21.—It has been decided by the board of governors of the Automobile Club of Buffalo that hereafter women autoists may become members of the organization. One applicant has already filed her blank for membership. There are many women in Buffalo who own automobiles and who are desirous of becoming attached to the Automobile Club.

The club now has 1,023 members, no less than 96 new members being added last Thursday afternoon. This makes the Automobile Club of Buffalo the largest local automobile organization in the country. As several applications have been received since last Thursday the directors have deemed it advisable to change the by-laws so as to admit a total membership of 2,000. At present the by-laws admit only a membership of 1,000.

ROCHESTER CLIMB PRIZE GOES TO PACKARD.

ROCHESTER, N. Y., Oct. 28.—As a result of a protest filed by J. J. Mandery against the Franklin car which made a new record of 49 seconds for the course at the annual climb of the Rochester Automobile Club at the Dugway Hill in Penfield, October 19, Mr. Mabbett, who entered the car, has withdrawn it. This leaves G. D. B. Bonbright, with a Packard car, the winner of event No. 11. His time of 51 seconds now stands as the fastest time of the day.

MAXIM TO BRING OUT A LINE OF ELECTRIC VEHICLES

HARTFORD, CONN., Oct. 28.—It has just developed that Hiram Percy Maxim, who quietly severed his connection with the Electric Vehicle Company as chief engineer last summer, to take up a line of work about which no details were forthcoming other than that it had to do with the automobile field, has been working on a new line of electric vehicles. Associated with him is T. W. Goodridge, and the firm title is Maxim & Goodridge, which will also be applied to the vehicles themselves. Both have been devoting their attention to the design of a new electric victoria phaeton, as pleasure vehicles will be turned out at first, though regarding future plans there is nothing definite known at the moment. So far as appearance goes, the new car does not differ perceptibly from any of the existing types, and, in fact, its builders state that such essential parts as the running gear and the like have nothing of novelty about them. But the features in an electric which determine weight suspension, transmission of the power to the driving wheels, noiselessness and simplicity are things to which special attention has been de-

voted and in the design and construction of which something quite out of the ordinary is promised, which, to quote the designers, "will be considerable of an improvement over anything of the kind thus far produced."

The first car is well under way at the present time and is expected to be complete and on the road very shortly. No announcement will be made, however, until it has been thoroughly tried out in winter service in order to prove the superiority of its design, on the culmination of which full details will be made public, together with a definite schedule of deliveries.

In the meantime it is the policy of the makers to strictly avoid any publicity regarding details, either technical or financial, until they are in a position to deliver a thoroughly tried out car on an exact schedule of dates. All plans have been very carefully laid and the designers are confident that the Maxim-Goodridge electric will find a ready market as soon as it is sufficiently developed to be placed before the public. This is the first authoritative information regarding the plans of the new concern.

AERO CONFERENCE INTERESTS MILITARY MEN.

Owing to the presence of a large number of aeronautical experts in New York, the International Aeronautical Congress, originally planned to be held at Jamestown, took place at the Automobile Club of America, West Fifty-fourth street, last Monday and Tuesday. Representatives of the army and navy, scientists, educators, and most of the contestants in the recent race for the International Aeronautical Cup attended the gathering.

Aeronautics as applied to the military art occupied a large part of the members' attention. General James Allen, head of the United States Signal Corps, told what the United States army was doing and planning to do in the rapid building of an aeronautical branch, and Admiral C. M. Chester, of the United States navy, told what the sea branch of our national defences expected from an aerial squad. Major George O. Squires declared that the dirigible balloon was already regarded by the leaders of military thought as a thoroughly military weapon.

Each of the contestants in the international balloon race gave an account of his experiences in that event, Major Hersey in addition supplying some interesting details on the failure of the Wellman aerial expedition to start on the proposed trip to the North Pole. He declared that Mr. Wellman would repair his airship and make another attempt next summer.

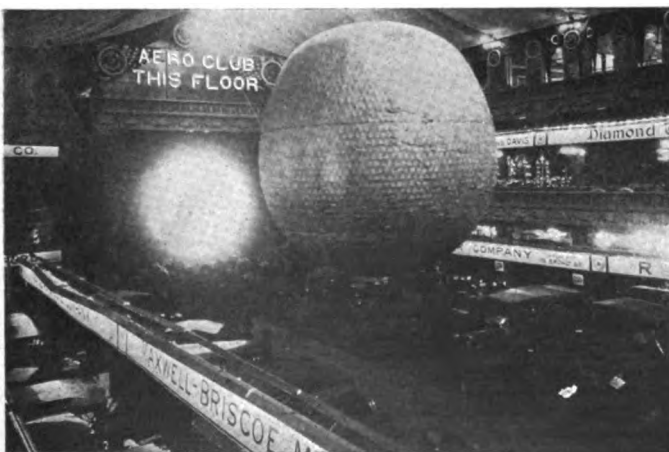
Aeroplane developments were dealt with in a series of papers read before the congress by some of the most prominent men in this branch of arial navigation.

GERMAN AERONAUT TO RECEIVE CUP MONDAY.

Next Monday evening has been fixed as the date of the annual meeting of the Aero Club of America, at the clubrooms, 12 East Forty-second street. At this meeting Oscar Erbsloeh, of the Aeronautical Club of Germany, will be presented with the Gordon Bennett Aeronautical Cup, won by the record flight of the *Pommern* from St. Louis to Asbury Park. The early date of the presentation, although official measurements had to be taken to meet a competitor's objections, is creditable to the Aero Club.

TWO ARTISTIC COLUMBIA CATALOGS.

Two of the finest catalogs of automobiles ever issued in America are the "Electric" and "Gasoline" books issued by the Electric Vehicle Company and descriptive of Columbia automobiles. The drawings and color schemes are the work of Robert J. Wildhack, a painter with studio in Washington square, New York. Wildhack is a Westerner, hailing from interior Indiana, and he combines an artistic conception with a mechanical understanding. He is completing in spare time an automobile of his own design and build. His selection to do the new Columbia catalogue was thus an excellent choice. The frontispieces of the two books in many colors are gems which will be much sought after for framing. Wildhack's strength comes from his knowledge of detail proper to leave out. To this he gives much time and study. His execution is both quick and effective. To realize an eyebrow he employs one touch of a large brush.



CUP WINNER "POMMERN," THAT WAS INFLATED FOR A DAY.



COVER OF ELECTRIC CATALOG OF ELECTRIC VEHICLE CO.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

O. D. Wheeler & Company are erecting a large garage at 19 Maple street, Marlboro, Mass., which will be equipped with a fine machine shop. A complete line of supplies will be carried.

The Mitchell Motor Car Company, of New York City, has made application for membership in the New York Automobile Trade Association. This will make a total of 64 members for the association.

The Merkel Motor Company, Milwaukee, Wis., has discontinued the manufacture of automobile engines and will in the future devote the entire resources of the factory to the production of the Merkel motorcycle.

The Toronto Automobile Company, a newly organized corporation, with a capital stock of \$40,000, will erect a factory for the manufacture of autos at Port Arthur, Ont. The site has been purchased and construction of the buildings will begin at once.

The Warner Instrument Company, Beloit, Wis., makers of the Warner automobile, has instituted a department of promotion, in charge of Edgar W. Jordan, formerly advertising manager of the Shaw-Walker Company, of Muskegon, Mich.

Previous to shipping its cars to New York City for the Grand Central Palace Show, the Imperial Motor Car Company, of Williamsport, Pa., gave an inspection party to residents of that city, displaying the first five Imperials and thus giving the home people the first look at them.

Contracts for Franklin automobiles, which have been closed in eight of the principal cities west of Denver, show an increase in each instance of twenty per cent. over the number contracted for last year. This verifies to a certain extent the statements that have been made relative to a greater demand from the West.

The F. A. Brownell Motor Company, of Rochester, N. Y., capitalized at \$400,000, will commence the manufacture of automobiles in that city. The directors are F. A. Brownell, W. E. Dunn, William Deininger, George C. Whipple, Robert C. Kershner, Thomas J. Swanton, Burton H. Davy, and Clarence E. Shuster.

The capital stock of the Pittsfield Spark Coil Company, Dalton, Mass., has been increased from \$20,000 to \$100,000, and the extra \$80,000 has been paid in. The increase was made to keep pace with the company's rapidly growing business. Wm. P. Wood is the general manager of the corporation, and United States Senator W. Murray Crane, together with his brother, Zenas M. Crane, have been directors since the plant was moved from Pittsfield to Dalton.

Columbia University will offer during 1907-08 twenty evening courses specially adapted to the needs of technical and professional workers. The courses include work in applied mechanics, architecture, electricity, fine arts, industrial chemistry, mathematics, and surveying and structures. The work begins October 28 and continues twenty-five weeks. A full description of the courses may be obtained on application to the Director of Extension Teaching, Columbia University, New York City.

The Broadway Mammoth Automobile Exchange is now located in its new and absolutely fireproof building, 239-245 West Fifty-sixth street, New York City, where

it has an up-to-date salesroom and thoroughly equipped repair shop. The first and second floors are used for showrooms, the third floor for the supply department, and the fourth floor for the repair shop and body factory. Manager L. C. Jandorf has surrounded himself with a corps of able and trained assistants to make visitors welcome.

A somewhat incongruous typographical error occurred in the advertisement of the Tincher Motor Car Company, of South Bend, Ind., on page 105 of THE AUTOMOBILE of October 17. The time of the special 3-mile match race run at Milwaukee, September 21, was made to appear as "11 minutes flat." This was due to the fact that the summary of the 10-mile free-for-all event, which was also won by Allen Pirie on a Tincher, was inadvertently omitted, and the time—11 minutes—followed the summary of the 3-mile event. Eleven minutes was the time made in the 10-mile event.

One of the biggest tire contracts of the year has just been consummated between the Cadillac Motor Car Company, of Detroit, and the Hartford Rubber Works Company, Morgan & Wright, and the G & J Tire Company. This is especially significant in view of the fact that this is the fourth consecutive year that the rubber goods interest has held the contract in spite of keen competition. The terms of the contract specify that the Cadillac company will use the goods of the above companies exclusively on their 1908 product; and, moreover, that they will adopt as standard equipment on all 1908 cars the new Midgley universal rims.

One of the most complete books of its kind that has appeared is being distributed at Grand Central Palace by the American Motor Car Manufacturers' Association under the title of "Leading American Cars." It contains complete specifications of the 170 models made by the 51 members of the association, ranging from the \$500 Brush runabout to the \$7,000 Austin. The pleasure vehicles are classified separately from the commercial vehicles. The book contains a brief history of the association, an index of the cars described, all the important records, and a number of important firsts in automobiling, such as the first race winner, the first tour, and hill climb, and similar events.

RECENT BUSINESS CHANGES.

The Linkroum Automobile Company, of Newark, N. J., succeeds the Linkroum-Smelter Automobile Company, owing to the recent death of L. W. Smelser. S. H. Stern, formerly assistant manager of the Michelin Tire Company of America, is a new member of the company. The Linkroum Company will have the exclusive selling rights of the Lozier line in Central New Jersey.

The garage business of the Palmer & Singer Mfg. Co., of New York City, distributors of the Matheson, is to be conducted in the future by the Knickerbocker Garage Company. The officers of the latter company are the same as those of the former. The Knickerbocker Company will take over the garage business of the Palmer & Singer Mfg. Co. when the latter moves into its new five-story building, in about two weeks. Practically every owner of a Matheson car in New York, as well as many other autoists, have reserved space in the new garage.

NEW AGENCIES ESTABLISHED.

N. L. Merwin, of Amsterdam, N. Y., has taken the Lozier line for Fulton and Montgomery counties, in the State of New York.

J. S. Russell, of New Orleans, has contracted for the Glide agency, and will organize a company at once to handle the Glide line in the State of Louisiana.

Owing to the great demand for the Jones speedometer in France, the Jones Speedometer Company has opened a branch house at 88 Boulevard de Courcelles, Paris, in charge of Rudolph Simonetta.

Mr. Dilley, of Los Angeles, Cal., one of the largest auto dealers in that State, has taken over the Pacific Coast representation of the Autocar. Arrangements were concluded when Mr. Dilley visited the Autocar factory at Ardmore, Pa., last week.

Arrangements have been made for the sale of Brush runabouts in Illinois by the Pardee Motor Company, of 1229 Michigan avenue, Chicago. Fred J. Pardee, a pioneer dealer and one of the oldest members of the Chicago automobile trade, is at the head of the company.

The new Philadelphia branch of the Firestone Rubber Company, located at 256 North Broad street, will open for business on November 1. The establishment, which has an area of 14,250 square feet and is complete with all modern facilities for the application and repair of tires, will be in charge of W. R. Walton.

Sales Manager W. C. Metzger, of the Cadillac Company, gives information concerning the appointing of G. J. Grossman as New York agent for the Cadillac. Mr. Grossman is the owner of the big garage at White Plains, N. Y., claimed to be the largest in the country. It has 21,600 square feet of space on one floor.

November 1 the Babcock Electric Carriage Company will open a branch house in New York City at 1591 Broadway, corner Forty-eighth street. H. E. Wagner, formerly connected with Wyckoff, Church & Partridge, and who had charge of the Babcock line with that house, has been appointed eastern sales manager with headquarters at the new branch.

Among European products recently introduced to the American trade are the patent non-skidding rivets and the Edco spark plug, manufactured by Edouard Dubied & Company, of Couvert, Switzerland, and the chrome leather made by Cavernier & Quezin, of Paris. These firms are represented in the United States by Chas. Dien, 43-45 West Thirty-fourth street, New York City, who has already closed several good contracts with American manufacturers for their use on 1908 products. Mr. Dien is also the American representative of the Touring Club of France.

PERSONAL TRADE MENTION.

Vice-President H. E. Coffin, of the E. R. Thomas Detroit Company, will sail for Europe November 6, for a two months' study of trade conditions and development in England, France, and Italy.

J. C. Matlack has been elected vice-president and general manager of the Michelin Tire Company of America. C. C. Harbridge, who is well known in the selling trade, is to have the managership of the Chicago branch.

C. P. Brown, formerly of the Motor Car Equipment Company, of New York City, has been appointed manager of the Motor Mart Sales Company, factory distributors of automobile accessories, with headquarters in the Motor Mart, Broadway and Sixty-second street, New York City.

Clarence A. Saffle has been appointed Pacific Coast representative of the Warner Instrument Company, of Beloit, Wis., with headquarters at San Francisco, and with California, Washington, and Oregon as territory. Mr. Saffle was formerly connected with the Underwood Typewriter Company.

Ben Blumenthal, proprietor of the West End Auto Palace, was elected a director of the New York Automobile Trade Association, at the last meeting of the board of directors of that organization, to succeed Carlton P. Mabley, who resigned from the directorate because he is no longer actively engaged in the sale or storage of autos.

T. F. Smith will succeed A. F. Chase as manager of the Maxwell-Briscoe Chase Company, Chicago, Ill., and George Holden, of Detroit, will succeed A. S. Johnson, secretary of the above firm. Mr. Smith comes from the National Cash Register Company, having resigned as sales manager of the Chicago branch to accept his present position.

M. C. Krarup, the well-known writer on automobile subjects, has become interested with the firm of John Crowley & Company, 120 Liberty street, New York, in the importation of crucible nickel and chrome-nickel steels and forgings, from the Krefelder Stahlwerk, of Krefeld, Germany, and will take charge of the automobile end.

Percy S. Cradock, of the firm of George Cradock & Company, of Wakefield, England, manufacturers and specialists of fine quality alloy steels for the automobile trade, is in New York for the purpose of appointing an agent for his firm's products. Mr. Cradock is stopping at the Holland House and can be seen until November 6 by appointment.

Welton H. Flynn has been appointed assistant sales manager of the Acme Motor Car Company, of Reading, Pa., and will be in charge of the eastern territory. In securing the services of Mr. Flynn the Acme company obtains the services of a popular representative. He will make his headquarters with the New York agents, J. B. Brewster & Company, Seventh avenue and Forty-ninth street, New York City.

Directors Tischlein and Gerlach, of the Continental Caoutchouc Company, have arrived in New York from Hanover Germany, and have been in attendance at the Grand Central Palace automobile show. They will return to Europe at the end of this week. Manager Gilbert, of the American branch of the Continental Company, is receiving congratulations on the showing of the business done in this country.

Recent changes in the E. R. Thomas Detroit Company, of Detroit, Mich., makers of the Thomas Detroit, include the appointment of John G. Utz as chief engineer, with G. G. Behn as his assistant. Mr. Behn is well known in the trade, having been associated with the industry prior to entering Cornell University in 1898, and after his graduation in 1902. Mr. Behn has had a wide practical as well as theoretical experience in all branches of auto construction.

FANNING MAKES CHANGE.

Frank J. Fanning, long connected with the Haynes Automobile Company, of Kokomo, Ind., as sales manager, has resigned to accept a partnership with James Levy, of Chicago, agent for the Autocar and

other cars. Mr. Fanning has been succeeded by C. B. Warren, who has for a long time been manager of the New York agency of the Haynes company. Mr. Warren, during his term of office in New York, has been most active in his position, having disposed of more Haynes cars in New York than were ever disposed of by a former manager, and also having won for the Haynes sterling honors in all events open to him in New York. Mr. Warren will be located at Kokomo, but will have general charge of all the agencies.

"WON'T SLIP."

They hold their own; they hold the road,
And at no curve need they be slowed;
Upon the earth they keep their grip—
And Bailey Tread Tires won't slip.

They're Tires that hold the right o' way.
They've come to go and come to "stay"
And while you go the merriest clip
The Bailey Tread Tires won't slip.

They're "knobby" Tires that stand all strain.
The "Rubber Studs" are safe and sane;
The stretch of ice you need not skip
For Bailey Tread Tires won't slip.

For Auto, Auto-Bi or Bike,
They lead in speed on track and pike.
They neither ravel, rend nor rip.
And Bailey Tread Tires won't slip.

They "corner" all the turns with ease;
No "heart in mouth" if you have these;
No sudden short turn brings a tip
For Bailey Tread Tires won't slip.

They are not skidders that skidoo.
All roads are pleasure roads to you;
The "Won't Slip" Tread says every lip.
Is rightly named "Won't Slip." —(A. W. B.)

NEW TRADE PUBLICATIONS.

Ejector mufflers manufactured by the Motor & Manufacturing Works Company, Geneva, N. Y., are illustrated and described in a new sixteen-page handbook just issued.

A detailed route card showing the best road from Chicago to South Bend, Ind., has been issued by the Studebaker Automobile Company, of South Bend, Ind. The journey is treated in both eastern and western directions.

Descriptive of the various models of the Schacht Auto-Runabout, an automobile of the improved buggy type, the Schacht Manufacturing Company, of Cincinnati, O., has issued an attractive illustrated catalogue.

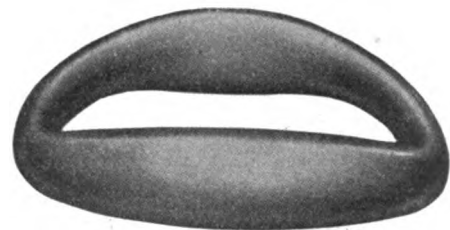
Scenes on the road and peeps into the showroom elbow one another in Number 7 of the *Reo Echo*, devoted to the interests of R. M. Owen & Company. Editor Gogarn presents an aftermath of the Glidden Tour, in which the Reos were well to the fore, and puts forth a sketch of his company's features for 1908.

Bulletin Fourteen from the White Company, Cleveland, deals with the most important contests entered with conspicuous success by White steamers. Prominent among them are the Glidden tour, the London town carriage test, the Harrisburg endurance run, the Cleveland hill climb, the Wilkes-Barre hill climb, and a number of prominent events abroad. The booklet, which is illustrated and printed in colors, contains a map of the Glidden tour route.

INFORMATION FOR BUYERS.

Brass Specialties.—The G. W. Murphy Company, Merrimac, Mass., are manufacturing an extensive line of brass specialties specially designed for automobile use, and among which they call special attention to their assortment of door handles. These

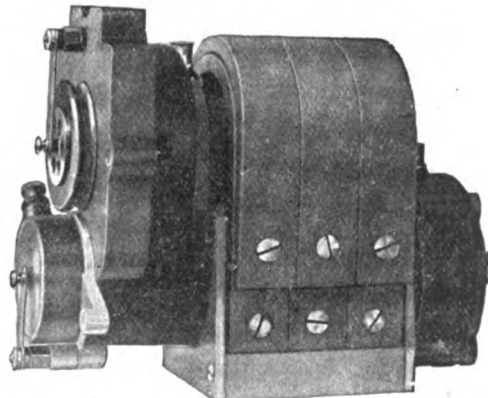
are shown, together with their corresponding fittings, in a wide variety of styles in polished brass, nickel or silver-plate, and are made either with slotted screw washers, flat washers or escutcheon plates. The plated finishes are of the Murphy standard plate, and are guaranteed by the makers to wear. The designs listed are largely ex-



ONE OF THE MURPHY DOOR HANDLES.

clusive with this house, and all door handles are guaranteed to have perfectly fitted washers and true shanks. In addition to door handles they also make a specialty of the Murphy curtain fasteners, which have been designed especially to meet the requirements of the automobile and motor boat. They are covered by patents, and it is the claim of the makers that they will not release the curtains under any stress of weather or vibration.

U. & H. Magnetos.—The J. S. Bretz Company, Times Building, New York City, who are agents for the F. & S. annular ball-bearings and Hartford universal joints, have taken the U. S. agency of a new high-tension magneto made by Unterberg & Helmle, Karlsruhe, Germany. In general



UNTERBERG & HELMLE MAGNETO.

construction and operation it is similar to the standard types, but has an unusual feature in the shape of an easy starting device. This consists of an arrangement whereby the armature may be given part of a turn at high speed, producing a hot spark irrespective of the position at which the interruptor is set to operate. During this partial revolution the speed of the armature is entirely independent of the rate at which it is turned by the crankshaft of the motor while in service. The device is in operation only while the motor is being started, being automatically disengaged. The spark is automatically retarded by this starting device, which makes it unnecessary either to spin the motor or resort to the compression relief. The armature differs from standard types in having both the condenser and interruptor mounted in a separate housing. The spark gap is of improved construction, and is provided with mica windows. Both low and high-tension types are made for two, three, four or six cylinders, as well as an oscillating type for stationary use.

INDEX TO ADVERTISERS

Acetylene Gas Illuminating Co. 100
 Acme Motor Car Co. 206
 Adams Co. 206
 Add-Wear Tire Sleeve Co. 104
 Adjustable Lighter Co. 99
 Aero & Marine Motor Co. 137
 Ajax-Grieb Rubber Co. 127
 Alum. Solder & Refining Co. 124
 Am. Brass & Alum. Works. 101
 American Die Casting Co. 113
 Amer. Motor Car Sales Co. 152-153
 American Vanadium Co. 140
 American Veneer Co. 114
 Anderson Forge & Machine Co. 101
 Apperson Bros. Automobile Co. 230
 Arc-Toledo Spark Plug Co. 107
 Atlas Motor Car Co. 157
 Auburn Automobile Co. 104
 Audel & Co., Theo. 110
 Aurora Motor Works. 151
 Auto and Power Appliance Co. 99
 Auto Pump Co. 99
 Autocar Co. 145
 Automobile Supply Co. 101
 Automobile Utilities Co. Cover
 Autohine Co. 100
 Automobile Supply Mfg. Co. 137
 Automobile Catechism 106
 Avery Portable Lighting Co. 129
 Babcock Electric Carriage Co. 142
 Badger Brass Mfg. Co. 130-131
 Bailey Co., C. J. 192
 Baldwin Chain Mfg. Co. 144
 Barnett Drop Forging Co. 111
 Beaver Mfg. Co. 100
 Behen-Faught Motor Car Eq. Co. 102
 Bemus, T. Alton. 115
 Berkshire Motor Car Co. 104
 Bethlehem Steel Co. 112
 Biddle & Smart Co. Cover
 Bishop Co., J. H. 132
 Billings & Spencer. 98
 Blasler Mfg. Co. 102
 Bliss-Chester Co. 99
 Boker & Co., H. 100
 Blomstrom Mfg. Co. 146
 Borlein Auto Co. 115
 Bosch, Robert 132
 Boston Auto Gage Co. 108
 Bowser & Co., S. F. 182
 Boyle & Co., John. 207
 Brennan Motor Co. 113
 Bridgeport Vehicle Co. 172
 Briscoe Mfg. Co. 102
 Brownell Motor Co. 100
 Buckeye Jack Mfg. Co. 121
 Buckeye Mfg. Co. 224
 Bullard Automatic Wrench Co. 114
 Bullard, J. H. 117
 Buob & Scheu. 102
 Cadillac Motor Car Co. 158
 Cameron Car Co. 143
 Cast Iron Brazing Co. 103
 Central Body Co. 102
 Champion Co., A. 114
 Charter & Co. 99
 Chase & Co., L. C. 174
 Chicago Automobile Show. 207
 Clark, E. S. 99
 Cleanola Co. 106
 Cleveland Cap Screw Co. 121
 Coes Wrench Co. 94
 Colgan Co., J. W. 99
 Colt Runabout Co. 113
 Cook's Standard Tool Co. 137
 Connecticut Steel & Wire Co. 102
 Connecticut Gauge Co. 112
 Conn. Tel. & Elec. Co. 120-124-126
 Conover Motor Car Co. 193
 Corbin Motor Vehicle Corp. 179
 Corcoran Lamp Co. 100
 Cornish-Friedburg Motor Car. 146
 Correspondence School Motor Car Practice 99
 Continental Auto. Mfg. Co. 173
 Continental Caoutchouc Co. 138
 Continental Motor Car Co. 147
 Continental Motor Mfg. Co. 133
 Cotta, Chas. 115
 Covert Mfg. Co. 100

Cradoek & Co., Geo. 133
 Crescent Parts Co. 104
 Crouse-Hinds Co. 141
 Crown Soap Co. 185
 Cullman Wheel Co. 109
 Daimler Mfg. Co. 104
 Davis Robe Co. 194
 Dayton Electrical Mfg. Co. 103
 Dayton Motor Car Co. 225
 De Luxe Motor Car Co. 104
 Diamond Chain & Mfg. Co. 101
 Diamond Rubber Co. 189
 Dien, C. H. 123
 Diets Co., R. E. 208
 Dixon Crucible Co., Joseph. 110
 Dorriss Motor Car Co. 151
 Dover Co., Geo. W. 98
 Dow Portable Electric Co. 197
 Dragon Automobile Co. 110
 Duff Mfg. Co. 209
 Duplex Coil Co. 158
 Eastern Carbon Works. 135
 Eclipse Machine Co. 99
 Edmunds & Jones Mfg. Co. 104
 Eldredge Electric Mfg. Co. 112
 Electric Vehicle Co. 147
 Elmore Mfg. Co. 231
 Empire Automobile Tire Co. 134
 Empire Wheel Works. 102
 Excelsior Supply Co. 105
 Fairmount Eng. Works. 104
 Firestone Tire & Rubber Co. 144
 Flisk Rubber Co. 145
 Ford Motor Co. 104
 Forest City Motor Car Co. 147
 Franco-Am. Auto Supply Co. 99
 Franklin Mfg. Co., H. H. 139
 Fry, T. C. & W. L. 101
 G & J Tire Co. 158
 Garford Co. 161
 Gearless Transmission Co. 190
 General Accumulator & Battery Co. 106
 Gemmer Mfg. Co. 122
 Gibney & Bros., Jas. L. 211
 Giesler Bros. 116
 Gilbert Mfg. Co. 103
 Goodrich Co., B. F. 188
 Goodyear Tire & Rubber Co. 155
 Gray-Hawley Mfg. Co. 135
 Grout Bros. Auto Co. 104
 Gumelastik Tire Co. 135
 Ham Mfg. Co. 198-199
 Hardy Co., The R. E. 115
 Harriss Oil Co., A. W. 182
 Hartford Auto Parts Co. 114
 Hartford Rubber Works Co. Cover
 Hartford Suspension Co. 205
 Hatfield Auto Parts Co. 111
 Hatfield Motor Vehicle Co. 146
 Haws, Geo. A. 136
 Haynes Automobile Co. 164
 Healy Leather Tire Co. 104
 Heinz Electric Co. 170
 Heltzer Carbureter Co. 100
 Hercules Auto Specialty Co. 124
 Hercules Electric Mfg. Co. 99
 Herschell-Spillman Co. 105
 Herz & Co. 154
 Hess-Bright Co. 111
 Hicks Speed Indicator Co. 111
 Hoffecker Co. 183
 Hoffman, Geo. W. 100
 Holley Bros. Co. 229
 Holman Automobile Co. 234
 Hopewell Bros. 220
 Hotchkiss Mfg. Co. 102
 Hotel Breslin 181
 Hub Lubricator Co. 185
 Imperial Motor Car Co. 235
 Importers' Automobile Salon. 179
 Indestructible Steel Wheel Co. 107
 Index Speed Indicator Co. 180
 Jackson Automobile Co. 104
 Jeffery & Co., Thos. B. 162-163
 Jeffery-Dewitt Co. 105
 Jenckel Motor Mfg. Co. 116
 Jenkins Specialty Co. 116
 Jersev Brake Co. 115
 Johnson Sporting Goods Co. I. 107
 Jones Speedometer 210
 Jones, Wm. S. 135
 K. W. Tentlon Co. 107
 Kent Mfg. Co., A. 100
 Killeore Mfg. Co. 100
 Kimball Tire Case Co. 108
 Kimball & Co., C. P. 172

Kinsler-Bennett Co. 116
 Kissell Motor Car Co. 232
 Knox Automobile Co. 218
 Konigslow, Otto 101
 Kokomo Electric Co. 141
 Lavalette & Co. 168
 Lear Automobile Co., Oscar. 104
 Leather Tire Goods Co. 126
 Limousine-Carriage Mfg. Co. 107
 Lipman Mfg. Co. 99
 Lobbe Pump Co. 102
 Locke & Co. 113
 Locomobile Co. of America. 143
 Logan Construction Co. 98
 London Auto Supply Co. 143
 Long Mfg. Co. 142
 Long-Turney Mfg. Co. 122
 Lozier Motor Co. 236
 Macbeth 141
 Mandeville Steering Wheel Muff Co. 176
 Manhattan Electrical Sup. Co. 99
 Manhattan Screw & Stamp. Co. 112
 Maple City Mfg. Co. 107
 Martini Import Co. 112
 Marvel Mfg. Co. 121
 Manhattan Storage Co. 105
 Mason Car Sales Co. 111
 Mason, John A. 102
 Masury & Son, John W. 159
 Mayo Radiator Co. 102
 McCord & Co. 105
 Mezger, C. A. 195
 Merchant & Evans Co. 120
 Merritt & Co. 99
 Metropolitan Auto. Guide. 97
 Mich. Crucible Steel Cast. Co. 101
 Michelin Tire Co. 201
 Midgley Mfg. Co. 101
 Miller Bros. 102
 Miller, Chas. E. 187
 Mitchell Motor Car Co. 219
 Moline Automobile Co. 104
 Monarch Motor Car Co. 104
 Monogram Crest & Sign Co. 109
 Morgan & Wright. 166-167
 Mosler & Co., A. R. 99
 Moss Photo Engraving Co. 184
 Motor Car Equipment Co. 118-119
 Motor Boat Show. 155
 Motz Clincher Tire & Rub. Co. 104
 Muller, Albert 99
 Murphy Co., C. W. J. 196
 Muttly Co., L. J. 204
 Myers Auto Top Co. 102
 National Auto Accessories Co. 100
 National Brake & Clutch Co. 212
 National Motor Vehicle Co. 228
 National Oil Pump & Tank Co. 118
 Neustadt Auto & Supply Co. 116
 Never-Miss Snark Plug Co. 147
 New Process Rawhide Co. 135
 N. Y. Sporting Goods Co. 99
 N. Y. & N. J. Lub. Co. 122
 Nordyke & Marmon Co. 226
 Northern Motor Car Co. 128
 Northway Motor & Mfg. Co. 105
 Northwestern Storage Bat. Co. 136
 Nuttall Co., R. D. 101
 Nutting Machine Co. 113
 Ofeldt & Sons. 99
 Okey Motor Car Co. 104
 Old Colony Light Co. 114
 Olds Motor Works. 104
 Oliver Mfg. Co. 187
 Owen & Co., R. M. 232
 Pacific Tucking & Mfg. Co. 99
 Packard Electric Co. 135
 Packard Motor Car Co. 228
 Pake-Storm Drop Forge Co. 98
 Palmer & Singer Mfg. Co. 104
 Pantasote Co. 180
 Parish & Bingham Co. 101
 Parker, Stearns & Co. 116
 Pease & Sons, S. C. 102
 Penna. Auto Motor Co. 145
 Penn. Rubber Co. Cover
 Peugeot Chains 101
 Pfanstiehl Elec. Laboratory. 100
 Pierce Co., Geo. N. Cover
 Picrome Hide Co. 101
 Pioneer Brass Works. 101
 Pirelli Tires 104
 Precision Appliance Co. 151
 Prest-O-Lite Co. 125
 Progressive Mfg. Co. 108
 Prosser & Sons, Thos. 106

Quincy Co., J. M. 102
 Quincy, Manchester, Sergeant Co. 100
 Raines & Co. 99
 Rainier Co., The. 216-217
 Ranger Motor Works. 146
 Randall-Paichney Co. 175
 Reeves Pulley Co. 100
 Remington Tool & Machine Co. 117
 Remy Electric Co. 128
 Renault Freres 173
 Richardson Eng. Co. 112
 Robert Instrument Co. 109
 Roberts Motor Co. 109
 Robinson & Sons Co. 133
 Rose Mfg. Co. 134
 Ross Gear & Tool Co. 101
 Royal Battery Co. 106-108
 Royal Equip. Co. 112-113-114-111
 Royal Motor Car Co. 146
 Rubay, Leon 111
 Rushmore Dynamo Works. 214
 St. Louis Car Company. 176
 Salisbury Wheel & Mfg. Co. 100
 Samson Leather Tire Co. 109
 Sanford Mfg. Co., F. C. 102
 Saxton Lamp Co. 177
 Schacht Mfg. Co. 142
 Schraeder Sons, A. 120
 Schwarz Wheel Co. 165
 Shawver Co. 110
 Smith Mfg. Co., R. H. 213
 Smith & Sons, S. 177
 Snow, N. H. 102
 Speed Changing Pulley Co. 105
 Speedwell Motor Car Co. 143
 Spicer Universal Joint Mfg. Co. 140
 Splittdorf, C. F. 120
 Sprague Umbrella Co. 117
 Springfield Metal Body Co. 102
 Standard Automatic Lub. Co. 111
 Standard Co. 200
 Standard Roller Bearing Co. 100
 Standard Welding Co. 215
 Stanley, John T. 141
 Steam Carriage Boiler Co. 102
 Stearns Co., F. B. 227
 Stevens-Durvae Co. 233
 Stewart & Clark Mfg. Co. 108-202-203
 Stitch-in-Time Vulcanizer Co. 110
 Stret Machine Co. 100
 Studebaker Auto Co. 179
 Success Auto Buggy Co. 104
 Supplementary Spiral Spring. 107
 Swinehart Clincher Tire Co. 111
 Syracuse Alum. & Bronze Co. 101
 Teel Mfg. Co. 109
 Thomas Motor Co., E. R. 191
 Tincher Motor Car Co. 160
 Thompson, J. P., Sons Co. 100
 Timken Roller Bearing Axle. 171
 Turner Blowout Patch Co. 109
 Trebert Gas Engine Co. 104
 Troy Carriage Sun Shade Co. 171
 Tucker, C. F. 99
 Turner Brass Works. 116
 Uncas Specialty Co. 173
 Vacuum Oil Co. 142
 Veeder Mfg. Co. 136
 Verstraete Mfg. Co., Ed. 111
 Vivax Storage Battery Co. 123
 Walker Carriage Co. 102
 Walker Co., E. C. 113
 Warner Gear Co. 108
 Warner Instrument Co. 136
 Warner Fole & Top Co. 102
 Waukesha Motor Co. 111
 Wayne Automobile Co. 165
 Weed Chain Tire Grip. 103
 Welch Motor Car Co. 221
 Western Malleable Steel Co. 101
 Western Motor Co. 116
 Weston Elec. Instrument Co. 134
 Wheeler & Schebler. 148-149
 White Co., The. 115
 White Co., The. 169
 Whitlock Coll Pipe Co. 150
 Whitney Mfg. Co. 114
 Wilson-Wellman Mfg. Co. 121
 Wing Co., Chas. 102
 Winton Motor Carriage Co. Cover
 Witherbee Igniter Co. 135
 Wright Cooler & Hood Mfg. Co. 123
 Wyman & Gordon Co. 98
 Yankee Muffler Co. 115
 York Motor Car Co. 104

FOR UNMATCHABLE QUALITY BUY

COES

STEEL HANDLE MODEL WRENCH

91

THE WRENCH for Automobilists

High-grade quality in every detail of design, material, workmanship and up-to-date improvement. Excellence with extremely reasonable cost

NON-BREAKABLE CASTINGS
 NON-STRIPABLE THREADS
 NON-TROUBLESOME PARTS

QUALITY

through and through
 Look for the name—COES;



70 years splendid reputation worthily maintained

right up to the present time as the World's Best Wrench Makers. Write for "Wrench Book" free.

COES WRENCH CO.
 WORCESTER, MASS.

THE AUTOMOBILE

VOL. XVII

NEW YORK—THURSDAY, NOVEMBER 7, 1907—CHICAGO

No. 19

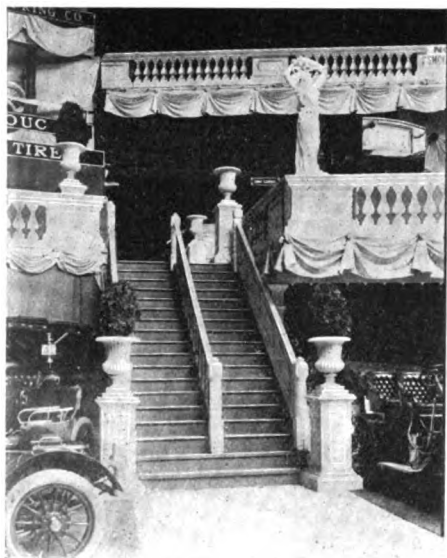
American Industry Challenges World: A. L. A. M. SHOW CONVINCINGLY ASTOUNDS



THE A. L. A. M. show is a distinct, comprehensive, and overwhelming triumph of the American manufacturers of automobiles, challenging in unmistakable manner unbiased and equal comparison with the product of the leading European makers, who possessed advantages gained through being first in the field by several years. The exhibition in Madison Square Garden, which opened expectantly on Saturday night, November 2, and will close brilliantly on Saturday evening next, is a revelation even to those who have followed the industry from its earliest stages and watched the gradual development and betterment of automobiles in this country. While one might be inclined to question the continued extraordinary demand—a steady demand is assured—for the output of such a substantial number of concerns bidding principally for *de luxe* patronage, he must realize that the highest types of cars are now available, American-made, to those who can afford these luxurious vehicles with gorgeously finished bodies and sturdy, reliable motors, capable of long journeys, the climbing of mountains, and progress over roads not deserving of the name.

And all of this in less than a decade!

Of course, there will always be those who prefer to buy something from abroad, and, while admitting the excellence of European cars, one fails to comprehend why the patriotic and discerning American should longer select his high-priced automobile on the other side of the



HOW THE STAIRWAYS WERE DIVIDED.

is provision for the man of moderate means, the bulk of the show is devoted to those who want the very best and are willing to pay for it. In fact, it is a display of highest-grade automobiles, and one which will astound even the man who in the past could see nothing worth having except an imported vehicle.

Of course, the American makers are proud of what they are presenting in the big Garden, and they have good reason for feeling elated and confident and satisfied, for their 1908 models will meet the wishes of the most fastidious.

It may be that the recent flurry in Wall street, instead of curing the broker of his automobile habits—something well nigh impossible after he has become wedded to the use of a car—has caused him to figure a little more economically, which means that 45 per cent. duty is an item which he has in mind to blue-pencil. Advising him to take a look at the Garden array is an act for which he is likely to feel grateful, in view of the financial bumps over which many have traveled recently with deflated tires and benumbed shock absorbers.

To the double music of the sonorous telharmonium and the more flexible tones of the Garden band, the thousands have noted that the licensed cars have been not only embellished exteriorly, but inwardly the vital parts have been perfected in vast degree until any amount of mileage is available with sane use and care, for even engines of automobiles require looking after like any other piece of machinery, and that which the automobile accomplishes nowadays often approaches the phenomenal.

In all the 39 different makes of pleasure cars, 9 of pleasure electrics, 12 of commercial vehicles, and 14 of motorcycles, which go to make up the show as a whole, there is entirely lacking the element of freak design once so prominent. And what is even more noticeable is the high standard of finish and equipment represented by the bodies of the cars, as well as their uniformly excellent design, patterned after the straight-line type.

Though the show is, in the main, one of high-grade cars representing the most advanced degree of the builders' skill and listing at correspondingly high prices, there is much to attract those whose interest is most keen in the lesser priced vehicle, and the range of prices is very wide indeed. Beginning with the small twin-cylinder, air-cooled and friction-driven Waltham at \$600 in the runabout class, the single-cylinder Cadillac at \$850, and the new Buick four-cylinder runabout at the same price, which is attracting such an unusual amount of attention, it is but a step to the \$1,000 to \$2,000 class of touring cars, which are represented by no less than five examples, of which several have all the attributes of many of the higher-priced cars in the shape of four-cylinder vertical engines, sliding change-speed gears, long wheelbase and large tires.

salt pond when he can do equally well in quality, and much better from a financial point of view, by buying at home.

Once upon a time a couple of makes stood out prominently, and while their owners still swear by them it is possible to pick any one of a score and more of American cars and obtain a commensurate return for the money invested. The popular priced car does not have much of an innings in the Garden, and, while there

M. J. BUDLONG ELECTED A. L. A. M. MANAGER.

Thirty of the thirty-one members of the Association of Licensed Automobile Manufacturers attended the annual meeting, held Wednesday afternoon, at the association headquarters, and elected Milton J. Budlong as general manager, to succeed E. H. Cutler, who found it impossible to continue in office because of his recently increased duties as president of the Knox Automobile Company, of Springfield, Mass. Charles Clifton was re-elected president; H. H. Franklin, as treasurer; and L. H. Kittridge, as secretary. Thomas Henderson was selected as first vice-president, taking the place of F. L. Smith on the executive committee, which will also include Charles Clifton, W. E. Metzger, S. T. Davis, Jr., and George H. Day. Mr. Smith asked to be relieved, owing to his inability to give time from his duties as head of the Oldsmobile Company to attend the meetings in New York City.

Mr. Budlong, who recently retired from the presidency of the Electric Vehicle Company, is a well-known figure in the automobile industry, personally popular, and possesses well proven executive ability. His selection is commented upon most favorably.

Mr. Cutler, in retiring, made a few brief remarks, in the course of which he thanked the members for their hearty co-operation and support extended him during his term of office, and commended Mr. Budlong as a capable successor.

MOTOR AND ACCESSORY MFRS. ELECT DIRECTORS.

Some sixty members attended the annual meeting of the Motor and Accessory Manufacturers, held at the Hotel Astor, Wednesday morning. The president's report showed since the formation in Cleveland, February 11, 1904, a steady increase in membership. In 1904 there were 94 members; 1905, 130 members; 1906, 173 members; and at the present time, 192 members. The treasurer's report indicated an ample balance in the treasury.

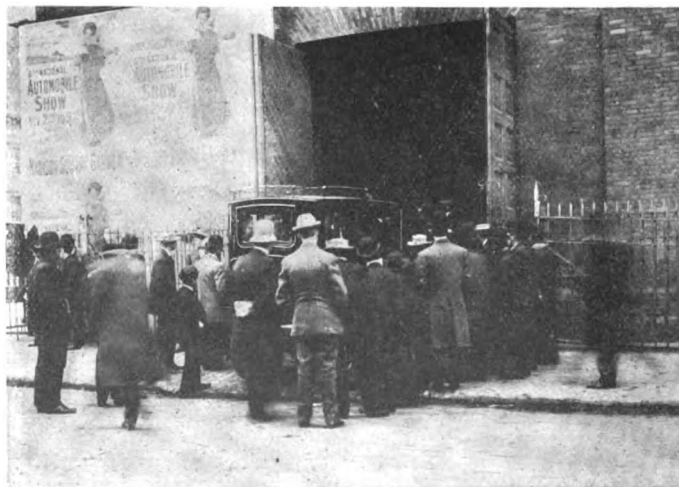
These were the directors elected to serve for three years: W. S. Gorton, Standard Welding Co.; H. S. White, Shelby Steel Tube Co.; P. S. Steenstrup, Hyatt Roller Bearing Co.; H. E. Raymond, B. F. Goodrich Co.

Elected to serve for two years: C. E. Whitney, Whitney Mfg. Co.; D. J. Post, Veeder Mfg. Co.; C. T. Byrne, Byrne, Kingston & Co.; H. W. Chapin, Brown-Lipe Co.

Elected to serve for one year: E. S. Fretz, Light Mfg. & Foundry Co.; H. T. Dunn, Fisk Rubber Co.; F. E. Castle, Gray & Davis; L. M. Wainwright, Diamond Chain & Mfg. Co.

Following the adjournment to the annual meeting, the board of directors met and organized by electing the following officers: President, H. S. White; first vice-president, H. E. Raymond; second vice-president, H. T. Dunn; third vice-president, F. E. Castle; treasurer, W. S. Gorton; secretary, Peter S. Steenstrup.

A sanction was granted to the Philadelphia Automobile Trade Association for a show, to be held in Philadelphia next week.



TAKING IN THE CARS AT THE GARDEN'S REAR ENTRANCE.



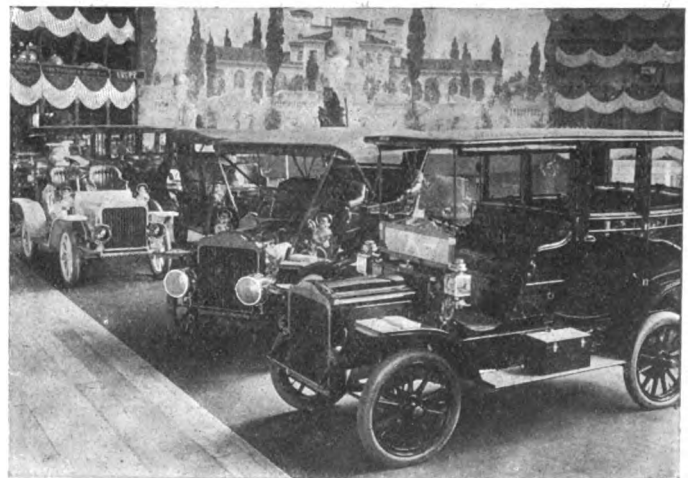
LONG before the manufacture of automobiles in this country had arrived at a stage where its importance was sufficient to dignify it by the title of industry, those far-seeing makers who were then pinning their faith to the future of the new method of transportation realized the need of co-operative effort if the many obstacles that then confronted them were to be successfully met and overcome. They fully realized that, in addition to the task of evolving the perfect automobile, and that time is but a very few years back, there were so many other things to be accomplished that no single maker could possibly attempt to cope with them all. The result was the formation of the Association of Licensed Automobile Manufacturers, more familiarly known as the Licensed Association and the "Selden interests."

When first the manufacturers who go to make up the membership of this association came together they practically represented what was the nucleus of the entire American automobile industry of to-day, but their combined product formed as motley an array of self-moving vehicles, termed automobiles, as can only be found within the four walls of a museum at the present writing. Development has been so rapid, and yet so solid and permanent, that it is hardly conceivable, even to those who have been most closely identified with the automobile movement during that time, that the result as now spread forth in the Garden can be the work of but three or four years. It positively seems years ago that the outlandish and lumbering productions of 1903 and 1904 were gazed upon with rapture and no little patriotic pride at the self-same spaces that many of them now occupy, as being representative of the highest ideals of American automobile construction. Think for a moment of the Winton of those days and compare its two tremendous horizontal cylinders that completely filled the chassis frame from side to side, and almost from end to end, with the graceful and perfected six-cylinder construction of the same car which to-day is being exhibited within less than fifty feet of where it was accustomed to hold forth in earlier times.

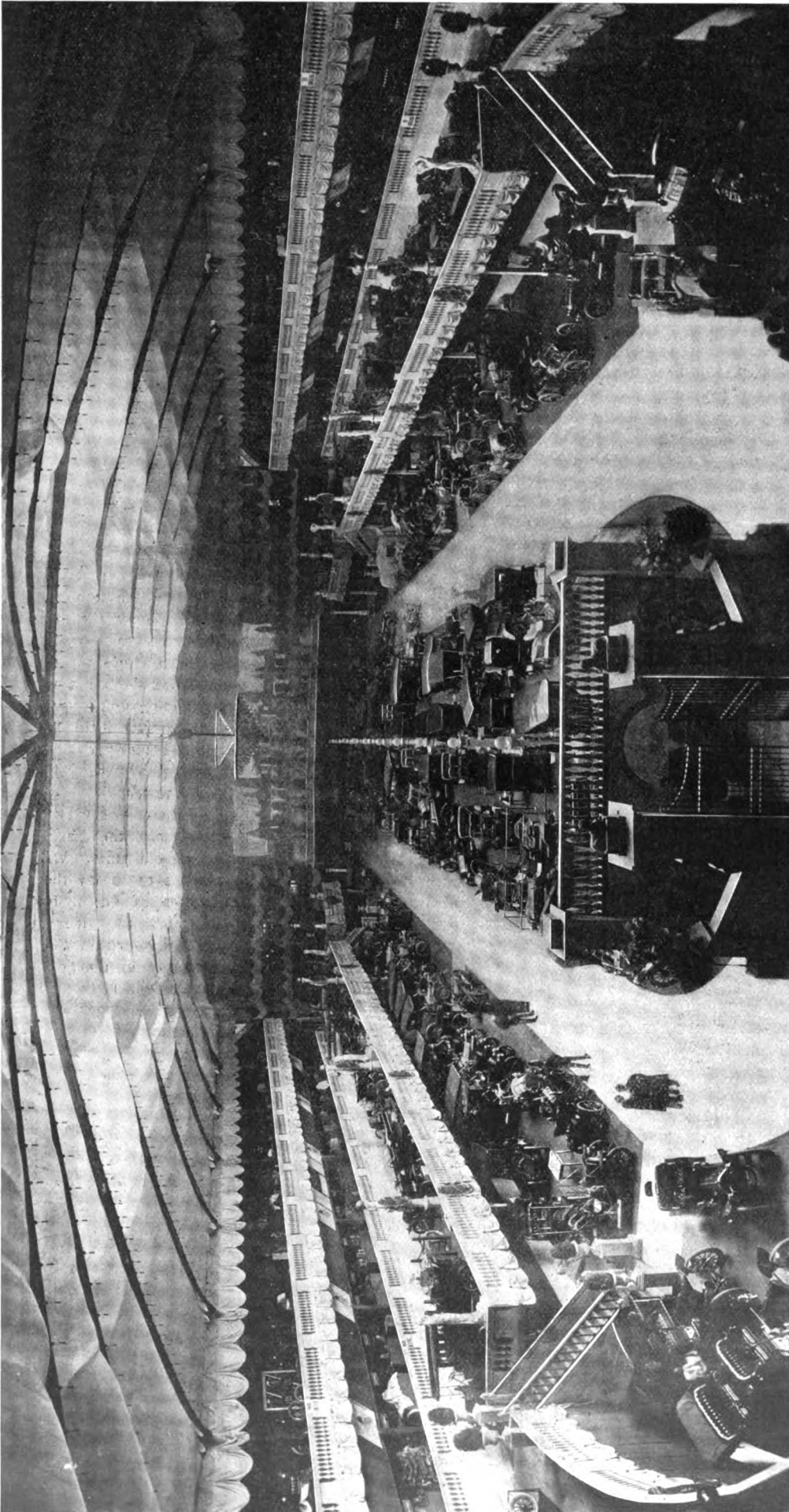
What of the little one-lungers with the curved dash that made the name Oldsmobile a byword the world over? It is not hard to picture the array of them that formerly filled the exhibit of this concern and which held the attention of a very large part of the entire attendance during show week, for they were the first examples of the popular-priced automobile. But it is next to impossible to reconcile the idea of the exquisite Packard creation, which now tenants almost the same space that it has held forth at for years, with the tremendous single-cylindered affair that did duty as its predecessor at the same stand. It represents a process of evolution that would puzzle a Darwin. Then there was the Stearns, which had less engine in more space, and more parts than were impossible to get at without the aid of a pit than could be found on a season's output of the same make of cars to-day. At that time the Elmore was a wire-wheeler perched aloft on a sort of hermaphrodite running-gear, with its power plant of the two-cylinder type somewhat in the position of Mahomet's coffin,

suspended in an inverted position underneath the seat.

Wherever one looks around the Garden there are the old familiar names and the familiar faces that make the Garden show somewhat akin to a family reunion to the old-timer. Who would recognize in the Thomas or the Haynes of to-day their horizontal-engined, short-wheelbased prototypes of but a few short years ago had he not been able to follow the different steps of development that have taken place in the interim? Then there was the Pierce "Motorette," and its bigger brother of a year or so later, the Pierce "Starhope"—cars which had the cardinal virtue of being able to run in high degree, but the former of which, at least, reminded one more of a gattling gun. From those models to the Pierce "Great Arrow" and the Pierce "Big" and "Little" sixes is a far cry indeed.



WHITE STEAM CARS WERE WELL AND EFFECTIVELY PLACED.

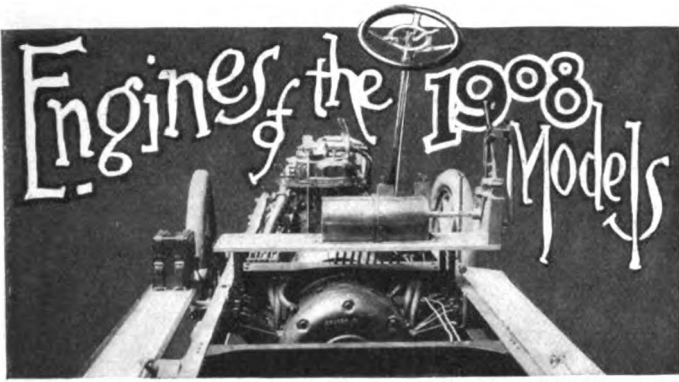


But even more so is a comparison of the one and two-lunger Knoxes and their ponderous parts with those of their refined successors that bear about as much resemblance to their honored forbears as an ice wagon does to a racing sulky. And so it goes down through the list; Franklin air-cooling is still the same air-cooling of those days, but the refinement accomplished seems like the work of a dozen years.

Here are still the same numerous representatives of the Pope family, and it will be remembered that the Pope cars were among the very first to adopt forms of construction that are now recognized as standard, such as the four-cylinder vertical motor placed forward under the bonnet. The early annals of American automobile racing are inseparable from the Peerless, and its rapid development to a state of perfection recalls the service rendered the industry in its infancy by the racing game. No matter what part of the Garden the visitor finds himself in he sees cars that have graced the same or neighboring spaces ever since the great arena has housed the automobile show. The Locomobile, which in the early days had to live down the name borne by its ill-fated predecessor of the tea-kettle type of steamer; the Cadillac, first, last and all the time, the undying advocate of single-cylinder economy and simplicity; the Northern, Lozier and Matheson, all of which took part in the early struggle toward the goal.

In this connection the show houses one of the most notable examples of well-directed and persevering effort that any industry can boast of—that of the White. When steam was practically down and out, to revert to current slang, the builders of the White maintained their faith in it and through their determination and skill have shown that it is far more applicable to the automobile than its first users ever dreamed of. The result, as shown by their exhibit, is a monument to the name.

Taken all in all, the show is representative of the acme of the American automobile industry, and one cannot fail to be struck by the reflection: Why should an American think of buying a foreign-made car?



POWER-PLANT AND ELECTRIC TRANSMISSION OF THE COLUMBIA.

BY CHARLES B. HAYWARD.

It only requires a little observation and study to show, despite the fact that a high degree of standardization has been approached by American automobile builders, that all motors are not alike by any means. They differ, not alone where details are concerned, but even with regard to many features that must be considered as of greater importance than merely a change of arrangement. The latter essential is capable of so many changes that it is quite evident there are a great many ways of accomplishing the same end where the internal combustion motor is concerned.

To begin with there is more diversity of opinion apparent now regarding the matter of cylinder casting than there was two or three years ago, when it was confidently predicted by the advocates of one method or the other that their school would predominate in the near future. Those who were advocates of one type or another at that time have remained loyal to their convictions, so that there are just as many instances of cylinders cast in pairs and cast separately as there have been. The same thing is true of the various methods of valve placing and operation. The practice of making a one-piece casting of the four cylinders has found a new recruit in the Thomas town car, though this is a special design that embodies numerous other features of merit, placing it practically in a class by itself.

Newcomers to the ranks of the cast-in-pairs advocates are to be found in the Selden; other prominent instances of this being Locomobile, Royal Tourist, Lozier, Peerless, Columbia, Winton, Oldsmobile, Stearns, Thomas Detroit, Pope-Toledo, Studebaker, Packard and Haynes light cars, while those upholding the plan of casting the cylinders individually are to be found in Pierce, Haynes, Apperson, Franklin, Corbin, Knox, Thomas Flyer, Cadillac, Stevens-Duryea, Autocar, Matheson, and Elmore, the latter making as short a motor with independently cast cylinders as the average four-cycle type with twin castings. The Northern and the Waltham display the only in-

stances of the two-cylinder horizontal type to be found show, though they differ in all other respects.

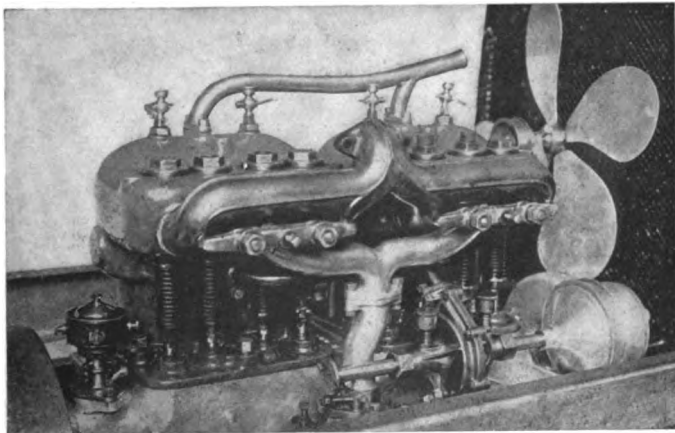
Some New Motors at the Show.

It might be thought, owing to the membership of the exhibiting association being limited and designs as a whole having reached a very marked degree of standardization, that there would seldom be any really new motors to chronicle at the annual shows. Naturally, new in this connection must be regarded as indicating more the fact that the makers of the motors are newcomers in the market rather than that the designs are particularly novel, but even this finds one or two striking exceptions, such as the Franklin air-cooled motor and the new Knox water-cooled motor, a complete description of which appears elsewhere in this issue. While still adhering to those standards of design long familiar on the Franklin motor, the latter has been practically redesigned and with its spherical combustion chambers and concentric valves, the arrangement of which has been very cleverly worked out, it embodies a great many features of interest to the technically minded visitor with an eye to what is new in the way of motor design and construction.

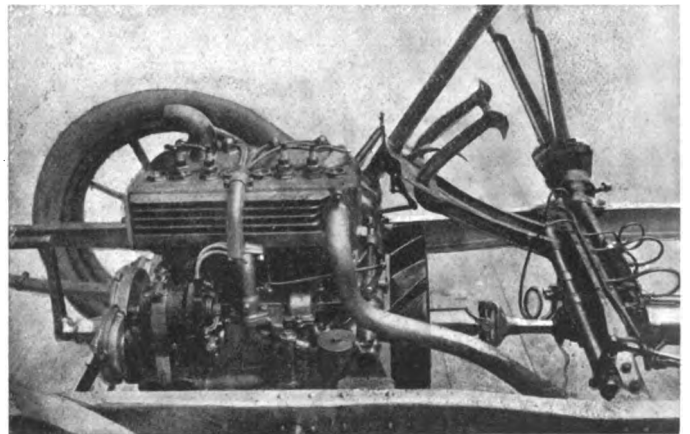
This also applies to the new water-cooled Knox motor, in that the latter is among the first, if not actually a pioneer, in the readoption of a principle long utilized in the building of stationary gas engines—that of making the cylinder heads separable. The design is of unusual interest, as by careful study the disadvantages which caused this form of construction to be abandoned at the outset in the building of automobile motors have been completely overcome and all the advantages it affords gained.

The Corbin water-cooled motor is another newcomer that is of interest, and the first thing about it to strike the observant eye is the peculiar shape of the lower half of the crankcase or oil pan, which has been designed to act as a shield for the flywheel in the rear and has been extended forward sufficiently to protect the fan pulley and timing gears from below. The cylinders are separately cast units with the valves placed all on the left-hand side and operated by the direct thrust method from a single camshaft. The oil and water pumps are also on this side and are actuated by a separate shaft driven through spur gearing from the camshaft, while the inlet manifold is carried between the central pair of cylinders and the carburetor located on the other side of the motor. The outlet from the gear-driven centrifugal pump is also carried between the cylinders to the opposite side. Both inlet and exhaust manifolds are held in place by the same yokes, making them easy to dismount. Particular attention has been paid to accessibility, unusually large hand holes being provided in the sides of the crankcase—in fact, this is practically all open when the plates have been removed.

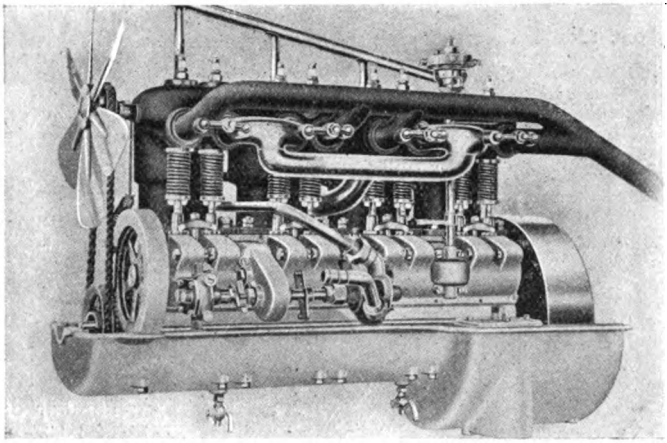
The new Lozier four-cylinder motor has a combined pan



WORKING SIDE OF THE NEW 25-HORSEPOWER SELDEN MOTOR.



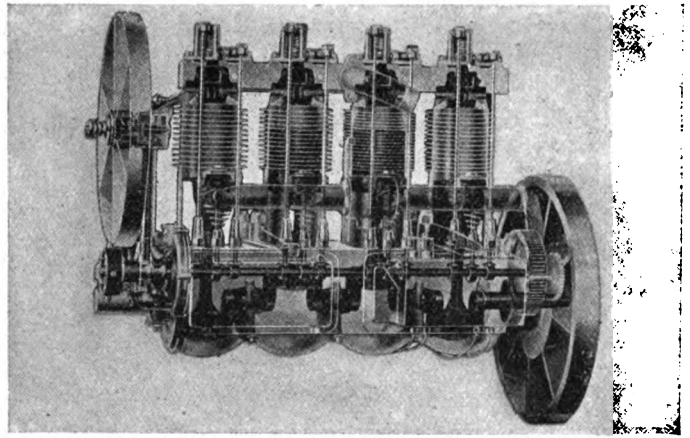
MERITORIOUS FEATURES OF THE THOMAS TOWN CAR MOTOR.



FEATURES OF THE NEW CORBIN WATER-COOLED MOTOR.

and crankcase which represents an extremely creditable example of aluminum casting.

With the exception of the fact that the cylinders are cast in pairs, much of the foregoing description may be said to apply to the new four-cylinder Selden motor, which is shown in two sizes, a 4 1-4 by 4 1-2-inch, rated at 28 horsepower,



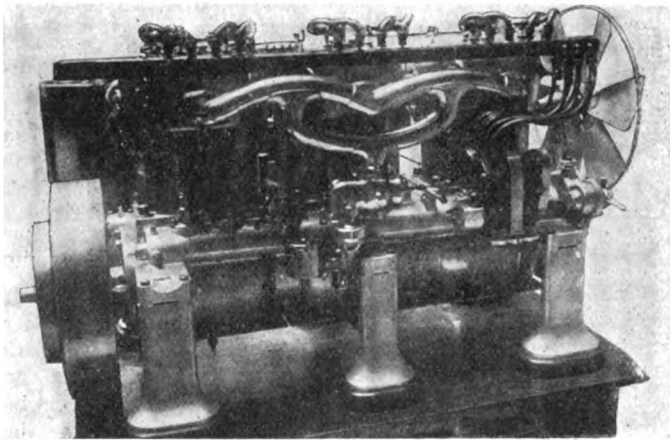
SHADOWGRAPH OF THE NEW FRANKLIN AIR-COOLED MOTOR.

a short shaft located at the rear of the motor and driven from the end of the camshaft. The exhaust manifold is given a slight upward bend, and the outlet, which is located in the center, faces toward the motor, the connection to the muffler being carried across and down.

Compactness Guiding Star of Designer.

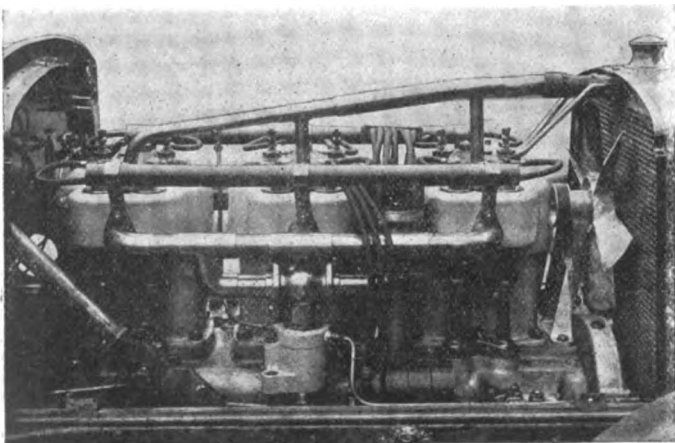
It is when he comes to consider the power plant of the new Thomas town-car that the observer finds a great deal of food for reflection. It is quite evident that compactness has been the guiding star of the designer throughout, and that this has been amply achieved is apparent at a glance, as its 20-horsepower motor could almost be carried off under one's arm. The cylinders are cast as a single unit, and the most noticeable thing about this construction is the fact that the exhaust manifold has been made an integral part of the motor. It is also provided with cooling flanges.

To one familiar with foreign practice, it is plain that there has been little attempt at originality, but that the designer has culled the best from a number of standard French designs and embodied the results in this motor. For instance, it is easy to recognize the Renault type of flywheel, the C. G. V. single-piece casting, the Brasier combined tank and radiator, Renault type of thermo-syphon circulation, and the latter is a particularly noticeable feature which adds materially to the neat appearance of the motor as a whole, as there is no water-piping in evidence, with the exception of the radiator connections, while all the wiring is encased except right at the plugs, and the magneto can be lifted off for inspection, merely by loosening a thumb-screw. The motor as a whole is carried on a sort of oscillating three-point suspension, which has been very ingeniously worked out, and carried to a successful result.

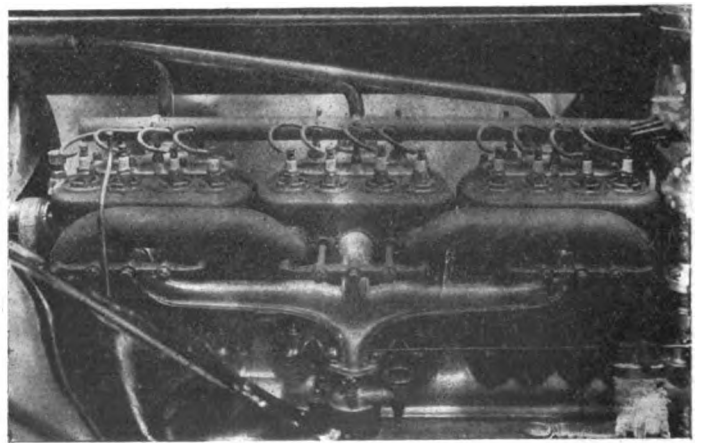


THE HIGH-POWERED SIX-CYLINDER PEERLESS WITH DUAL IGNITION.

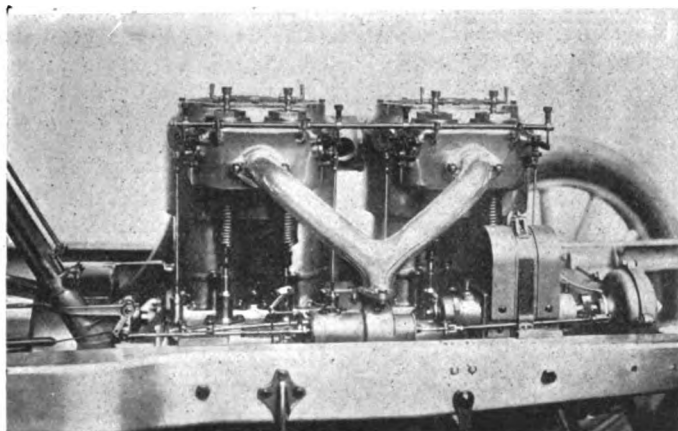
and a 5 1-4 by 6-inch motor, rated at 45 horsepower under the recently adopted formula. The centrifugal pump and magneto are both driven from an independent shaft on the right-hand side of the motor, which is also the valve side. On the smaller motor a mount is provided for a magneto, but on the latter the generator itself forms a regular part of the equipment. The low-tension timer is mounted vertically on



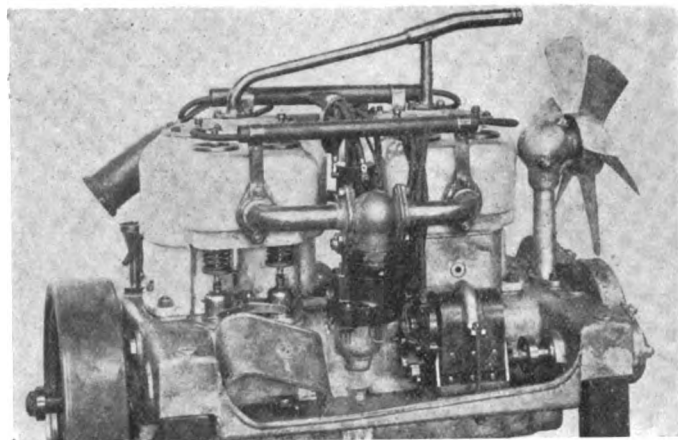
SIMPLICITY OF THE INLET MANIFOLD OF THE NEW LOZIER "SIX."



DEVELOPMENT OF THE OLDSMOBILE "SINGLE" OF FORMER DAYS



LOCOMOBILE MAGNETO, CARBURETER AND CIRCULATING PUMP



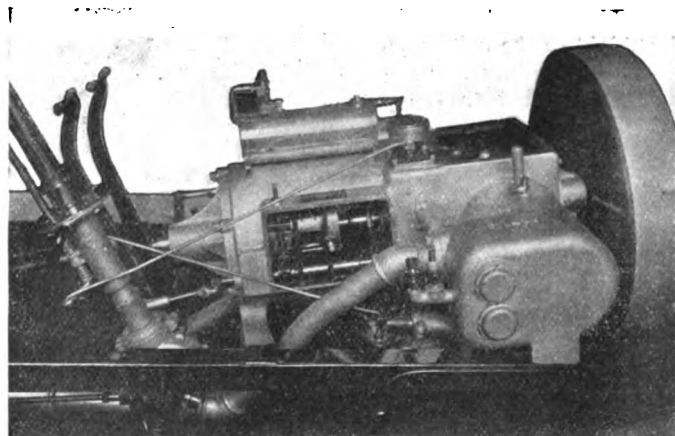
SHOWING THE LOZIER CRANKCASE CASTING AND VALVE COVERS.

That there are not a great many novel features to be looked for in the new sixes is not difficult to learn, for, except in such cases as have the subject of special design, the majority of the six-cylinder motors do not differ greatly from the fours turned out by the same makers. Though so much has been said and written of the six-cylinder motor as being something quite new during the past season, it only requires a moment's reflection to recall the fact that this is far from being the case. There have been six-cylinder racing cars for three years past and six-cylinder stock cars for fully two years past, one maker alone claiming to have several hundred of them on the road. The Stevens-Duryea "Big Six" dates back to the 1905 shows, and the Pierce Arrow to the 1906 A. A. A. tour, while the Thomas six-cylinder racing car was one of the first of its kind to be seen in this country, and the Franklin air-cooled six has been a stock car for two seasons. So it seems the six is not an extreme novelty by any means, but the increased demand for this type of motor is reflected in the increased number shown at the Garden, among which such newcomers as the Pierce "Little Six" and the Winton "Sixteen Six" are of special design, the latter being the sole representative of the Winton line, which this year is confined to this type of car.

But, as a general rule, designers have adhered closely to the standards represented by their productions of the four-cylinder type in evolving the six-cylinder motor—so much so as to lead one to the conclusion, as has been frequently overheard at the Garden, that "it is merely a case of sticking on another pair." For instance, the Peerless six-cylinder motor is characterized by cylinders cast in pairs, oppositely disposed valves actuated by the direct thrust method from separate camshafts and other features that have long been identified with Peerless construction. In the same manner

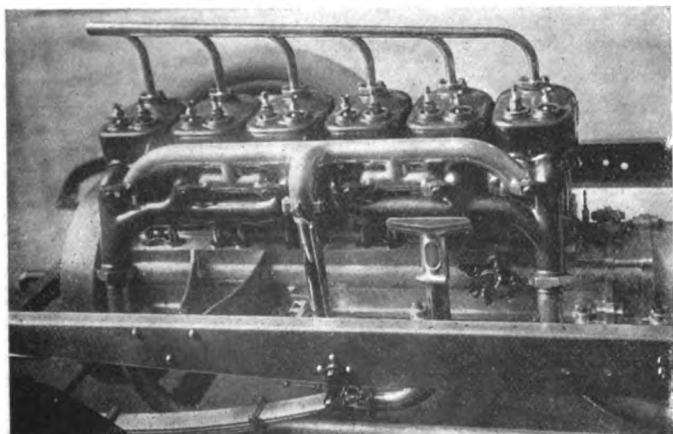
the new Thomas six-cylinder has separately cast cylinders, which is also true of the Pierce "Little Six," while the new Stearns six is true to its four-cylinder prototype.

This practice of merely adding another pair of cylinders to the existing type of motor, which many of the makers have found it expedient to adopt as the easiest and most

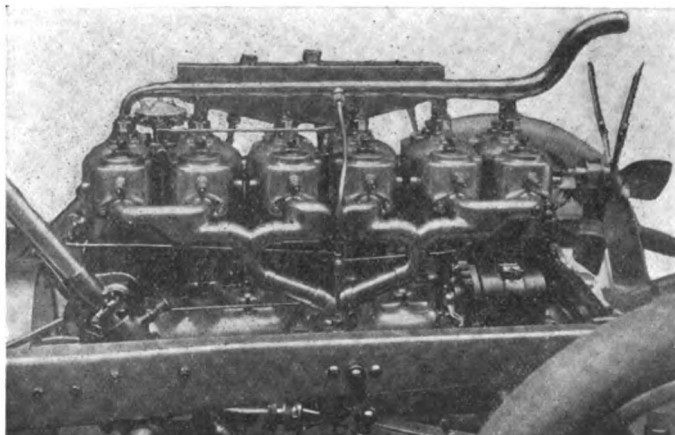


COMBINED POWER-PLANT AND SPEED GEAR OF THE NORTHERN

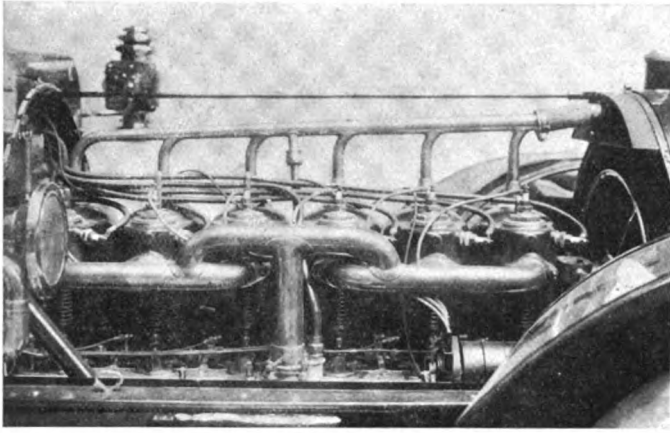
economical method of bringing out a six-cylinder model, has naturally led to the production of unusually powerful cars, despite their extremely conservative official ratings, which are very misleading—or at least they would be if any of the salesmen at the exhibits were content to have the visitor depart with the impression that the official and the actual rating were one and the same thing.



THREE-POINT SUSPENSION OF THE STEVENS-DURYEA "LITTLE" SIX.



EQUALIZED INLET MANIFOLD OF THE NEW PIERCE SIX-CYLINDER

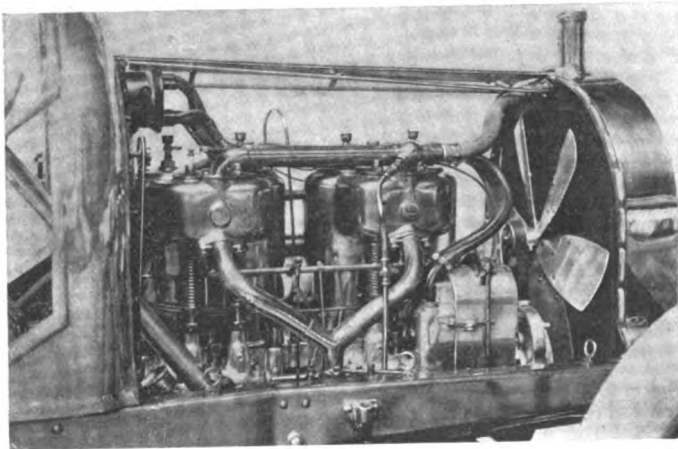


LOW-HUNG POWER-PLANT OF THE NEW THOMAS SIX-CYLINDER.

For instance, the new Stearns six, which is admittedly a replica of the well-known four of this make, with the addition of an extra pair of cylinders, was rated by the makers at 90 horsepower when first brought out, and its cylinder dimensions of 5 3-8 by 5 7-8 inches amply justify this, though its A. L. A. M. rating is but 69.3 horsepower. The Peerless 5 7-8 by 5 1-2-inch six-cylinder is rated at 57 horsepower, evidently an error, and the Thomas at 72.6, from which it will be apparent that designers generally have seemingly lost sight of the chief reason for building six-cylinder motors—that of gaining smoother torque and greater flexibility—and have taken to the building of ponderous motors for which there can naturally only be a limited demand at the best. It is in these examples of excessive weight and power, which mean correspondingly high tire and fuel expense, that the advocate of the four-cylinder type finds his best argument against the practice of adding another couple to the present standard, which has certainly been brought to a high degree of efficiency and smooth running.

Sixes Are Larger and Very Powerful.

If the six-cylinder is to be the coming type that will ultimately sweep all before it, as some of its most ardent advocates are now of the opinion, such cars as the Stevens-Duryea and the Pierce "Little" Sixes represent steps in the right direction. That six-cylinder cars of 70 to 90 horsepower, or any other design of such high power, do not represent an ultimate standard is a statement that calls for no refutation, and the fact that makers will only build limited numbers of such cars shows that they are of the same opinion. It is merely a case of taking advantage of a demand that is making itself felt at the moment. Firms like the builders of the Packard, Cadillac, Columbia, Matheson, Knox, Corbin, Autocar and some others have remained steadfast to their allegiance to the four-cylinder type.



FAMILIAR LINES OF THE ROYAL-TOURIST MOTOR FOR 1908.

When it comes to the matter of motor accessories there is one trend that is very noticeable, and that is toward the adoption of the magneto. In fact, from a much maligned object, the value of which was very slightly regarded by the American maker but a very few years ago, the magneto has come to be a standard feature of motor equipment to such an extent that it is not lacking on any but the lowest-priced cars, and there merely owing to the fact that the list price of the car does not permit of its inclusion, though it is almost invariably offered as an extra, and motor design has been modified to facilitate its fitting in practically every instance. One exception to this is to be found in the case of the two-cycle Elmore, on which the Atwater-Kent ignition apparatus used in connection with dry cells as the source of current, has been adopted as the regular equipment.

Where this essential is concerned, technical opinion appears to be pretty well divided regarding the merits of the self-contained type of high-tension magneto, such as the Bosch, and the high-tension with coil type, such as the Eismann, though in at least one instance the latter is fitted as a regular part of the equipment and the purchaser is given an option of the Bosch where preferred, this being on the Pope-Toledo. Low-tension ignition can hardly be said to have made any perceptible inroads into the ranks of those advocating the high-tension type, as such cars as the Locomobile, employing its own type of magneto, the Matheson, Studebaker and Columbia are still the most prominent upholders of make-and-break ignition.

Where the carbureter is concerned, the chief change to be noticed is in the adoption of the Venturi tube type of Holley make on the Winton, and the adoption of a water-jacketed type in connection with a hydraulic governor on the new Lozier motor, similar to that used for three years past on the Packard and still consistently adhered to. There is another striking feature about carbureter practice, and that is that the average maker has come to the conclusion that he can buy a better carbureter than he can turn out in his own works, and, in consequence, a surprising number of the old line makers have given up producing this essential in their own factories and now purchase their carbureters complete, ready to be fitted to the cars. There is little or no change where the remaining motor accessories are considered, with the exception of the lubrication, in which there is a tendency manifest to reduce this to an extreme of simplicity, the oil being circulated by a pump and returned to a well, where it is filtered and again pumped through the system, thus eliminating the numerous small oil feeds which mean added complication. Either in this form, or something akin to it, are the lubricating systems of the Pierce, Packard and Lozier, all three being distinguished by their simplicity. Though not exactly an accessory, valve mechanism covers are a new adjunct and may be mentioned under this head; they are employed on the new Winton and Lozier motors.

Some Concluding General Observations.

While the past season has not been marked by defections from the ranks of advocates of air-cooling, those of water-cooling have gained two new partial recruits in the shape of the Corbin and the Knox, both of these motors, as already mentioned, being of considerable interest. A review of the entire show reveals but four different makers, if the motor-cycles be omitted, namely: Franklin, Knox, Corbin and Waltham, although the latter are also showing a water-cooled car having a two-cylinder horizontal type of motor, which is merely a runabout body mounted on the standard Waltham two-cylinder delivery chassis for 1908.

The White steamers are also the sole representatives of their class, and as such hardly come within the purview of any review of tendencies having to do with the internal combustion motor, of which the show as a whole affords so many striking examples of perfected types.



By W. F. BRADLEY

CONSIDERED numerically, the display of commercial vehicles at the A. L. A. M. show has not assumed very large proportions. Gasoline is represented by not more than half a dozen firms, and constructors of electric commercial vehicles in several cases only show one or two examples of the numerous types produced by them. One concern had the distinction of holding a vehicleless stand, adorned only by a group of salesmen, while the show space of several other firms provided ample accommodation for spectators.

Most conspicuous of all, on account of its great size, is the Alden-Sampson gas-electric road train, consisting of a four-cylinder gasoline engine coupled up to a dynamo, the current produced being transmitted to the tractor and a series of trailers. The distinguishing feature of the train is that each of the six-wheel trailers is controlled and steered from the tractor, every vehicle following exactly in the track of its predecessor. A full train of five or six trailers, each one carrying a load of five tons, can thus be handled by one man.

In the heavy-load gasoline vehicle class Hewitt stands alone with a powerfully constructed five-ton truck, shown in bare chassis and with a stake body. The power plant, which is carried forward under the driver's seat, where it is easily accessible, consists of a four-cylinder engine with cylinders cast in pairs, developing 32 horsepower at 1,000 revolutions. Having been specially designed for this class of work, the engine has naturally been made as accessible as possible, and constructed so that any part may be inspected without dismantling the whole. As an example, large inspection plates not only admit of a complete examination of the main bearings, but allow the pistons to be removed without dismantling the engine. The valves are all on one side, flat seated and much larger than is usual in automobile practice, and are operated by a one-piece nickel-steel camshaft. On the opposite side of the engine is a high-tension gear-driven Bosch magneto, and the automatic carbureter, both easily accessible, the magneto being dismantlable in a few minutes. Fuel supply is by pressure feed from a large tank hung to the side frame, to an auxiliary tank forward and slightly above the level of the engine. From here the flow to the carbureter is by gravity.

Transmission is of the planetary type, with nickel-steel gears and shaft; the improved control, by which three speeds forward

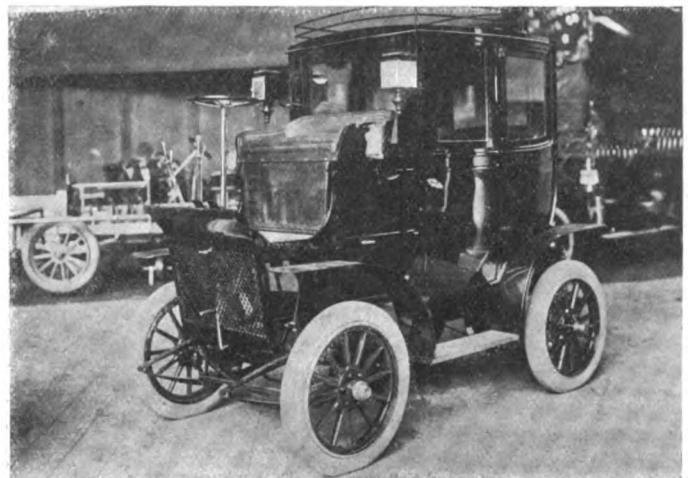
and reverse are obtained, is designed to make it impossible to put in one speed until the other is automatically thrown out. Final drive is by means of heavy side chains from countershaft to the rear wheels, the countershaft with bevel gear and differential being mounted on Timken roller bearings. The economical speed claimed for the truck is seven to nine miles an hour. The maximum speed when running light is fifteen miles an hour.

In addition to their heavy vehicle, the Hewitt Motor Company displays a single-cylinder 10-12-horsepower light delivery wagon, with closed body, guaranteed to carry loads of 1,000 to 1,500 pounds.

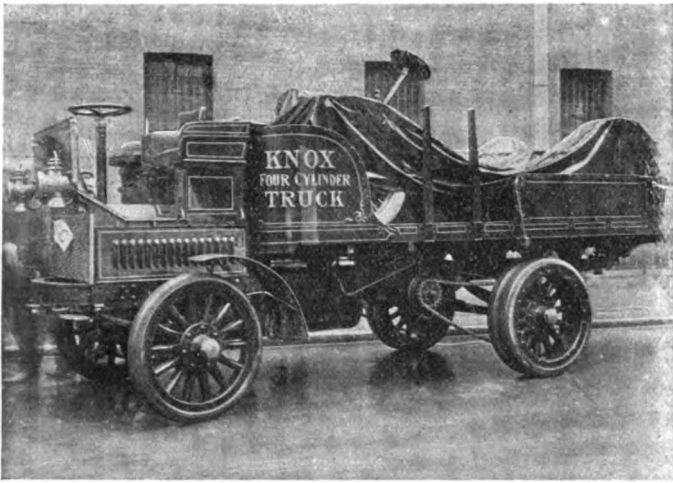
The H. H. Franklin Company's only representative in the commercial class is a light stake wagon driven by an air-cooled motor carried forward.

Knox commercials, though a big family, are represented only by the three-ton four-cylinder truck, the engine of which is carried forward under the driver's seat, leaving a body space twelve feet long by sixty-eight inches in width. Wheelbase of this vehicle is 111 inches, tread being 60 by 62 inches, single solid tires being carried on the front wheels and dual solids, 36 by 4 inches, on the rear wheels.

Although the new E. R. Thomas Company's town vehicle occupies a place in the pleasure section, it is also entitled to representation in the commercial class as a taximeter cab, it being the intention of the company not only to equip the chassis with elegant town bodies for private city use, but to place a number of simpler landaulet bodies on the same chassis for taximeter service. The chassis, which is an entirely new production, having nothing in common with the touring models of the firm, has been designed with a view to compactness and simplicity and easy handling in traffic. The power plant, a model of compactness, consists of four cylinders in a single casting, the exhaust manifold being an integral part of the casting, provision being made for carrying off the heat by external flanges as well as a water jacket surrounding all valves. To further decrease the size of the engine the crankshaft is mounted only on two end bear-



THE ATTRACTIVE FRANKLIN CAB WITH AIR-COOLED MOTOR.



ONE OF THE FINE FREIGHT CARRIERS IN THE BASEMENT.

ings, the customary center bearing being abolished. Another distinguishing feature of the engine is thermo-siphon water circulation and the entire absence of piping, the only water connections being from the head and base of the radiator to the jacket surrounding the cylinders and valves.

Selective transmission has been employed, with the entire gear set combined in the differential housing on the rear axle. A double universal joint is provided on the propeller shaft, and connection to the power plant by a cone clutch is made through a special pivoting suspension, claimed to be an original feature.

Rear suspension of the Thomas cab is by full elliptic springs of a special design, attached to the side frame by means of projecting hangers; together with the low center of gravity, these appear likely to give very easy suspension and comfortable riding under rough road conditions. Control has been simplified to the operation of a clutch and brake pedal and a foot accelerator. The sparking point being fixed—a high-tension Bosch magneto is employed—no spark lever is needed on the steering wheel; the throttle control by means of lever has also been discarded, leaving the steering wheel absolutely free of all controlling arrangements. Gear changing by means of selective type is reduced to its simplest form; three speeds forward and reverse are provided, provision being made against accidental slipping in of the reverse by a stop on the sector to overcome which the driver must press on the head of the lever. To keep out dust as far as possible the gate sector has been almost entirely inclosed. The chassis to be used for taximeter service are fitted with a Popp taximeter operated by flexible cable.

In the electric section the General Vehicle Company provides the largest display with a couple of heavy trucks having separate



A GENERAL ELECTRIC CAR THAT WILL CARRY FRESH MEAT.

motors and side-chain drive, and one light delivery vehicle.

At the Baker stand the only exhibit is a police patrol van of regulation type so far as body is concerned, but driven by electric power. Pope-Waverly shows a series of light electric delivery vehicles. Studebaker makes a display of electrics, showing various models with bodies and one bare chassis. Single and double motor electrics are the feature of the Champion Wagon Company, two types being shown.

THE SOCIETY OF AMERICAN GOOPS.

"The Society of American Goops" means that band of industrious press workers who endeavor to obtain as much free publicity as the wielders of the blue pencil will permit to filter into the news columns. During the annual shows, the "Goops" always get together, and to-night they are holding forth down in Houston street at "Little Hungary," where a gorge is taking place superior to the famous feasts of Lucullus—at least such is the case in the opinion of the "Goops," whose names are herewith given:

Toastmaster—R. H. Johnston, White Company.
 Committees—Band, Alexander Schwalbach; songs and piano, R. H. Johnston; cars, menu and feed, E. Ralph Estep; invitations, Harry T. Clinton, Alexander Schwalbach, F. Edward Spooner, F. L. Farote; badges, press, Alexander Schwalbach, F. L. Farote.
 Privates—C. W. Wurster, Stearns; A. L. Rich, Lozler; Charles R. Culver, Knox; J. A. Kingman, Locomobile; W. H. Workman, Packard; E. R. Estep, Packard; Charles Drysdale, Cadillac; F. Edward Spooner, Pierce; George M. Davis, Thomas; H. L. Humphreys, Welch; W. B. Walker, Franklin; H. M. Foote, Peerless; F. L. Faurote, Olds; C. W. Mears, Winton; R. H. Johnston, White; J. W. Drown, Corbin; J. F. Marstan, Pope-Toledo; John Coakley, Babcock; F. B. Hart, Rambler; C. G. Perceval, Cleveland; E. Leroy Pelletier, Ford; A. B. Tucker, Dragon; N. Lazarnick, Daguerre; Alexander Schwalbach, Darracq; Harry T. Clinton, A. L. A. M.; Arthur N. Jervis, Berliet; Duncan Curry, A. C. A. Show; Joseph E. G. Ryan, Chicago Auto Show; L. M. Bradley, A. M. C. M. A.; Jack Hiscock, Philadelphia Show; Howard Reynolds, Boston Show; J. W. Gogarn, Reo.

CHICAGO MOTOR CLUB'S 630-MILE CONTEST.

CHICAGO, Nov. 5.—Plans have been completed by the contest committee of the Chicago Motor Club for the 630-mile sealed bonnet reliability contest to be held the week the automobile show opens at the Coliseum. The dates set are November 26, 27 and 28, and the show will open two days later. The first day the cars will be sent to South Bend, Ind., and return, a distance of 230 miles. The second day to Rockford, Ill., and back, 200 miles, and on the third day to Ottawa, Ill., and back, another double century.

The trophy of the endurance contest, designed by Henry Thiede and modeled by H. G. Donar, of Chicago, is cast in bronze and mounted on an ebony base. Its height, including the base, is 42 inches. It is intended to make 150 reproductions of the trophy to be used as part of the decorations of the Chicago show, each one being mounted on a decorated column trimmed with red plush, with white and gold effects. The valuable and artistic trophy has been offered by S. A. Miles, general manager of the National Association of Automobile Manufacturers, which conducts the big show in the Coliseum.



ARTISTIC TROPHY FOR THE CHICAGO ENDURANCE RUN.



WHAT would an automobile show be without its wealth of accessory exhibits which lend so much of life and variety to every event of the kind? And usually the accessory maker and dealer is to be found wherever there is such a thing as an automobile show, even though two happen to follow each other in such close succession as is the case with the recent affair in the Grand Central Palace and this week's show in the Garden. There are some exceptions to this, however, in the shape of makers who are confining their efforts to the licensed show in the Garden, among those who are making a display in the latter alone, being the following:

Avery Portable Lighting Company.—"Autogas" tanks, made by this concern, at its factories in Milwaukee, Wis., are shown in two sizes, the smaller measuring 6 by 22 inches, containing 50 feet of gas ready for use, and weighing 30 pounds, while the larger cylinder measures 7 1/4 x 22 inches, contains 85 cubic feet of gas, and weighs ten pounds more. These tanks were invented by P. C. Avery in Chicago early in 1903, and were first known as the "Averylite tank." The tanks are made by pressing a disk of steel into the required shape, thus making the cylinder seamless, except at one end, which is accurately fitted and brazed in. Each tank is tested to a pressure of 600 pounds and has a tensile strength of 1,500 pounds to the square inch, though the normal gas pressure never exceeds 300 pounds. Should the tank be placed in a hot fire, a special safety plug with which it is equipped will break at 500 pounds pressure.

Bethlehem Steel Company.—Pressed steel frames of standard patterns, dropped-forged axles, crankshafts, steering knuckles, and a number of other automobile parts in special steels, rolled particularly for this purpose, go to make up this firm's exhibit. They also show samples of a line of high-speed tool-steel, specially adapted to working automobile steels. As they have one of the largest drop-forging plants in the country, the range of parts which they are equipped to make covers everything for which a drop-forging may be employed on a car.

Brennan Manufacturing Company.—Where motors are concerned, this firm is in an excellent position to take care of the demand for both air and water-cooled patterns in the four-cycle type. They show examples of both in the four-cylinder vertical type, but also make the horizontal opposed twin-cylinder type, embodying many special features of their own design, as well as six-cylinder vertical motors, which are extremely compact power units. They are representative of the highest current standards

of motor design, and particular attention has been paid to attaining the maximum of simplicity.

Columbia Lubricants Company.—All oils look alike to the average visitor to automobile shows and, as a general rule, exhibits of lubricating oil are not the most attractive things in the world to the man in the street. But it is quite different with brands such as the "Monogram" shown by this concern especially for automobile use, and to which they have devoted their attention for several years past. In the name "Monogram" many an autoist recognizes a familiar friend.

Dow Tire Company.—Although it is less than a year ago since the Dow non-deflation tube was presented to the automobile world, the record it has made in the meantime has been such as to attract widespread attention from autoists generally. The exhibit of this concern is consequently of more than passing interest in that the performance of driving nails and other puncture-producing devices into a pneumatic tire without the latter losing its inflation, is somewhat puzzling at first sight. The Dow inner tubes are made of two layers of a special material around the greater part of the circumference. Between these two layers is placed a special compound which has the property of automatically healing punctures in the tube.

Cook's Standard Tool Company.—Every autoist knows the Standard jacks, for they were one of the first for automobile use to be placed on the market. They are of the single-acting type in which the car is lifted or lowered only on the downward stroke, the upward stroke being free. They are shown in a number of sizes, capable of lifting the heaviest cars made.

Dietz Company, R. E.—It is evident that this concern has had its ear to the ground during the past year, as one of the things to be found in its exhibit consists of a line of lamps which are shown in a handsome black enamel finish, designed to correspond with the polish of the rest of the body, and which will not require any attention in the way of cleaning, which is the greatest drawback of the polished brass lamps. They also show a complete line of searchlights in different sizes, together with the Dietz generators. The latest productions in square side lamps for both electricity and oil are also a feature of their showing.

Duff Manufacturing Company.—"The jack that Duff builds," in other words the Barrett automobile jack, is the subject of this exhibit. They are shown in both single and double-acting types and embody an improved lowering device. They are compactly proportioned, very substantially made, and very simple to operate.

Empire State Tire Company.—Numerous claims of superiority are made by the makers of these tires over other types, for the reason that the tread of the Empire is extensible, and consequently, when inflated has a much greater wearing surface than is usually the case. The successive discontinuation of the layers of fabric at the hinge, and the substitution of layers of rubber, renders the universal breaking at this point practically impossible and prevents blowouts, except as a result of direct puncture. This firm also shows the Greenwald non-skid tread and a puncture-proof armor known as the "internal protector."

Edouard Dubied & Company.—This concern is represented in this country by Ch. Dien, who shows the "Edco" spark plugs made by them. The latter have several advantages in construction, the absence of a joint between the insulator and body of the plug making it perfectly gas-tight, while the insulator of steatite is milled directly into the metallic body of the plug, thus giving hermetical sealing. Ch. Dien also shows a line of valves, lugs, screws, nuts, non-skid rivets and chrome leather.

Hardy Company, R. E.—"Sta-Rite" specialties form the subject of this firm's exhibit and include such things as ignition plugs, spark coils, and automobile accessories. The "Sta-Rite" plugs have been adopted as a standard part of the equipment of a very large number of American cars, and are probably made in a greater number of different styles, types and sizes than any other line of plug on the market. In fact, there are six distinct styles and 47 sizes, the patent rights and the exclusive sale of these plugs being owned by this company. This firm also makes a line of mica insulated plugs, as well as high-tension spark coils.

Hoffecker Company.—Hoffecker speed indicators and mile registers form the subject of this firm's exhibit, and several of them are shown in operation. In some instances this is done with a glass enclosing case substituted for the usual metal case, so that the spectator may note the extreme simplicity of the apparatus as well as the manner in which it works. Just what the interior of the usual speed indicating apparatus might consist of has long been a puzzle to the average person, so that this method of displaying the instrument attracts a great deal of attention.

Indestructible Steel Wheel Company.—Automobile wheels of a totally different type that well merit the name of "indestructible," are shown by this firm. They are of pressed steel put together by riveting, the whole being especially designed and offering many advantages for automobile use. They are made in three gauges of metal, weighing from 11 1/2 to 18 pounds up per wheel, making them applicable to all weights and sizes of cars, and having a carrying capacity of 15,000 to 50,000 pounds, for pleasure or commercial vehicle use. The pleasure model is made particularly light by means of perforations between the spokes. The fact that these wheels are employed on the car used by the circus performers in "Looping the Gap" speaks for itself.

Janney-Steinmetz & Company.—Among the numerous specialties shown by this firm, doubtless the one which attracts most attention is the Hill lock valve, otherwise known as the "automobile hitching post." This is a Yale lock cut-off for the gasoline pipe, equally adaptable to either gravity or pressure feed, and which effectually prevents a car from being stolen. They also show their line of cold-drawn seamless steel tanks.

Kilgore Manufacturing Company.—Here the autoist is invited to "ride on air," as the Kilgore shock eliminator is the only one of the pneumatic type on the market, acting as it does on the same principle as the car's tires. The Kilgore eliminator works on the principle of actually absorbing the shock in compressing air, this being clearly illustrated at the exhibit.

Pittsfield Spark Coil Company.—One of the latest things shown by this concern is a new high and low-tension switch, made for use in connection with their own type of high-tension magneto and also as part of a four-unit coil, such as is generally used in the standard dual system of ignition. The Pittsfield magneto, which is of the high-tension with non-vibrating coil type, has been greatly improved since its first appearance last

year, and is shown in operation in connection with the Jewel plugs, made by this firm, as well as their new switches. The latter are of extremely neat design, all external parts being of polished hard rubber. They also show a complete line of coils for every form of service, including motorcycle, boat, stationary and dashboard use, as well as the Pittsfield timer, which is made in all sizes from one to eight cylinders.

Precision Appliance Company.—No better means could be devised to show the accuracy, reliability, and smoothness in action of "The Shooting Oiler" than the makers of the Hill Precision oilers have adopted at their stand. This represents the dash of a car with a glass footboard, beneath which is a small tank. The different leads from an oiler, which is being run by a small electric motor forward of the dash, terminate just under this glass, so that the spectator is given an interesting object lesson in the regularity of mechanical force-feed lubrication. By looking on the other side of the dash there may be seen the mechanism required to accomplish this object.

Rushmore Dynamo Works.—The chief thing of interest to the visitor at the exhibit of this concern is a 30-inch lens for one of the huge battleship projectors used in the U. S. Navy. This is shown in the rough and gives an excellent idea of the vast amount of work that must be required before it emerges in the finished state, as surmounting it are shown two finished mirror lenses of smaller size. This concern also exhibits a complete line of their automobile searchlights with Rushmore generators. Complying with the demand that is beginning to make itself felt, some of these are displayed in an attractive dark finish.

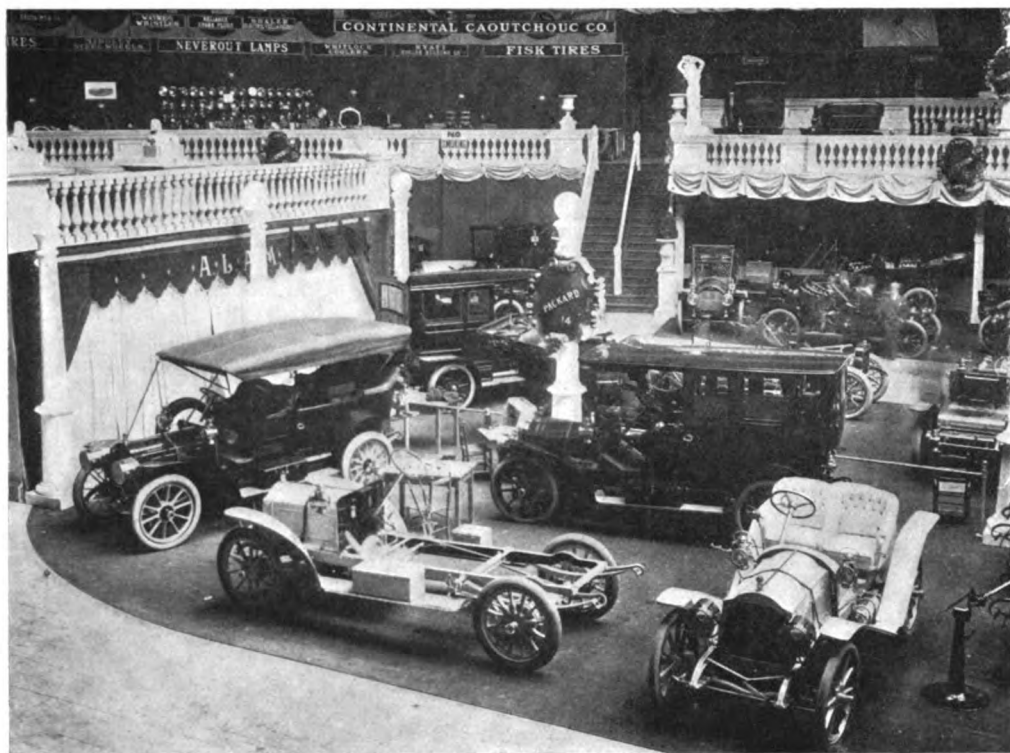
Smith & Son, S., Ltd.—Among the novelties shown by the makers of "Perfect speed indicator" is one specially designed for use on limousines. On the dash this shows a speed indicating dial, a clock face, and an electric annunciator with the usual signal. On the interior of the limousine body there is a duplicate of the speed indicating dial, and the button plate for operating the annunciator. They have also taken the agency for the "Crack" electric horn attachment, which may be fitted to any horn, so that the latter can be blown at will either by an electric button on the steering wheel or by the usual bulb.

Springfield Metal Body Company.—This firm makes a specialty of manufacturing aluminum and steel bodies, hoods and fenders for automobile use. Samples of completely equipped open and closed bodies are shown at their stand and form striking illustrations of the efficiency of this type of construction, on which the builders hold a number of patents. Their line includes every standard form of body, such as the popular straight line, five and seven-passenger tonneau, curved line bodies of their own design, runabouts, surrey types, and various inclosed bodies.

Stackpole Battery Company.—This firm manufactures a line of dry cells specially designed for automobile and motor boat use and of which they show a complete assortment in varying sizes at their exhibit. The brands under which the cells are made for this service are the "Autocrat," "Wizard" and "Radium."

Uncas Specialty Company.—The Leavitt secondary distributors and spark timers, which are shown in operation by this concern, always prove a never-failing source of attraction to the autoist who is interested in improving the ignition of his car, as well as of the manufacturer investigating the merits of new specialties in the ignition field. The primary timers are made in a range of sizes from single to six-cylinder motors and are of the ball-contact type, though this firm also shows a line of wipe-contact timers of the roller type, known as "The Leavitt timer, La-coste pattern," beside which they show other Leavitt specialties.

Vacuum Oil Company.—Vacuum Mobiloils are too well known to the average autoist to require any particular introduction, although the exhibit of this concern in the basement has been made unusually attractive considering the nature of the article shown. A stack of varnished oak barrels reaching half way to the ceiling, each one bearing a different brand, gives some idea of the numerous grades of lubricating oil refined.

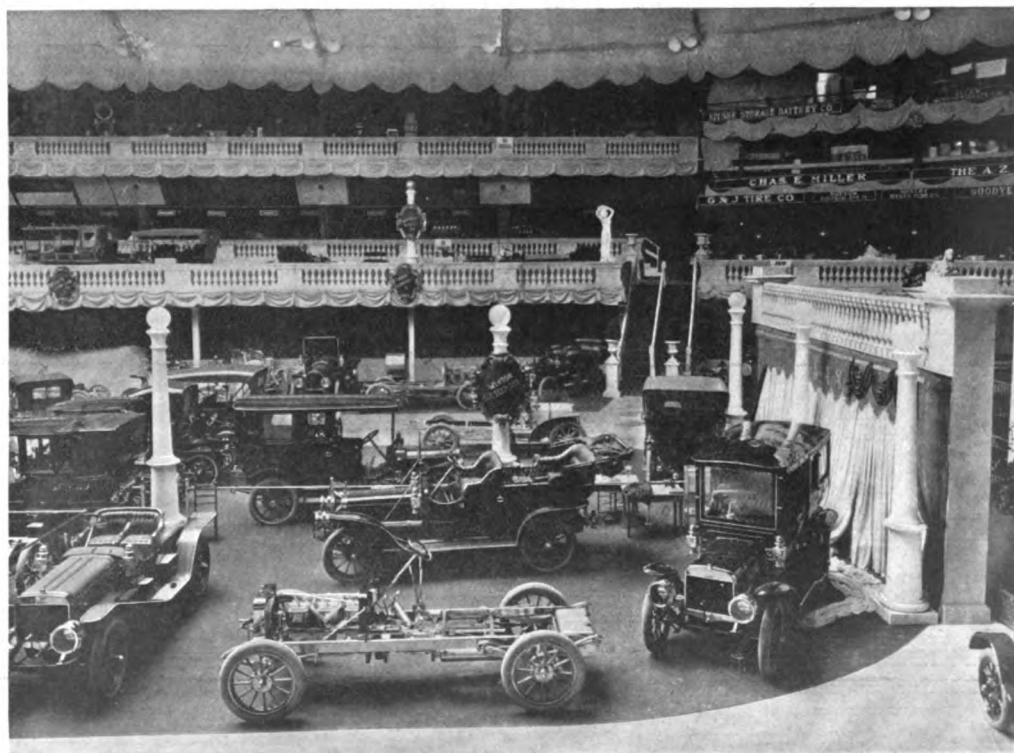


WHAT THE ELECTRICS REVEAL.

There is a quiet air of refined dignity about the restaurant annex at the Garden that is totally lacking, either in the main arena itself or any of the other overflow exhibits, for this year it is wholly given over to the exhibition of electric vehicles, and it may be added—there was not enough space to go 'round, so that some of them were compelled to exhibit in the basement. Everything is so clean and neat about an electric—in fact, they are the embodiment of luxury and comfort, so that such things as dirty oil or gasoline seem totally foreign to them. This does not seem to be the case with some of the cars staged by the General Vehicle Company, as they bear such a close resemblance to the standard types of gasoline cars that they are frequently mistaken for them. This concern exhibits a line that marks quite a departure in the way of electric vehicle design, in that a great deal of the experience gained in the gasoline car field has been taken advantage of by the electrical engineer. Thus the pressed steel frame, the long semi-elliptic suspension and the standard form of wheel steer have been utilized, while an extremely natural looking bonnet has been impressed into service to house the battery. Further, the somber colors of the coach builder have given way to the more attractive finishes familiar on gasoline cars, and the bodies are patterned after the type used on the latter, so that the resemblance is complete. But the greatest improvement has been made in the power plant and drive, now much more efficient. The Baker runabout is another production that appears to be out of its element in the midst of a number of electric cars, as

since its first appearance last year, this electric roadster has been considerably improved and is difficult to distinguish from the most up-to-date type of gasoline car. This concern also exhibits a complete chassis illustrating the simplicity of the mechanism of an electric as exemplified by their special design and construction, together with several of their leading types of cars, such as a coupé, though the most striking car in the Baker exhibit is a hansom cab with the driver's seat forward. The "Babcock Idea" in electrics is illustrated by several of the cars of this well-known make, supplemented by a collection of attractive literature on the subject, which tells of the things the Babcock electrics have achieved in their long and successful career. The line of Columbus electrics is one of the most complete to be seen, and in addition to several types built by this concern, it also includes a

complete chassis. Pope-Waverley is synonymous with electrics and one of the special types of rear axle driving units with its hering-bone gears as employed on these cars shows how they differ in design from other electrics and the reasons for their superiority. They also exhibit several of their standard types of complete cars. There is a most complete showing of the pioneer Columbia electrics, particularly in the heavier types such as broughams, and the length of time this make has been on the market is a recommendation that speaks for itself. The R. & L. electrics, made by the Rauch & Lang Carriage Company, Cleveland, O., complete the exhibits in this section and they are particularly worthy of attention. The Detroit electrics made by the Anderson Carriage Company, Detroit, Mich., are shown in the basement.





Gossip of
the Show

Col. George Pope, Chairman Exhibition Committee: "No exhibition equal to it has ever been held before in this country. It marks an epoch in the construction of automobiles, and the man who cannot satisfy his automobile wants, be they large or small, in the present show, is certainly a difficult one to please."

* * * *

W. E. Metzger, of Executive Committee: "We are thoroughly pleased with the show; agents are here, business is being done, and genuine interest is shown in the exhibits. I believe that there are more people here during the day than at any previous show, though the gate receipts have not been announced yet. Personally the show is held rather too early, the October date having a tendency to cut down Autumn sales."

* * * *

Charles Clifton, President A. L. A. M.: "Certainly the show is an excellent one, the exhibits being superior to anything shown before in this country. There is a sense of proportion about the hall, an excellent showing of the exhibits without anything being hidden by decoration, that is thoroughly pleasing. Having just arrived from a city where the dollar is not as mighty as in New York, but where we still pay out in hard cash, I am not able to judge more closely the results of the show. Naturally

the financial disturbances will affect us, for automobiles cannot be produced automatically whatever the conditions and stored up until there is a demand for them; but the tightness is not likely to be more than a condition that is merely temporary."

* * * *

Football and automobiles have few things in common, but the advent of the many sixes has been responsible for the memorizing of cabalistic trains of figures on the part of the numerous salesmen, and not a few of the visitors have been surprised to overhear one of these attentive and earnest, dinner-coated, walking encyclopediæ of automobile lore at the Peerless stand say in all seriousness to an interested onlooker, "1-3-2-6-4-5"—and his hearer seemed to be "on." He had his little book by heart, did this "explainer," but at most of the other stands where sixes were a feature the answer was usually: "I'll give it to you in a moment; I have it in my note book." "It" was the order of firing of the cylinder of the sixes, and the reason for the unusual interest displayed in this fact was that each maker seemed to have worked out a different combination. In the Oldsmobile this is 1-4-2-5-3-6, and in the Winton 1-5-3-6-2-4, and different combinations are to be found on the other sixes, the only thing they have in common being the use of the forward cylinder as the starter. Among the visitors there is a tendency to catch on quickly to the technical details.

* * * *

The fair sex displays much keener interest in the exhibits at the Garden than has ever been shown before. The interest, too, is not merely in the upholstery, mirrors, and toilet requisites of the various handsome limousines, but in the mechanical construction of engines and transmission. At one stand a fair visitor was deeply interested in the starting handle, and, with a skill that revealed more than a passing acquaintance with the gentle art of cranking, seized the lever of a well-known make and pointed out a structural arrangement which made it difficult for a lady to start up that particular car. Another fair visitor discoursed on the make-up of a gear box in a manner that would have been a credit to a mechanic. Women at the steering wheel, testing the disposition of the pedals and levers from their standpoint, were frequent.

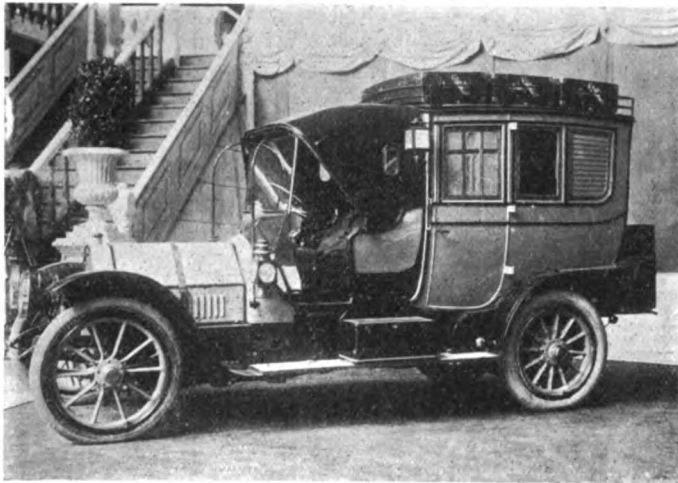
* * * *

"What's that gasoline car doing in here with the electric?" is a question that is asked every time a newcomer to the Garden strolls in among the attractive collection of *de luxe* electric vehicles in the restaurant annex, and the surprised query is well-justified, for some of the new General Electric pleasure cars, with their bonnets of the conventional type concealing the batteries, their standard wheel steers, and, more than anything else, the usual bronze side levers, look like anything but electric cars. It is difficult at first sight for even the most experienced autoists to distinguish the difference, and this is made doubly so by the fact that many of the latest models of gasoline-driven cars have dashboards that are practically free from the encum-

branches of oilers, coils, and switches that formerly made them easy to recognize. When Alexander Churchward, the designer of the new General cars, drove one of them up to the Garden door, he was warned to take the gasoline out of it before taking it into the building.

* * * *

Probably there are few better authorities on the good points of six-cylinder construction than "Teddy" Dey, who has charge of the exhibit of the George N. Pierce Company, which shows a "big" and a "little" six. And his is the

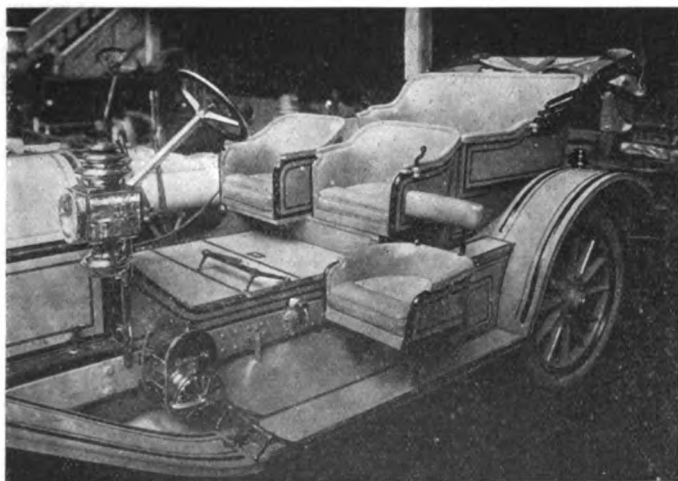


STAGE COACH TYPE SHOWN IN POPE-TOLEDO EXHIBIT.

familiarity of personal experience, not theory, for he handled the first "Big Six" Pierce in the A. A. A. tour of a year ago, and went over the route of this year's tour twice in the same car—first as a pathfinder, and secondly in the tour itself, in which he made a perfect score, being instrumental in large measure in again winning the trophy for the Buffalo club.

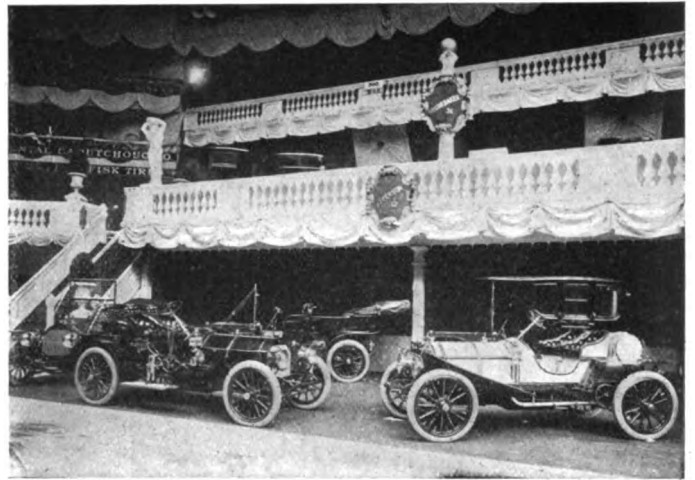
* * * *

Real interest, and not mere idle curiosity, was a characteristic of the Garden display. This could be better judged



MECHANICIAN'S SEAT A FEATURE OF THE STEARNS.

by the crowds on the galleries than on the main floor, and, although it involved climbing a steep stairway, visitors were always plentiful "up aloft." If for no other reason, it was worth going up merely to note the many ingenious appliances designed by accessories exhibitors to attract the attention of passersby. Some of the "stunts" of the electrical men were hugely successful.



WHERE THE APPERSONS WERE ADVANTAGEOUSLY PLACED

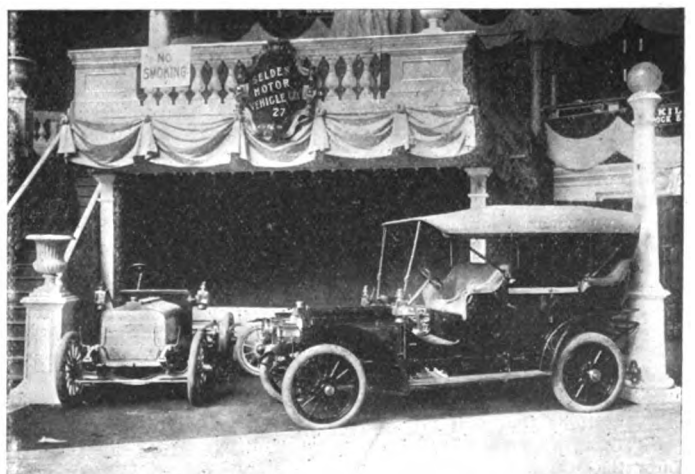
It did not take long for feminine New York to spot the dainty Packard runabout built "for two and a man behind" as "just the loveliest, dearest little thing." With its delicate lavender finish set off by gold striping and pure white upholstery, it only seemed natural to dub it the "honeymoon car," which was done forthwith. It has been the cynosure of all feminine eyes ever since the show opened, and scarcely a girl leaves the Packard stand to pass on to another without a backward look of longing: "Isn't it just too cute!"

* * * *

Miss Hebe White moved from the Palace to the Garden without soiling the spotless raiment that adorned her at the former place, and it only goes to show how clean a nice girl can keep herself, even if there is a whole lot of "nasty oil" around, for Miss Hebe holds forth at the stand of the N. Y. & N. J. Lubricant Company, and she's as good a "mixer" as the non-fluid oils, which she takes pleasure in telling visitors all about, and she doesn't have to look sharp when showing how smoothly the non-fluid lubricant sticks to business in the Matheson gear-box, because it stays where it is put.

* * * *

Driving nails into an inflated tire, and then running it under considerable pressure corresponding to the load of a car on the rear wheels, at a rate equivalent to the usual travel of a car, never fails to draw a keenly interested group of spectators about the stand of the Dow Tire Company, who have designed an elaborate apparatus to simulate the conditions under which a pneumatic tire runs when on a car. It certainly puzzles the average man to figure out why the air does not follow the good-sized nail when it is drawn out of the tire, but it is a matter that is easily explained.



THE SELDEN—A NEWCOMER THAT SHOWED UP WELL



Walter White.
H. K. Sheridan.



Frank Nutt,
Elwood Haynes.



Edgar Apperson.



C. W. Mears,
C. B. Shanks



W. H. Kirkpatrick,
E. H. Parkhurst.

SOME OF THE WELL-KNOWN FIGURES OF THE INDUSTRY SEEN ABOUT THE GARDEN.

THOMAS HENDERSON ELECTED N. A. A. M. PRESIDENT

AT the annual meeting of the National Association of Automobile Manufacturers, Inc., held at the Hotel Victoria, Wednesday morning, Thomas Henderson was elected to the presidency, succeeding Albert L. Pope, who presented a very complete and exhaustive report of the work of the association during the past year. Hereafter the initiation fee for membership will be \$500 instead of \$25.

These members of the executive committee were re-elected to serve for three-year terms: S. T. Davis, Jr., L. H. Kittridge, W. E. Metzger, Charles Clifton, and S. D. Waldon.

At the meeting of the executive committee, which followed the annual meeting, these officers were elected: President, Thomas Henderson; first vice-president, S. D. Waldon; second vice-president, W. E. Metzger; third vice-president, L. H. Kittridge; secretary, C. C. Hildebrand; treasurer, W. R. Innis.

Responding to the request of the American Automobile Association for the appointment of a member for a conference committee composed of delegates from various national automobile bodies, the president was instructed to make such an appointment. The suggestions relative to racing on circular tracks, recently adopted by the conference held under the auspices of the A. A. A., were referred to the N. A. A. M. contest committee.

In the course of his report, retiring President Pope said:

It has been the good fortune of all my predecessors in office to be able, in opening their annual report, to congratulate you and the entire industry upon the favorable conditions under which the automobile business has been conducted. At our last annual meeting the retiring president noted that the members of this association had been reasonably conservative in the number of cars produced, and expressed the opinion that so long as this conservatism went hand in hand with quality the automobile industry would be conducted on a safe and sound basis. The wisdom of the advice implied by his remark has been proven by recent events.

Not because of over production; not because there has been any falling off in quality; not because the country is less prosperous or the purchasing power of the people is exhausted, but because of abnormal conditions for which no manufacturer can be blamed, which no manufacturer could accurately foretell, and against the effects of which no manufacturer can consider himself absolutely proof, the time has come when I consider it my duty to emphasize the remarks of your last president, and to say that it is now necessary, and will, in all probability, continue necessary all through the season of 1908 and possibly well into the season of 1909, to exercise the utmost caution.

Even the ablest of our financiers is unable to accurately forecast the conditions that will prevail during the next few months. We know that the prosperity of the country is as great as ever, we know that the people of the country individually have more wealth than ever before, we know that no real reason exists for supposing that these splendid conditions will undergo an early change. But

wealth is not money, and at present we have not sufficient money in circulation to represent the wealth and facilitate its transfer.

Perhaps so far as the automobile industry is concerned this condition is not in all respects deplorable. Encouraged by unfounded stories of fabulous profits there have come into the automobile industry so many manufacturers, all seeking to do business on so large a scale, that the production might easily exceed the demand. It is an extremely fortunate fact that most of the older, better, and more conservative manufacturers have exercised great caution in production. But as to the less conservative element, it is not unlikely that had nothing occurred to cause them to pause; either of their own volition or perforce, the production would have been excessive. We all realize that this would have meant failures, demoralization of prices among the less important manufacturers, and an uncomfortable time for the entire industry until these troubles had, in the ordinary course of business, been cleared away.

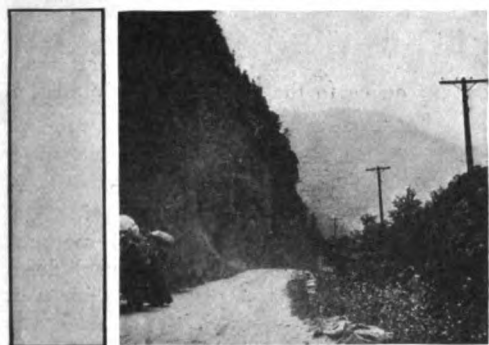
The automobile industry can, therefore, learn from the existing conditions a splendid lesson. It can learn that only in times of prosperity can the country absorb the number of cars which the manufacturers are now able to make; it can learn that the prevailing conditions will result in a closer scrutiny of quality than has heretofore existed; it can learn that only those with abundant capital can safely expect to manufacture cars in large numbers, and then only provided they possess the necessary plant and selling organizations to enable them to produce and market their goods more economically than they have been doing; in other words, that it will be necessary, not perhaps to lower prices, but to provide better cars than ever before for the money asked. They can learn that it is far better to make 100 cars at a profit than 200 without profit or loss or 300 resulting in failure.

It has been the policy of the Executive Committee of the National Association to admit to membership only those concerns on which it can count for conservative action in times like the present, and for excellence of production under all circumstances. Membership in the National Association does, and I hope always will, stand as a guarantee of these requirements.

This does not mean, however, that there are no manufacturers outside of the association possessed of the qualifications above set forth. There is another reason, and it is found in the fact that there is in the treasury of the association a large sum of money which belongs to, and exclusively to, the present membership. The executive committee has regarded itself, as it unquestionably is, as responsible to the members for the proper care of these finances. The members of the executive committee do not feel that as caretakers of the fund they are warranted in decreasing the interest therein of any member by the admission of some new member, who would thereupon become entitled to a full interest in the fund, unless that member brings to the association some strength and a sufficient return for the interest which, by admission, he would obtain.

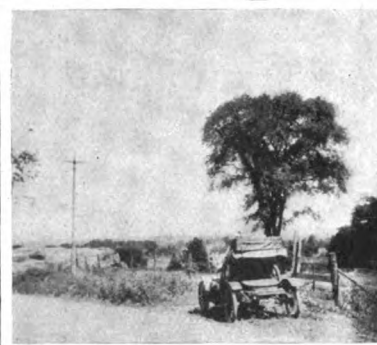
The present initiation fee is \$25, upon the payment of which sum a new member would become entitled to, approximately, a one-fiftieth interest in a fund of approximately \$40,000, which will, in all probability, be shortly increased by a substantial profit upon the Chicago show.

A 1,000 Miles of New England



THROUGH CRAWFORD NOTCH.

By A. Westgard



THE ROAD NEAR LENOX, MASS.

AFTER sifting many plans for two weeks' vacation this summer, we finally decided upon a tour which would offer fair roads, great diversity of scenery, and a good hotel at the end of a day's journey. Being the proud owners of a model R Ford runabout, we received a great many admonitions from well-meaning friends not to undertake such a long tour as we had mapped out, owing to the mountainous character of the country and the length of the trip, a thousand miles or so.

However, we went ahead with full confidence. We fitted out with extra shoes, inner tubes, and spare parts, which, with our baggage, altogether weighed some two hundred pounds. Suit cases were enclosed in rubber sheeting and disposed of on the running boards and on the top. Beside, we carried a refrigerator basket for lunches, as we expected to eat our noon-day meal "a la picnic."

On the First Day, 92 Miles.

Our first day's trip carried us from New York along the Boston Post road through Greenwich and Bridgeport to Stratford. We found that the road was being repaired at several places, necessitating a couple of detours. The traffic was heavy on this part of the trip and the scenery not particularly attractive, as the road for the greater distance lies so far back from Long Island Sound.

From Stratford we turned inland, following the Housatonic river to Shelton. This was a good gravel road and offered many scenic beauty spots. Crossing the river at Shelton, we followed the valley of the Naugatuck river north. The road is somewhat marred by being paralleled by a double track trolley line, but many charming vistas of the river were enjoyed before reaching Waterbury. Here we put up at The Elton. It was more than a pleasant surprise to find a hotel of such uniform excellence in a manufacturing town of the size of Waterbury. We were made thoroughly comfortable and Manager Judd took great interest in advising us of the condition of the roads to be encountered in our next day's journey. The distance covered the first day was 92 miles, negotiated without a hitch.

Into the Berkshires on the Second Day.

The next day continued us up the Naugatuck valley through Thomaston and Torrington to Winsted, over fair dirt roads with more fine scenery. From Winsted we turned west to Norfolk; on these few miles we encountered the first of any heavy going we had met with so far. It was up grade and sandy, but our little car did it splendidly. Beyond we found fine roads and a great deal of macadam through Great Barrington and Stockbridge to Lenox, Mass. We were now in the far-famed Berkshire Hills. Putting up at The Aspinwall, located on top of a considerable knoll, we enjoyed all the comforts of another first-class hotel, with beautiful views in all directions. A commodious garage is located within the hotel grounds and the little car got a well-earned grooming that night. The distance covered the second day was 74 miles.

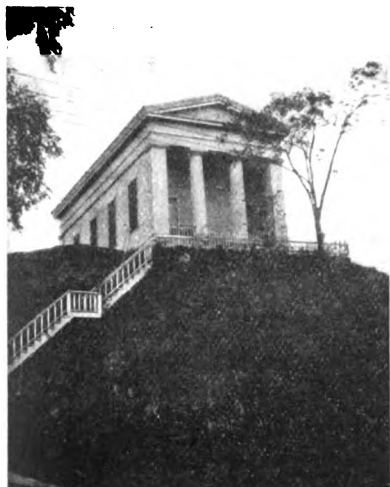
Starting out the third day we skimmed along a road to Pittsfield, whence our route led via Lanesboro and New Ashford into the very heart of the Berkshires, with majestic Greylock towering on our right. The views were particularly fine, the road dirt but good. Arriving at the old town of Williamstown we were informed that the speed limits were being rigidly enforced and that we had better "keep crawling." We "crawled" past the venerable buildings of Williams College and struck out up the Hoosic valley to Pownal, Vt. Here we did our first serious stunt of hill climbing. The road leads up along the side of a hill and its steepness, narrowness, and number of waterbars would have long remained in our memory were it not all forgotten and forgiven on account of the enchanting views of the beautiful valley below.

Continuing north over more level country, we passed through Shaftsbury to Bennington and took a snapshot of the famous Battle Monument. Shortly beyond Bennington we encountered another stiff climb, beyond which the country was rolling and the road fine the rest of the way to Manchester. On entering this town we passed the splendid golf links of the Ekwanok Country Club, said to be one of the finest in America. The town is situated in a beautiful valley at the foot of Mount Equinox, which rises thousands of feet above it. We were made comfortable at The Equinox House, one of the old hostleries of the New England States. We covered 64 1-2 miles during the day.

Granite State on the Fourth Day.

Upon mentioning that our next day's route led over Peru Mountain on the other side of the valley, we were told all sorts of horrible tales of its steepness and its many "thank-you-marms," but by this time we felt that our "pocket edition" could overcome any difficulty of that nature, so we started out full of confidence. Three miles from town, just beyond the village of Manchester depot, we began to strike the grades, at first easy, then more steep. Just at the foot of the mountain itself we were pleasantly surprised to find a toll gate, as this led us to think that the half-dollar tax must indicate that the road ahead certainly had had some attention. This, however, proved not to be the case. It seems to be entirely "a la nature." We had three and a half miles of steady climb, not so very steep after all, but owing to hundreds of waterbars, one every thirty to forty feet, we were compelled to take the entire ascent on the slow speed. This naturally tended to heat our small high-speed engine. However, we backed down into one of the water-breaks four or five times and got cool water from the brook alongside the road and thus had no difficulty in gaining the summit. We were the first who had ever taken a low-powered runabout over this mountain, and, of course, we were duly proud.

The road now led down long grades through Peru to North Derry, beyond which town we had another stiffish climb, then down more grades via Simonsville, through Chester to Spring-



OLD MASONIC BUILDING.

An ancient landmark at Woodbury, Conn., about 200 years old.

view to the westward. We covered 74 1-2 miles this day.

The next day it rained in the forenoon, and we spent the afternoon making a circuit of the lake with Manager Marvin, of the hotel, who pointed out the beauty spots of enchanting Lake Sunapee.

In the White Mountains on the Fifth Day.

Our fifth day on the road carried us over uniformly good dirt roads via Danbury to Bristol in the Pemigawasset Valley. Here we struck out north, skirting the east shore of beautiful New Found Lake to Plymouth and encountered some four miles of heavy sand near West Campton. We were now entering into the White Mountains region, as evidenced by the towering hills around us. However, the road up the valley to Flume House was not at all hilly. We took a good view of the profile of "Indian Head," just beyond the hotel. The only serious climb is in the Franconia Notch, about a mile beyond Flume House. Upon reaching within a hundred feet of the very top of the grade we encountered a short steep pitch which brought the gasoline below the level of the carbureter and we were "stuck." How we regretted not having procured a little extra "gas" at Bristol or Plymouth! However, regrets were vain—we sat down and waited, and it was fast getting dark, too. In the course of time—it seemed such a long time to us—a team came up the hill. The driver generously offered to go to the Profile House, three and a half miles distant, for some gasoline. Needless to say his offer was accepted; it might also be added that the boasted price of one dollar a gallon for gasoline frequently paid by tourists in Europe "looked like thirty cents" when compared with the cost of the small quantity we needed. After a couple of hours' tedious wait there in the woods we were once more under way. We had intended to keep on to Bretton Woods, but decided to spend the night at the Profile House in order to view the famous "Old Man of the Mountain" by daylight.

Next morning we had a good look at this freak of nature, a perfect profile of a face appearing at the very edge of a precipitous cliff only a few minutes' walk from the hotel. We continued over a sandy road to the Profile Golf Links, whence a new fine gravel road led direct to Twin Mountain House. From there the road, now more sandy, with numerous railroad grade crossings, followed the Ammonoosuc river direct past Fabyans to Lretton Woods, in the very heart of the mountains. We had traveled ninety and a half miles since leaving Sunapee Lake. Bretton Woods is a sort of kettle surrounded by towering mountains, Mt. Washington, the hoary giant, overtopping the rest. The Mount Washington Hotel, where we stopped, is located on a knoll in the very center of the kettle, the Mount Pleasant House, under the same management (Anderson & Price), is at its western edge, and half way between the two hostleries

are the garages, with room for seventy-five cars, and The Bretton Arms, which is run as a hotel for chauffeurs. Beautiful golf links extend to the south from the hotels. A couple of days were spent in thorough enjoyment of this magnificent region and its splendid hotels. The little car, too, got a cleaning; but let me say right here that, aside from carbureter adjustment made necessary owing to the difference in altitudes, it needed no attention.

The Sixth Stage Ends in Maine.

With regrets we left Bretton Woods and set out on the sixth stage of our journey, heading for Crawford Notch, in sight some three miles distant. We passed Crawford House and, entering into the "Gate of the Notch," the road wound down steep grades through the woods; the surface was, however, excellent for motoring. Passing between Mount Webster on the left and Mount Willey on the right, we finally emerged into more level country and followed the Saco river through Bartlett, past Glen Station and through Intervale and North Conway, splendidly located summer resorts. Just beyond North Conway we took a left fork of the road and went via East Conway, which offered a better road than the more used route via Center Conway, to Fryeburg, Me. The road was good dirt surface to Bridgton and Naples. Some fine bits of scenery along the numerous ponds and lakes on these Maine roads.

The route from Naples had a few miles of sand and two short but steep hills before we arrived at Poland Spring, Me., seventy-seven and a half miles from Bretton Woods. Coming as we did from the rugged nature of the mountains the peaceful and restful nature around the justly famous Poland Spring House acted like balm to a feverish patient. This hotel has magnificent golf links and beautiful views, and pure water and air. An ample garage is connected with the hotel. We were so contented that we tarried a day longer than intended.

Newcastle, N. H., on Seventh Day's Ride.

The seventh installment of our trip led us south over fine gravel roads to Portland. We skirted the beautiful harbor with its many islands and crossing the Fore river started with many misgivings on a stage of the route which has always enjoyed



ROUTE OF THE 1,000-MILE NEW ENGLAND TOUR.



ONE OF THE MANY GRAND VIEWS IN THE WHITE MOUNTAINS.—IN FOREGROUND, FRANCONIA INN AT SUGAR HILL.]

an evil reputation on account of its alleged sandy condition. Though we encountered some sand in two or three short stretches we found the road not at all so bad as anticipated. From Biddeford to Kennebunk the road traversed a woods, and though a little bumpy, it was quite fair going. It would seem, however, that in wet weather this particular stretch might be pretty trying. Beyond Kennebunk the road was good. We went by York Beach and York Village, crossing the Piscataqua river into Portsmouth. We did not stop in the city, but kept right on for about three miles beyond to The Wentworth Hotel at Newcastle, 81 miles from the morning start. This place was made famous as the abode of Japanese and Russian peace commissioners and is justly entitled to its reputation as a delightful hotel. It has fine views of the ocean and Portsmouth harbor with its navy yard. It also has golf links and a good garage.

Boston at the Conclusion of Eighth Stage.

Our next day's trip being short, we started late in the forenoon and passed calm and peaceful Rye Beach and Boar's Head to Hampton. The trolley line kept us company all the way to Newburyport, Mass. As we for the first time had failed to load our lunch basket we were quite ready for lunch and were directed to Wolfe's Tavern, the only hotel in the town. Here we met with our first disappointment on the tour.

We had had good macadam roads since leaving Newcastle and these continued all the rest of the day, through Beverly and Salem into Lynn. From Lynn we went over the new Revere Beach boulevard, and it was certainly fine, curving from it directly into Fellsway, over which splendid parkway we rolled smoothly through Somerville into Cambridge. We had a little difficulty in finding our way through the cobblestone paved streets to Massachusetts avenue, which leads direct to bridge over Charles river. Three blocks beyond bridge we turned into Commonwealth avenue, Boston, 68 1-2 miles from Newcastle.

Next on to Springfield, Mass.

Next day's trip was a pleasure indeed. Splendid macadam brought us out Commonwealth avenue, through Weston and Marlboro to Worcester. Thence through Leicester, where one ascends the only hill worth mentioning in the run to Springfield. Between West Warren and Palmer are about seven miles of bad dirt road, narrow, sandy and rutty. One cannot help wonder how a State with such a large percentage of fine improved roads can allow such a condition to exist on its most used trans-state highway. We spent the night in Springfield, after covering a distance of 96 miles that day.

The tenth stage of our tour brought us down the east side of the Connecticut river, by acres of green tobacco fields, and across the bridge into Hartford. Thence via New Britain and Bristol to Plymouth, good going all the way. The distance of about one mile between Plymouth and Thomaston is down a hill so steep that even in spite of the confidence inspired in us by the past hill-climbing performances of our little Ford we were glad that

the grade was down instead of up. From Thomaston the nine miles to Waterbury was the only road which we covered twice in our long journey. We made the sixty-one and a half miles to Waterbury in fine shape, the little engine still running as smooth as oil. We were glad to once more be under the hospitable roof of The Elton. Owing to the general excellence of the roads there is no reason why an average touring car could not comfortably cover the entire distance from Boston to Waterbury in one day. The 157 miles should prove as easy as many a trip of half the distance.

The eleventh and last day of our travels carried us through Woodbury, where we inspected the Masonic Building, over two hundred years old, a venerable and interesting piece of architecture. Thence through a scenic beauty spot along the Housatonic river to Danbury. Eight miles beyond, at Sodom Reservoir, the route turns up a bad dirt hill, but two miles further at the Westchester County line begins a stretch of some 58 miles of fine macadam, which made the rest of the trip via Bedford and White Plains a joy all the way back into New York, ninety-seven and a half miles for the day.

WHERE A NEW LAW IS NEEDED.

CHATTANOOGA, TENN., Nov. 2.—Catoosa county, Ga., has an automobile law which undoubtedly holds the record for severity. This legal enactment provides for a speed limit of ten miles an hour throughout the county, and stipulates that an automobile must stop 150 feet in front of every wagon, buggy or ox cart, shut off the engine and await the signal to proceed. If this signal is not given the automobile must stand until the animal-drawn vehicle has passed fifty feet to its rear. The rule for overtaking any other vehicle of a non-mechanical nature is that the automobile must remain several feet in the rear and blow the horn. If the signal is given to proceed, the automobilist must not drive by at more than two miles an hour. If no signal is given, he must remain in the rear until a crossroad or some place to turn off is reached. The Chattanooga Automobile Club is working earnestly to have the law amended.



LAKE QUINSIGAMOND, NEAR WORCESTER, MASS.

HOW THEY CLIMBED THE BIG HILL OF GAILLON

PARIS, Nov. 1.—Though eight years old, the annual romp up Gaillon's smooth-surfaced, precipitous slope has lost none of its attractions. This year the ubiquitous Edge sent a team of cars over—six cylinders, of course—and had no reason to regret his visit to this usually placid corner of Normandy. In the no-limitation speed class Newton, handling a six-cylinder Napier in

30 horsepower—Martin-Lethimonnier triumphed over a De Dion and a Gladiator, in :57 3-5. It was a companion machine to the winner which met with such a disastrous head-on collision in the Criterium of France tour this summer.

After beating all comers, big and little, at Chateau-Thierry a fortnight ago, Olieslaegers, the Antwerp *Red Devil*, had to take the bottom position, owing to the stoppage of a flow of gasoline to the carbureter of his Albatross. Griffon took first and second places in the light motorcycle class, and Alcyon was first in the heavy class, each division providing keen contests.

Eighteen divisions of tourists, from light motorcycles to powerful "sixes," gave a big bunch of winners, but diminished the competitive interest of the classes. Molon's Gladiator, a top-notch at Chateau-Thierry, beat all four-cylinder tourists by climbing the hill in :39 1-5, equal to 56 miles an hour. For a car which took part in Paris-Berlin six years ago and has only five inches bore, this is not bad going. Glenworth, handling one of Edge's six-cylinder Napier cars, made the fastest time of the tourists, irrespective of classes, climbing the kilometer in :33 1-5. Miss Dorothy



HEMERY AND BENZ, FRENCH DRIVER, GERMAN CAR, A WINNING COMBINATION. ■■■ |

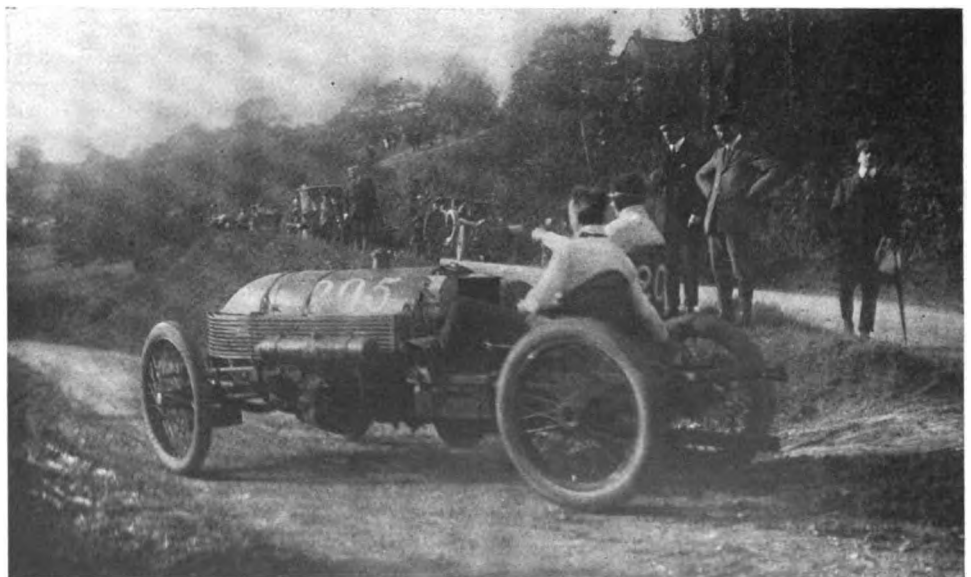
a masterly manner, rushed up the kilometer hill in :26 3-5, an average of 84 miles an hour, beating all comers. Although the Britisher did not lower the kilometer record for this hill, established by Lee Guinness in 25 seconds with the eight-cylinder Darracq of Florida fame, his veteran car made an excellent showing. It was this Napier which established a world's 100-mile record at Florida two years ago, with Macdonald as driver, and made fast time in several Gaillon and Chateau-Thierry climbs. Gore, a familiar figure at Brooklands track, came second on a Mercedes with :31 3-5. Rigal's Grand Prix Darracq came third in :34 4-5, fourth and fifth positions falling to Mors and Rebour. De Lange, in the Darracq built for and victorious in the Sporting Commission Cup at Dieppe this year, captured first position in his own class, time for the kilometer being :57 2-5. Better time was made by the Bayard-Clement Targa Florio racer, which Albert Clement should have driven in Sicily, the kilometer being covered in :48 2-5. These two classes were robbed of much interest through smallness of entries, though the going was always fast.

Germany, Italy, Belgium and France united in the German Emperor Cup class, victory falling to the German Benz, with Hemery at the wheel, in :38 1-5. Fiat, handled by an Englishman, to judge by the name of Johnson, was one minute slower, :39 1-5. Minerva, a Belgian product, took third position, and Rebour and Martin-Lethimonnier, both French, were classed fourth and fifth.

In the Criterium of France class—stock touring machines of about

Levitt, England's champion woman driver, won in her own class with a smaller six-cylinder Napier, time :49, but on general classification was beaten by a number of lower powered four-cylinder cars, among them Berliet, Mors, Gladiator, and Benz. A novelty for a French competition was the appearance of a couple of air-cooled machines; their time was indifferent and did not allow of comparison, each car being in a class of its own.

An unfortunate fatal accident marked the return journey from Gaillon to Paris. Mignot, a young chauffeur, was driving a Regina-Dixi stripped touring car between fifty and sixty miles an hour when the light basket work seat collapsed and he lost control. A tree was struck with tremendous force, the driver being instantly killed and the mechanic slightly injured.



NEWTON'S NAPIER, FASTEST OF THE DAY, DESCENDING HILL ON BY-PATH.

FRANCE'S SEVEN-DAY RACE OF THE VOITURETTES

PARIS, Nov. 1.—Sixty-three runabouts, representing twenty-eight firms, engaged in the Coupe des Voiturettes, is ample proof that France has come back in earnest to the popular car for the masses. Three years ago the first voiturette contest was held with but a handful of competitors; last year the event was of sufficient importance to be pronounced a success; this year it has reached such proportions that it may rank among the touring competitions of first order.

The modern method of holding a tour—in France at any rate—is to choose a closed circuit and allow the competitors to run round it seven days in succession, the last day being a race for the survivors, the fastest car being the winner. This has been done for the voiturettes, a triangular course, near Rambouillet,

miles. It is impossible to change any important parts, for the main organs are sealed, but ordinary repairs may be performed during running time. Immediately on expiration of time allowance each machine must declare in—or go out forever—and cannot be touched until starting time the following morning. Within the triangular course there is a busy automobile camp, for in addition to the cars staying on the spot for seven days, many of the competitors have gone into camp quarters, notwithstanding that Paris is only thirty miles away.

Six competitors went out on the second day, the trouble being broken gasoline tank, broken cotter pin on a universal joint and resulting complications, broken wrist pin, broken clutch shaft, seized clutch, and one collision. Fifty cars and eleven teams



PREPARING FOR START OF RUNABOUT TOUR ON TWENTY-ONE-MILE BARRICADED CIRCUIT GUARDED BY EIGHT HUNDRED TROOPS.

twenty-one miles round, barricaded at the corners and guarded by troops, has been fixed upon. For six successive days the little automobiles must make seven rounds of the circuit—147 miles—at an average speed of not less than 18.6 miles an hour. For some reason or other the 800 troops supplied from the nearest garrison towns to protect the twenty-one-mile course, arrived late the first day, causing the start to be delayed from 8 A.M. to noon. Impatient at the delay, a number of the drivers rushed round the course at the highest speed possible with their diminutive power plants. As a consequence of their recklessness, one soldier suffered a broken leg, there were a number of narrow escapes, and the "V" turn on the course was more dug up at the end of the first day than the bend at La Fourche on the Grand Prix circuit after speeds of seventy miles an hour. Rigorous orders have now gone forth that any driver covering a round at an average of more than twenty-four miles an hour will be immediately disqualified.

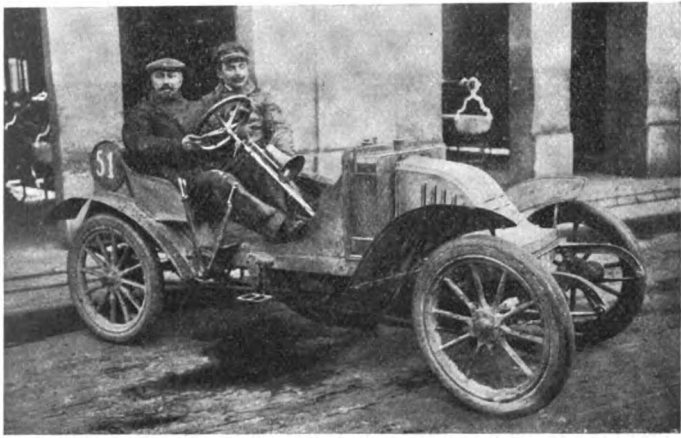
Seven cars went out on the first day, one with a broken shaft, one with a broken driving chain, one with a seized cylinder, one with a bent axle, one with a broken wheel, one through colliding with a tree, and one owing to arriving thirty seconds late on the last round. Late arrival is the only thing that counts against the competitors on this eliminating run of 882

were left to fight for the voiturette trophy. An example of the French system of making rules, to break them, was furnished when one of the competitors was delayed for a couple of hours owing to mechanical troubles. To regain his lost position he had to cover about one hundred miles at an average of thirty-seven per; the single-lunger was only capable of thirty-six miles an hour and consequently arrived a few minutes after the closing of the doors. The rules declared that disqualification would be imposed for exceeding the twenty-four-mile limit.

Three more cars went out on the third day, reducing the competitors to 47, the cause of the abandonment being leaky radiator and seized cylinder; leaky radiator, and a smashed car through missing the turn. Despite the warnings given by officials and the example of those who have succumbed, a majority of the drivers persist in rushing round the course at excessive speed.

Michelin, Dunlop, Continental, and Hutchinson have the stands on the course, but up to the end of the second day had not changed a single tire.

Judging from the characteristics of the sixty-seven runabouts entered for this competition, French constructors are of opinion that the correct thing for a popular two-seater, selling between \$500 and \$600, is a single lunger. Fifty-nine have single cylinders, and eight only are equipped with two-cylinder engines.



ONE-LUNGER BUILT TO RESEMBLE RENAULT RACER.

In every case the cylinders are vertical and carried forward under a bonnet, French ideas of propriety being distinctly against horizontal, double opposed, and engines carried under the body. In last year's test the bore was limited to 120 millimeters, but this year, with one or two exceptions, the bore and stroke of the single cylinders is 3.9 by 4.7, conservatively rated here by some of the makers as 4 1-2 horsepower. Cone clutch and shaft drive predominate, there being but one example of friction disk, and about four cars with side chains. Sliding gears are general, half a dozen of the cars having the luxury of selective type. Ignition by high-tension magneto is the rule, such well-known magnetos as Bosch, Eisemann, Gianoli, and Nilmelior being found on nearly 90 per cent. of the machines. There is but one set of dry batteries in the lot and less than a dozen storage batteries.

While half the cars are fully equipped as sold to the public, the other half are more or less stripped, and some have been modified to give them the appearance of racers. The Passe-Partout team, which ordinarily has a certain resemblance to the Renault, has been modeled closely, by special permission from Louis Renault, to look as much like an offshoot of the Grand Prix racer as possible. The same idea has been carried out with other well-known French racers as models.

AUTO NEWS FROM GERMANY.

BERLIN, Oct. 30.—A plan that has found much favor is the introduction of a Russo-Prussian autobus line over the frontier, after the idea of extending the railway from Memel into Russia met with severe opposition from the Prussia Government. A Courland company thereupon approached both Governments as to the advisability of running passenger and goods autos on the Libau-Memel route and received much encouragement from both sides. The chief difficulty is the duty question on the frontier, but it is believed that this will be easily overcome.

Boris Loutzky's marvellous 500-horsepower boat, the Zariza, is just now the main theme of conversation in German circles since its remarkable performances at the Rhine Regatta, when it traveled from Coblenz to Düsseldorf at a mean speed of 51 kilometers per hour and covered the first stretch from Coblenz to Cologne, 97 kilometers, in 1 3-4 hours. Herr Loutzky is one of Russia's most prominent naval engineers and is working at the celebrated Kiel Howaldt Works.

South Germany has not yet given up hopes of having the German autodrome in the Taunus after all, although the powers favor the Eifel project. The Frankfort Automobile Club called a meeting last week, which was largely attended, and named two delegates who are to put their view of the question once again before the Imperial Automobile Club, pointing out in the first place that by erecting the track in the western corner of the Fatherland, France and Belgium would profit almost more than those intended to principally benefit by the scheme, the German manufacturers.

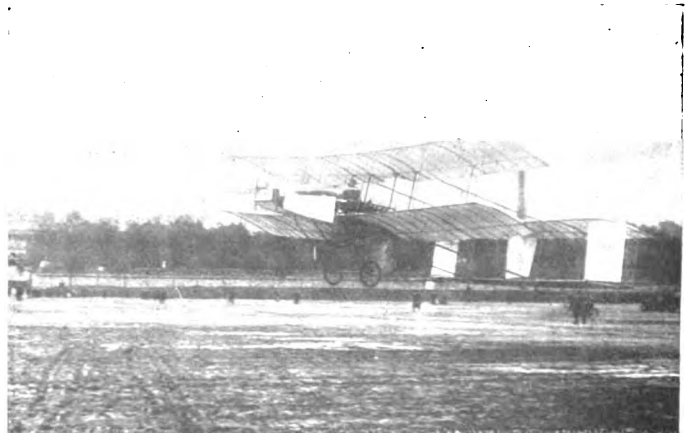
FARMAN'S AEROPLANE FLIES 2,529 FEET.

PARIS, Oct. 26.—Henri Farman, a prominent figure in the automobile world during pioneer days, has succeeded in lowering Santos-Dumont's aeroplane record of 721 feet by a flight of 2,529 feet. The aerial trip was made on the open military ground at Issy-les-Moulineaux, near Paris, in the presence of a large number of spectators. After a few preliminary runs against the fresh southwest wind, Farman started his 50-horsepower Antoinette motor again and rushed over the ground at twenty miles an hour. After a sprint of one hundred yards the front horizontal rudder was raised to a slight angle and the big machine lifted into the air to a height of nearly ten feet. The rudders were skillfully adjusted and it was at this height that the official measurement was taken by representatives of the Aero Club of France. The official time for the flight is announced as fifty-three seconds. Farman has made at least half a dozen flights of over six hundred feet during the past ten days, each one in the presence of a large number of spectators. No attempt is made at secrecy, his training ground being an open field used by the artillery brigades and open to the gaze of all passersby. Santos-Dumont and Wilbur Wright are among those who have witnessed the flights.

Henri Farman's record-breaking aeroplane has few new principles, its designer having simply sought to work on the lines of Delagrange, Santos-Dumont and others, and modify details. It consists of a forward cell 33 feet in width united to a rear cell of about 20 feet. A couple of bicycle wheels under the forward cellular planes and one under the rear planes serve to support the machine on the ground for the initial speed of twenty miles an hour necessary to obtain flight. The Antoinette 50-horsepower motor is carried on the forward plane, where it drives a two-bladed propeller calculated to propel the machine at a speed of 32 miles an hour. The eight-cylinder engine is of the latest model with water-cooled cylinders.

SANTOS-DUMONT HYDROPLANE HAS SETBACK.

PARIS, Oct. 26.—Santos-Dumont has launched his novel hydroplane, designed to attain a speed of over sixty miles an hour, but failed to create a very good impression in the first tests on the Seine, near Paris. With minute care the tender machine was placed in the water. Santos-Dumont, attired in a leather suit, took his place behind the steering wheel at the end of the central cigar and the curious craft was towed out to midstream. The sixteen-cylinder motor was new and could only be started up after a long delay. When the three-bladed propeller finally did begin to revolve the boat traveled 350 yards, then came to a dead stop. Even when under way the craft seemed lifeless and refused to glide over the surface as her designer had expected. After an hour the boat was withdrawn, Santos-Dumont declaring that failure was due to the engine turning only at 800 revolutions instead of 1,500. Before making any further attempts on water, he will carefully tune up the engine, being convinced that with sufficient power he can travel 60 miles an hour.



FARMAN AEROPLANE IN ITS RECORD HALF-MILE FLIGHT.

LETTERS INTERESTING AND INSTRUCTIVE

HOW MUCH POWER IS USED IN TURNING OVER?

Editor THE AUTOMOBILE:

[951.]—Will you please inform me, either through "Letters Interesting and Instructive," or otherwise, the horsepower or fraction thereof required to produce a revolution of a 50-horsepower gasoline motor? Would the compression per square inch affect this figure; in other words, would it require greater power to produce a revolution of a 40-horsepower motor with, say, 70 pounds compression to the square inch, than a 50-horsepower motor with perhaps only 60 pounds compression to the square inch? H. C. ARNOLD.

South Framingham, Mass.

It has been found by extensive experiment and investigation that the horsepower consumed by a well-built steam engine of the simple type, in overcoming the friction of its own moving parts, is about 5 per cent. of the total power generated. With the exception of the factor of compression, this may doubtless be found equally applicable to the internal combustion motor, though the latter has an advantage in this respect over the steam engine in that it has no glands or stuffing boxes on its moving parts. If we assume this as a basis for calculation, also that the 50-horsepower motor is well built and properly balanced, it will follow that 2.50 horsepower are consumed in turning the engine over when running at its full capacity, although it has been established that the friction in an engine is practically constant at all loads. However, it naturally increases rapidly with the speed, but it may be assumed that the motor in question turns over at the rate of 1,000 r. p. m. when running under full load. Then the power consumed per revolution

2.50
in turning such an engine over would be $\frac{\quad}{1000} = .0025$ horse-

power. This ignores the factor of compression completely. It naturally requires more power to compress a given volume to 70 pounds pressure than it does to 60 pounds, but the comparison you make involves differing volumes, or at least may be assumed to do so owing to the difference in the power of the motors. As the term horsepower involves three essential factors, *viz.*, m. e. p., or mean effective pressure throughout the stroke; area of piston acted upon and the speed of piston travel, it may be that the 50-horsepower motor would require less power to turn over per revolution than the smaller one, though this does not naturally follow. If, through errors of design, it was necessary to compress the same volume in the smaller motor to 70 pounds per square inch to obtain 40 horsepower, as was employed in the larger motor to give 50 horsepower at 60 pounds pressure, it is obvious that more power was being wasted in the smaller motor and it would consequently require more per revolution.

CONCERNING VALVE-GRINDING AND RESEATING.

Editor THE AUTOMOBILE:

[952.]—Some time in the past year you had an article in "The Automobile" about grinding and reseating valves. Will you kindly give me the date of the issue in which this article appeared, and very much oblige? J. B. SEEGER.

Dallas, Tex.

We do not recall that any extended article on this subject appeared in THE AUTOMOBILE during 1906. The only thing of the kind revealed by our index is entitled "A Wrinkle in Grinding Valves," in the issue of August 23, 1906. This was merely a paragraph and advocated the use of a piece of emery cloth in the shape of a disk slightly larger than the diameter of the head of the valve, a small hole being made through the center of the disk to pass the valve stem. This expedient is recommended where pitting is to be removed and is followed by the usual grinding in with flour emery and oil. We do not know of anything else that appeared on this subject during the period in question, but would be pleased to help you out through this department to the extent of our ability.

CRANKSHAFT DESIGN IN TWO-CYLINDER MOTOR.

Editor THE AUTOMOBILE:

[953.]—Would you be kind enough to inform me through the columns of your paper what the serious objections are to having two cranks on a two-cylinder upright engine on the same line with each other, so that there would be an impulse every revolution, instead of two impulses one revolution and none the next, which is the case with cranks opposite? Of course, I recognize the fact that the pistons, rods, and cranks are unbalanced, but would not the heavy flywheel which is necessary to carry the engine over one complete revolution take care of this and one impulse every revolution would make a more powerful and less jerky motor? Did you or any of your many readers ever have any experience with a crankshaft made this way? CURIOUS.

Brooklyn, N. Y.

The chief objection to building a two-cylinder motor with this type of crankshaft is to be found in the fact that it is impossible to accurately balance it mechanically, and this is found to be of more importance than the impulse balance. However, such motors are not as rare as your question would seem to imply. In fact, most stationary motors are built in this way and a great many automobile engines have also been equipped with crankshafts having the pins in the same plane, the 180-degree placing having been an exception up to within quite recently. The latter offers greater advantages for automobile work, as it obviates the necessity of providing heavy counter-balance weights, and even with these an accurate mechanical balance is not obtainable. The flywheel does not compensate for this entirely, while it does tide the motor over the idle interval very effectively and there is no jerky effect such as you imagine, the power being unaffected in either case. You will find in the two-cylinder Brush runabout an example of this type, but special pains have been taken to balance the motor by providing a counter-weight on an auxiliary shaft.

"WHY SO MUCH 'KNOCKING' IN THE AUTO TRADE?"

Editor THE AUTOMOBILE:

[954.]—I want an automobile and have wanted one for a long time, but the dealers have kept me from buying, and I have no doubt they keep a good many would-be purchasers from buying in the same way. For instance, I like the looks of the Reo and when I tell the Maxwell agent this he says, "You make a big mistake in buying a one-lunger. The minute that one cylinder goes out, you are done for. Take my advice and get a two-cylinder car." I go to the repair man and ask him if the Ford isn't a good little car. He says they are in the shop all the time and the cost of upkeep is very high. The repair man recommends some other car, and when I ask some one in regard to the make, he promptly "knocks" it and urges me to buy something else. I have about come to the conclusion that all cars are either junk or else all the trade are liars. Why it is that there is so much knocking in the automobile business? Many a man is kept from buying a small car through the talk given him by the trade of the awful size of the repair bills he must expect. Now, in view of the accounts published by owners of the steady service given by their cars, either these accounts are fabrications or else the trade is doing a lot of costly knocking. It is to be presumed that the dealers want to sell as many cars as possible, therefore, why don't they try to interest a prospective autoist by telling him that the car he favors is a very reliable car, but that he believes the car he represents would be more suitable. In this way, some one would sell the man a car and make one more convert for good roads—a thing much desired by all. Is it really true that, no matter how carefully it is handled, all cars require constant repairing and replacements? Looks to me from the dealers' talk that the first cost isn't anything compared to the cost of upkeep. H. E. REKOOT.

San Francisco, Cal.

We heartily agree with you that the practice of "knocking" the other fellow's car at every opportunity which prevails is much to be deplored. Unless he be so credulous as to gulp such statements entire, it belittles the dealer in the prospective buyer's eyes and when oft repeated is apt to disgust him entirely. It is not confined to the automobile business by any means, but as you say, it is an extremely shortsighted policy that does an infinite amount of harm—to the dealer himself, in the first instance, and

to the cause of automobiling and good roads ultimately. When a man is trying to sell you cabbages, or what not, he does not take pains to tell you that his wares are rotten, and the other fellow's the best in the world; it is the other way round, and in the last analysis it is merely human nature. The seller invariably puffs his own goods and deprecates the idea of buying from anyone but himself. But take some of the loudest of these "knockers" to task and ask him to substantiate his accusations; in nine cases out of ten he has absolutely nothing to back his statements but his own anxious desire to make a sale. While this is commendable, selling goods at the cost of belittling and berating the goods of his competitor is far from it.

All cars and all machinery require repairs and replacements, but this need should be far from constant, if they be properly taken care of, nor should the expense of maintaining any of the cars you mention exceed 10 to 15 per cent. of their first cost during the first year. There are any number of cases where it has not been 5 per cent., or even less. The accounts published from time to time of moderate upkeep expenses are not imaginary, often being substantiated by verification before a notary and being the actual experiences of autoists who take care of their own cars the year round. All cars go wrong at times, and any car, recklessly and improvidently handled, will run up a pretty bill of expenses. One or two such instances may form the foundation for a tremendous amount of the "knocking," but the very dealers who have been doing it were, at the same time, concealing skeletons as bad, if not worse, in their own closets.

RELATIVE EFFICIENCY OF TWO AND FOUR-CYCLE.

Editor THE AUTOMOBILE:

[955].—Will you please give me some information concerning the relative efficiencies of the two and four-cycle gasoline motors? What are the chief objections to the use of the auxiliary exhaust port in a four-cycle motor? Has the carbon which is contained in gasoline or kindred fuels any value as a power factor in the operation of an explosion motor? Can you give any more information concerning the double acting motor described on page 96 in "The Automobile," July 18 issue? Although living in the same city (Denver, Colo.) as the address of the Fish Gas Engine Company. I am unable to locate them or anything connected with the creators of this seemingly nine-day-wonder, which to the skeptical-minded certainly looks "fishy," at least.

G. I. PETERSON.

Denver, Colo.

We believe that carefully conducted tests have shown the relative efficiency of the two and four-cycle engines to be about 10 per cent. in favor of the four-cycle.

We do not know that there are any serious objections apart from the additional mechanism involved, as it is necessary to open the valves of an auxiliary exhaust positively.

Carbon is the basic combustible element in practically all fuels, whether liquid or solid. Gasoline and similar fuels are hydro-carbons, meaning that they consist principally of hydrogen and carbon.

We have no further data concerning the motor in question than appeared in the description you referred to, but the names of the builders were given there, and we believe addressing them at Paris, France, or care of one of the French papers, such as *L'Auto*, would reach them.

We cannot help you out on the last question as the only information we had on the matter was contained in the communication of our correspondent.

CREDIT FOR THE FIRST SIX-CYLINDER.

Editor THE AUTOMOBILE:

[956].—There is a great deal of talk going the rounds, edited by various factory representatives, agents, etc., claiming in each case that the credit of having produced the first six-cylinder automobile in America belongs to the particular company with which they are at the time connected. To those who know some facts in connection with the past production of the six-cylinder motor, the many claims emanating from the hustling agents bring forth a series of "rippling smiles!"

There are many who claim the added complications of the six do not offset the claim for greater elasticity made for it. etc.

Here is the difference in figures, showing just how much more elastic the six-cylinder engine is over the four-cylinder, as ascertained by actual running, which, after all, is the only convincing proof. The six-cylinder car can be throttled down to 33-4 miles an hour. The four-cylinder car can be throttled down to four miles an hour on high gear. The difference in one hour's running is 1-4 mile. At this game, is there much gained? The pulsation of the four-cylinder motor is no more perceptible to the passengers at four miles an hour than it is to the passengers in a six-cylinder at 33-4 miles an hour; the riding qualities are the same.

Another natural source or productive cause of easier riding claimed for the new sixes has arisen in the enforced increase of wheelbase, due to the room demanded to take care of the six cylinders. There are manufacturers of fours that have always made it a point to give a generous wheelbase. There is nothing so conducive to easy riding as a long wheelbase.

At ten miles the 1908 four-cylinder, long wheelbase car runs every inch as smoothly, as quietly, as any six-cylinder, with the added virtue of having fewer working parts. It has been a struggle to reduce the number of working parts in the modern auto. In the fours it has been accomplished; in the sixes, the working parts have been increased. It is a situation taken in at a glance by either the expert mechanical genius or the layman.

To go back to the question, "To whom should the credit go for the production of the first six-cylinder car in America?" don't all speak at once! One at a time, please! Was it Winton? Was it the Pierce Company? Was it the Oldsmobile? No! Well, then, who was it?

In 1904, at the Madison Square Garden show, the E. R. Thomas Motor Company had on exhibition a six-cylinder chassis which had been run successfully, and was offered for sale at \$6,000, and was rated at 60-horsepower. At that time there was no purchaser; the idea was too much for the embryonic automobilist of that day.

After a lingering state of coma in New York, the "Big Six" was returned to the factory, and was next heard from when M. Roberts, Harry S. Houpt's driver, qualified with it in the Vanderbilt race, on the Long Island course in 1905, making good time.

We will permit the reader to judge for himself. "Who produced and offered for sale the first six-cylinder car in America?"

S. F. Edge, the English champion of the six-cylinder car, followed Mr. Thomas' footsteps one year later. FRED J. TITUS.

Newark, N. J.

WHAT ONE OHIO BUGGYABOUT DID.

Editor THE AUTOMOBILE:

[957].—A few words may not be amiss regarding the Hatfield buggyabout, and what it will do when called upon.

October 10, Mr. Hatfield, Sr., and Mr. Zent, the master-mechanic of the Hatfield Motor Vehicle Company, left Miamisburg, Ohio, at 8:30 a. m. and arrived in Cincinnati at 11:15 a. m.—a distance of 49 1-2 miles. This trip was made without a stop of any kind, and every hill, with the exception of two, were taken on the highest speed. The roads were very heavy and muddy, and, as every one who is familiar with the country knows, it is a miserable proposition for automobiles.

After arriving in Cincinnati, Mr. Zent and a member of the Chas. Behlen Son's Company ran down to the river front and then ran straight up the hill and then up to the top of the Vine street hill, and also took in McMicken avenue. To any one who is familiar with the streets of Cincinnati and its cobblestone pavements it will appear that the car does all it should do. One hill climbed in Cincinnati we consider the worst hill in the State of Ohio.

On the unlucky day of the thirteenth of October, C. B. Hatfield, Jr., secretary and treasurer of the company, accompanied by Clay T. Vance, vice-president, drove the Hatfield buggyabout from New York City to Camden, N. J.—102 miles—in 5 hours 40 minutes, without a stop, having been obliged to slow down to the rate of seven miles an hour through seventeen towns. In the very near future a record run from Miamisburg to Indianapolis, Ind., will be made by the way of Dayton, Ohio—a distance of 122 miles.

Miamisburg, Ohio.

C. B. HATFIELD.

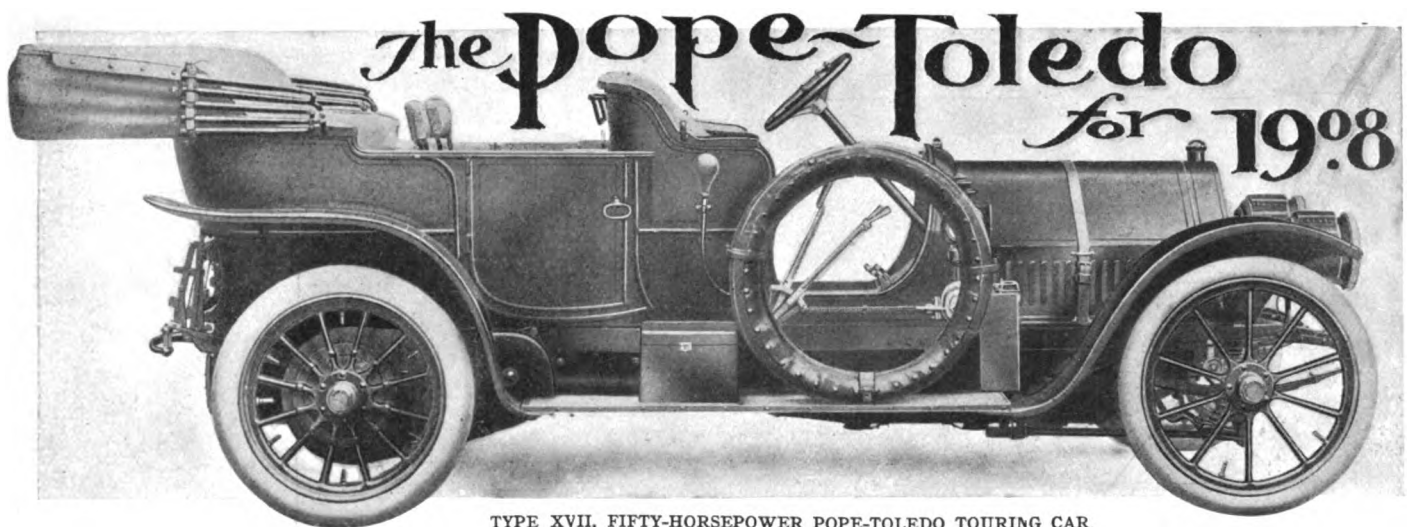
FOR THOSE TOURING INTO CANADA.

Editor THE AUTOMOBILE:

[958].—Some three weeks ago I telephoned you for information as to the proper person to whom I could apply at Rouse's Point for the papers and license necessary in taking my automobile into Canada. I write to thank you for the trouble you took in the matter, and to say that, from my experience, F. W. Myers & Co., of Rouse's Point, N. Y., are a firm to whom you can refer any automobilist, with the assurance that he will receive prompt and courteous attention. If he owns an imported machine, have him obtain a certificate from the collector of the port of entry that duty was paid, as he will need it at the Canadian line.

MACOMB G. FOSTER.

New York City.



TYPE XVII, FIFTY-HORSEPOWER POPE-TOLEDO TOURING CAR

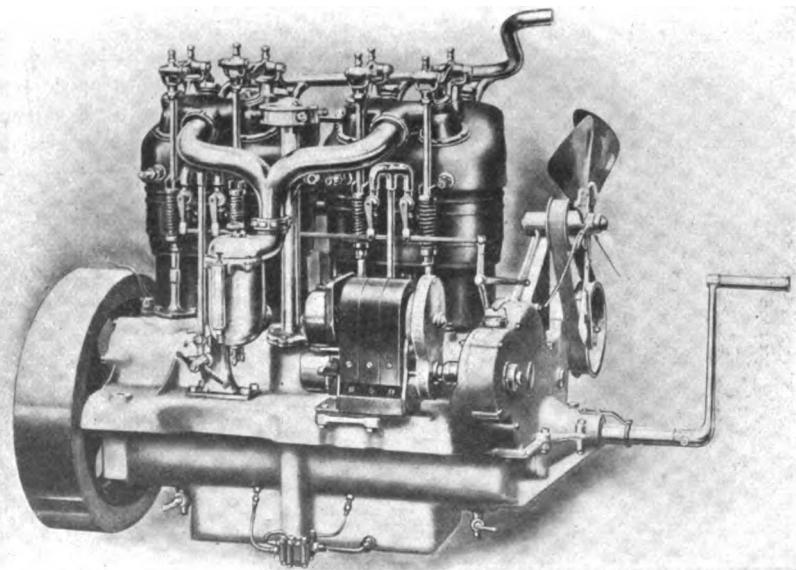
POPE-TOLEDO practice as exemplified by the new Type XVII, 50-horsepower car, which will be one of the representatives of the line for 1908 made by the Pope Motor Car Company, Toledo, O., is characterized throughout by the many numerous special features of design and construction which have been identified with it for the past two years. The motor is distinguished by the use of copper water-jackets surrounding the twin cylinder castings and large valves set at an angle in the cylinder heads and operated by walking beams from the single camshaft and set of cams. The exhaust valves are operated by individual springs, while the inlet valves are provided with supplementary stems, which can be removed for adjustment or replaced, thus preventing any danger of having the valves thrown out of alignment by reason of a warped stem. Specially treated chrome nickel steel is the material employed for the crankshaft, wristpins and connecting-rods, the first-named being supported on three liberal-sized D. W. F. annular ball bearings.

Motor Accessories.—In accordance with recognized standard practice on the highest grade cars, dual ignition is fitted, an Eisemann high-tension magneto and non-vibrating coil being provided to take care of the running side of the duplicate system, while a standard four-unit coil and accumulator set with primary timer run by the motor complete the other side. Instead of being placed on the dash as usual, the coils are carried under the front seat of the car, while the accumulators are housed in a special steel case carried on the running board. Either system can be used independently or both together, and the purchaser is given an option of the Bosch high-tension magneto for the running side where this make is preferred.

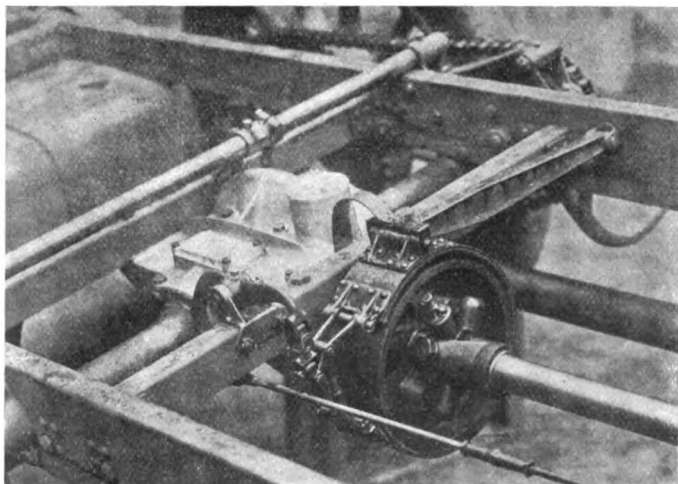
The carbureter is an exclusive Pope-Toledo design and is of the annular float type, insuring a constant supply of fuel regardless of the position of the car. While the main fuel supply is maintained by means of an ingenious pressure system in which a simple pump automatically operated by the exhaust pressure raises the gasoline from the 26-gallon copper tank at the rear of the car, the feed to the carbureter is on the gravity principle. This is ac-

complished by placing an auxiliary one-gallon tank on the dash, in which the fuel is kept at a constant level as long as the car is running. An auxiliary hand-pump is provided for emergencies, none being required for starting, as in the usual pressure system, owing to the supply in the small tank. The carbureter has a wide range of flexibility and will run the motor from about 200 r.p.m. to 1,200 r. p. m. with great efficiency. The water pump is centrifugal and gear-driven, carried on the forward end of the engine, and has a liberal capacity. It supplies the special "planetic" radiator of exclusive design and which is made in the home plant. This is of novel principle and construction and gives a high efficiency, thus necessitating a minimum quantity of water. A high filling thimble and a hard rubber vulcanized cap lined with brass are fitted, the latter being convenient to handle while the former prevents the hot water from siphoning from the radiator. Lubrication is of the continuous circulating type, using a gear pump run from the camshaft and a three-gallon tank.

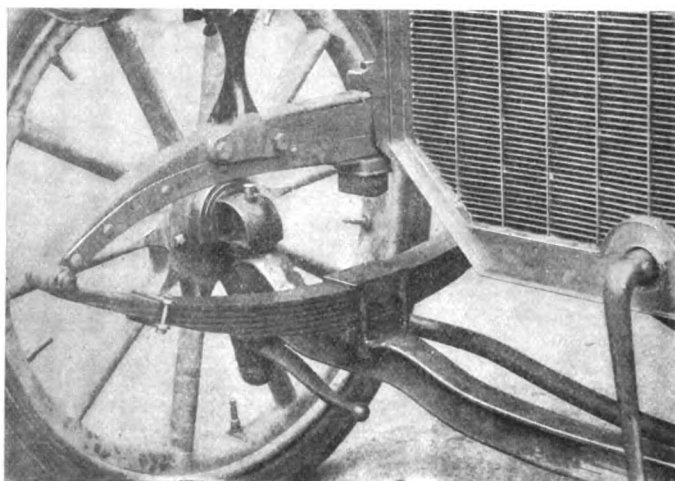
Transmission Essentials.—The first step in the transmission of the power consists of a multiple-disk clutch of special design, and which, contrary to usual practice where this essential is concerned, is encased in the same housing as the gear-set instead of being made a part of the flywheel. Packing joints providing with gland nuts are placed between the case holding the change-speed gear and the clutch and between the clutch and the outer end of the shaft, thus making the clutch case absolutely oil-tight. The number of disks has been reduced and their shape changed as well, permitting quicker action while still retaining the extremely smooth operation of this type. Hand holes have been provided for examination and oiling. The change-speed gear is of the sliding type with selective operation and provides four speeds forward, the direct drive being on the third. Chrome nickel steel is used entirely for both shafts and pinions, the former running on D. W. F. annular ball bearings of large size, the whole running in a liberal supply of oil. The entire clutch and gear-set unit is located directly back of the flywheel, which brings the former in a very accessible position beneath the



CAMSHAFT SIDE OF MOTOR, SHOWING CARBURETER AND MAGNETO.



POWERFUL CONSTRICTING BRAKE ON DRIVING SHAFT.



STEERING KNUCKLE AND RADIATOR CONSTRUCTION.

footboard; a large hand-hole and screw top are provided to permit access to the interior. The differential case on the center of the jackshaft has also been provided with liberal sized hand-holes for adjustment and lubrication. Final drive is by double side chains to the rear wheels, the chains themselves being of the silent type, the material employed being chrome nickel steel. The few disadvantages of this type of drive are entirely obviated by the provision of special chain cases, thus insuring cleanliness and efficient transmission of power at all times. Particular attention has been paid to making every part of the transmission, right from the flywheel back to the drivers, as accessible as possible, while still maintaining the highest standard of efficiency throughout.

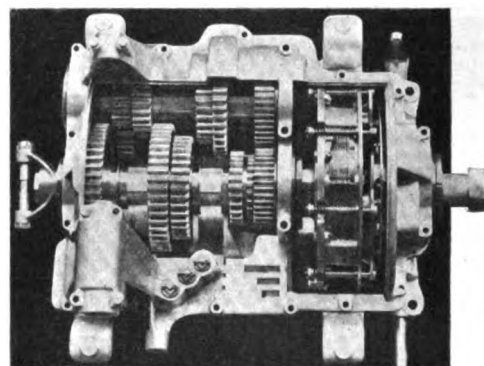
Chassis and Running Gear.—The frame is of the inverted "U" type with reinforced edges that has long been a distinguishing feature of the Pope-Toledo design. It is amply stayed and braced by transverse members and gussets, the former carrying the transmission unit. The axles are of I-beam section of generous size and of chrome nickel steel, the front being provided with pivots and steering knuckles mounted on D. W. F. annular ball bearings, with hardened steel bushings and compression grease cups, an excellent idea of the construction of this part of the car, as well as of the special type of radiator employed, being illustrated in one of the accompanying photographs.

Thirty-six-inch artillery wheels shod with 4-inch tires front and 4 1-2-inch rear complete the running gear, and these, in connection with the liberal spring equipment, which is of the semi-elliptic type, provide extremely easy riding. The matter of tire equipment is left entirely to the purchaser, the option of any of the best-known American makes being given.

That most important of all parts of the car—the

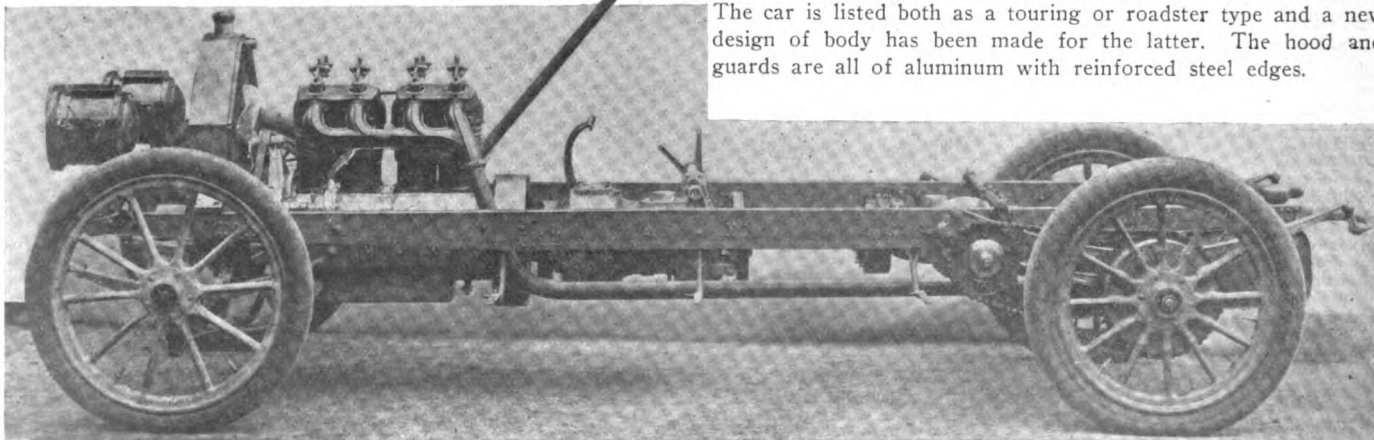
brake equipment—has come in for special attention, and it is doubtful if there are many cars on which it has been considered as of such extreme importance as on the Pope-Toledo. The running brakes are located in dust-proof drums on the rear wheels, being operated by a pedal which interlocks with both the clutch and the emergency brake hand lever on the side of the car. The emergency brake is of unusually powerful dimensions and is placed on the driving shaft between the gear-set and the differential. It is operated independently of the clutch by means of a second pedal, this arrangement facilitating restarting when stalled on a steep grade.

A pressed-steel body trimmed with Cuban sabique completes the car, a great deal of attention having been lavished on the body design with a view to providing the maximum of comfort and convenience for the passengers. A locker under the



COMBINED CLUTCH AND GEAR-SET UNIT.

forward seats and opening into the tonneau provides accommodation for two dress-suit cases, while further space for baggage is provided under the rear seats. Tools, oils and accumulators are all carried in special steel boxes attached to the running boards, the tool box also accommodating the tire necessities. The car is listed both as a touring or roadster type and a new design of body has been made for the latter. The hood and guards are all of aluminum with reinforced steel edges.

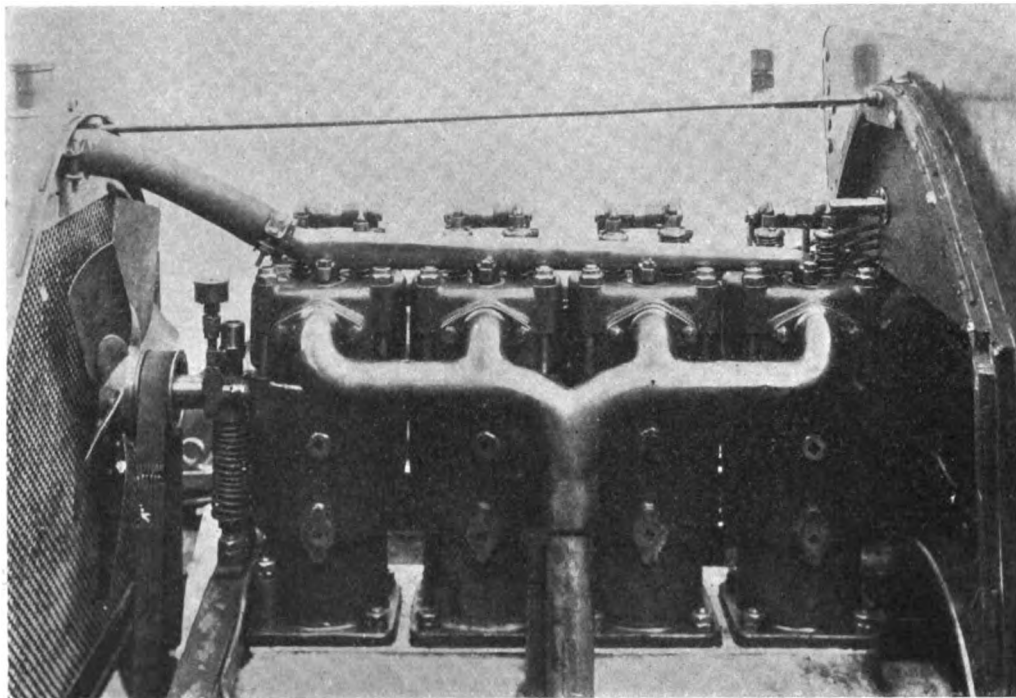


SIDE ELEVATION OF THE COMPLETE POPE-TOLEDO CHASSIS FROM THE EXHAUST SIDE OF MOTOR

CONCERNING THE KNOX WATER-COOLED MOTOR

THOUGH in his first attempts the American maker followed the standards set up by previous stationary practice rather closely, he seldom went as far as adopting the two-piece cylinder construction that is still prevalent in that field. Instead, he made

make for simplicity, using this term both from the user's as well as the maker's point of view. The most prominent of these, as already mentioned, is the two-piece cylinder construction. Separate cylinders are employed



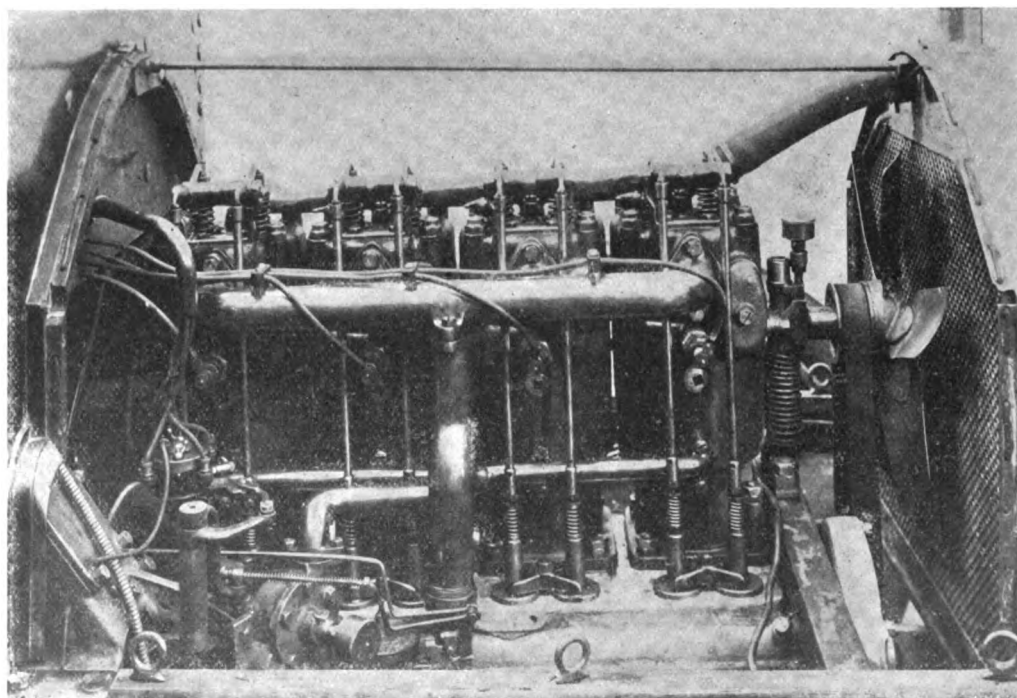
THE NEW KNOX MODEL L WATER-COOLED MOTOR FROM THE EXHAUST SIDE.

one-piece cylinder castings, and the latter have become practically universal in automobile motor practice, until now, the first signs of a tendency to return to former standards are revealed in the design of the Knox water-cooled engine, which forms the power-plant of the new Knox Model L car for 1908. So far as the car itself is concerned, it is a replica of those distinguishing features of design and construction that have long been identified as Knox standards and so may be said to depart little from the cars built by this concern — the Knox Automobile Company, Springfield, Mass., for several years past. The chief departure is naturally that of the adoption of water-cooling, and even in the design of the water-cooled motor, the same Knox standards that have become familiar on the air-cooled type of motor have been closely adhered to, so that, taken all in all, it is practically only in the provision of a radiator and the other essentials of water-cooling that the new motor differs.

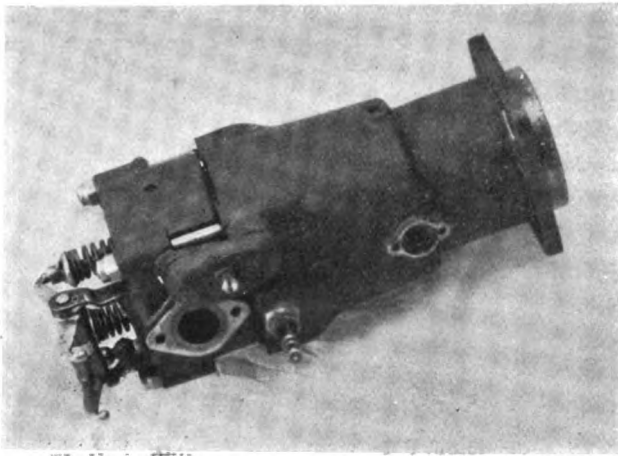
When considered in detail, however, the motor itself is found to embody more than one instance of what may be termed advanced practice in that they

no cages being employed, but instead of being placed in two lines as in the air-cooled motor, they are located on a single line lengthwise of the four units. Liberal provision for water is made in the head, the valve seats being cored in so that both

as usual, each consisting of two castings, one forming the body of the cylinder and the other the head. The most noticeable thing about these castings, and it is a feature that overcomes the old and well-founded objections to the use of two-piece cylinders, is the fact that both the cylinder proper and the head have each an independent water-jacket, with very liberally proportioned water spaces. The cylinder jacket covers it entirely but is closed at the top, the inlet being at the bottom and the water again issuing at a point diagonally opposite. Thus there are no water joints which could occasion a leak into the cylinder. In machining the cylinder casting a counterbore is made at its upper end on the outside, leaving a protruding shoulder or ring. In assembling, an asbestos-copper gasket is placed on this shoulder and the correspondingly recessed cylinder head seated upon it. The valves seat directly in the head,



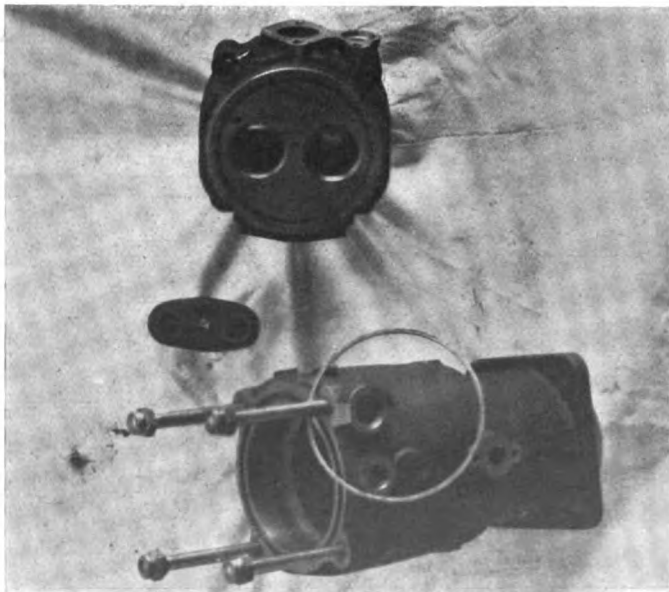
WORKING SIDE OF THE KNOX MOTOR, SHOWING VALVE MECHANISM AND CONNECTIONS.



CYLINDER AND VALVE ASSEMBLY OF THE NEW KNOX MOTOR.

are entirely surrounded by the circulating water. Although the jackets are entirely independent, the circulation is continuous, as the water, after rising through the cylinder jacket proper, is transferred to the head by means of a small U connection clamped on, the hot water issuing from the top of the head at the right side. This form of construction permits of machining the entire combustion space, besides making a much simpler casting. Shoulders are cast on each corner of the cylinder proper, and into holes tapped in these, studs are screwed. The latter coincide with holes drilled in the cylinder heads which are held down by four nuts, it being impossible to bring the parts together without a correct bearing. The valve mechanism is all on the right-hand side of the motor and is actuated by a single camshaft. The engine design is such throughout that the air-cooled cylinders may be substituted with little difficulty.

The advantages of this form of construction will be apparent at a glance. The head may be removed merely by taking off four nuts, thus giving access to the entire interior of the combustion chamber and making the task of cleaning the latter of carbon deposits quite an easy matter when compared with the standard type, in which the entire cylinder must be lifted from the crankcase. It also facilitates grinding in the valves and this may be done without any danger of having the grinding compound get into the cylinder. Disconnecting the big end of the connecting rod permits of the ready removal of the piston for inspection and also makes it a far easier matter to reinsert the latter with its rings when reassembling the motor.



ESSENTIALS OF THE KNOX WATER-COOLED CYLINDER.

ALL KINDS OF AUTO MAKING IN MICHIGAN.

Tolmy Hill, of Cherry Valley township, Lake county, Mich., has invented an automobile more wonderful than Holmes' wonderful one-horse shay. He has just been exhibiting his machine at one of the Michigan fairs, and "By heck," it goes.

The specifications of this new model of horseless carriage are: A second-hand brake wheel; a second-hand ice cream freezer, constituting a water tank for cooling the engine; a second-hand gasoline can; a second-hand marine engine; a new "sparker" costing \$21; a second-hand set of farm wagon wheels; a second-hand set of gears from a marl mixer, and a miscellaneous assortment of junk, all second-hand.

Does she go? You'd better guess. One facetious spectator at the trial test said that she made six miles a week. But the judges' stop watches showed a mile in 8.76 minutes. There are three speeds to this latest type of auto, three, eight, and fifteen miles an hour, though Mr. Hill admits he has tried the fifteen-mile gear only once.

"She splashed water all over me then," said he, "but she went two miles at that clip."

At the last fair which he visited this carriage had the honor of carrying several notables around the race track, including



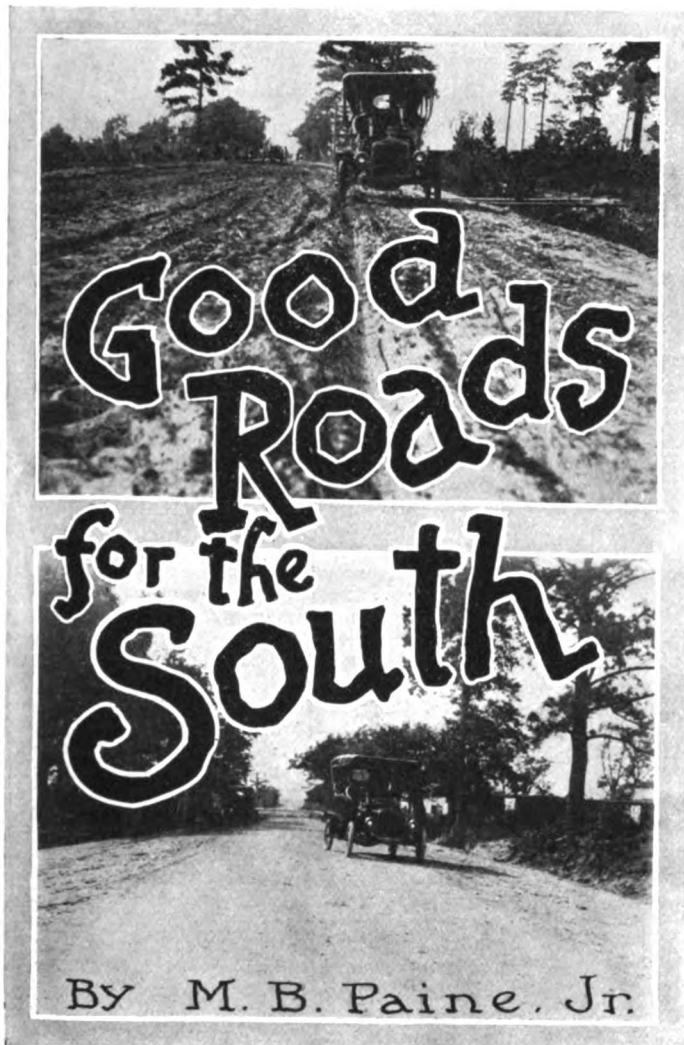
TOLMY HILL, OF CHERRY VALLEY, MICH., AND HIS CAR.

Governor Warner, Lieutenant-Governor Kelley and Congressman Townsend. He made it in 8.76 flat, amid the cheers of the crowd.

Tolmy Hill, the author of this contraption, is an old man who earns his livelihood by working in the marl mill at Marlborough. He may not be a millionaire, but he has a mighty good time in the world, and the assembling of the parts to his 1908 model has been one of his greatest pleasures. "And, by heck, she runs."

HOW A MOTORPHOBE JUDGE WENT WRONG.

ALBANY, N. Y., Oct. 21.—That prejudice may sometimes overreach itself to its own undoing, has seldom been better illustrated than in the case of Justice J. P. Van Ness, of the Court of Special Sessions, East Greenbush, who has achieved considerable of a local reputation as a motorphobe. Howard A. DeGraaf was arrested for exceeding the speed limit on October 28, 1906. He was taken before Van Ness, sitting as a justice of the peace, and fined \$25, which he refused to pay, giving \$100 security to appear before the same justice sitting in the Court of Special Sessions several days later. He was there fined \$100, and again refused to pay it, taking an appeal. Under the Code of Criminal Procedure, the jurisdiction of this court does not extend to fines in excess of \$50, although the Motor Vehicle Law authorizes a fine to that amount. Justice Tierney, sitting in the Rensselaer County Court, has just reversed the decision on this ground, and as the Court of Special Sessions is not a court of record, there is no provision in the code for remitting a case to it for retrial on reversal, and De Graaf escapes.



TWO VIEWS OF THE SOUTH CAROLINA STATE HIGHWAY.

The upper picture shows the sand bed which belied the name of road, and the lower view shows the same course after improvements were completed.

CHARLESTON, S. C., Nov. 4.—As the result of much agitation in the form of automobile runs, petitions and public mass meetings, thus bringing to the notice of the authorities the poor condition of the roads around Charleston, the people of this county have succeeded in getting an appropriation and the right to use convict labor to convert the present sand beds called roads into modern macadam highways.

In January last the State Legislature elected a committee of prominent men to act as special highway commissioners, and the first move of the commission was to plan and lay out a fine highway to Summerville, the well-known winter tourist resort, about 25 miles from Charleston. Three routes were available, and after careful consideration of their advantages as set forth by those interested in each route, the making of many auto trips over each, and close studying of the actual surveys of each route, the committee chose the original State road going over to Summerville by way of Otranto. This road for miles has long held the reputation of being the worst sand bed in this section, and has taxed the ability of more than one car in passing through it.

In choosing the best materials and methods to build the road, the committee received valuable assistance from the United States naval station, situated on the Cooper river at Charleston, Commandant Dyer having made extensive experiments in that line in building the roads through the United States Government reservation. Augusta gravel or cement gravel, a natural mixture of clay, pebbles and coarse gravel, was chosen, this having given much satisfaction in Georgia at Savannah and other places, and having shown the best tests here.

The new road runs straight north from Charleston by way of Meeting street, considerable progress in the building of it having been made already, so that by next Spring it is expected that visiting autoists and tourists at Summerville will be able to run to Charleston over a beautiful highway through the fragrant pine-lands and at as high a speed as they can reasonably wish. The committee is now contemplating the plans of improvement on the other roads leading to the rich truck farming districts, and to the great sea island cotton centers, so that in a few years this country will have many miles of fine roadway.

The autoists in this section, having become a very strong factor, are to be thanked for this good roads agitation. The percentage of automobiles in Charleston has increased 200 per cent. in the last eight months, and over 100 have taken out licenses with the clerk of the court. There are more than 100 automobiles in Charleston, but only this number has been registered. In a few months, at the present rate of increase, there may be 200 machines registered.

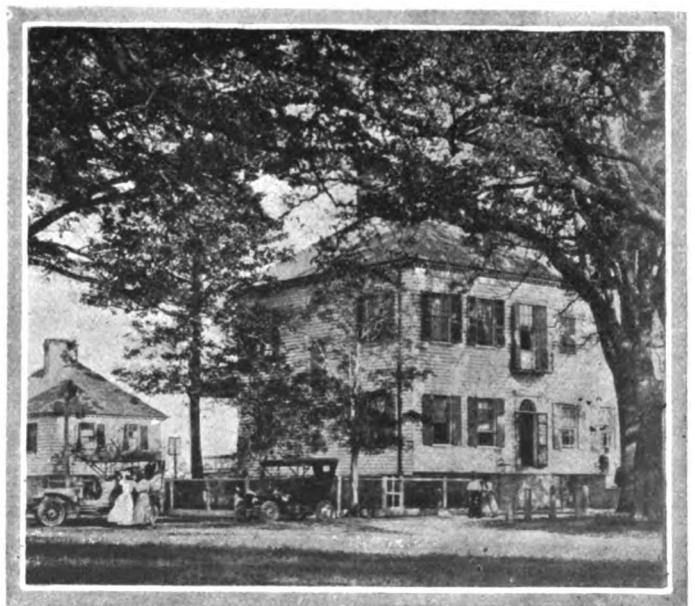
COLUMBIA AUTOISTS FOR GOOD ROADS.

COLUMBIA, S. C., Nov. 4.—An automobile organization for the improvement of roads in Richland county was recently organized at a meeting of automobilists at the Ridgewood Club. The meeting was very largely attended, and there was a general discussion, which culminated in the formation of a permanent organization with the following board of officers: President, E. M. Whaley; vice-president, G. M. Berry; secretary, W. C. Swaffield; treasurer, T. H. Meighan.

F. H. Hyatt made an address on the necessity for road improvement and advised the appointment of a committee to work in harmony with the general organization recently formed in Columbia for road improvement in the county, and President Whaley, Secretary Swaffield and H. D. Lorick were named such a committee to appear before the grand jury and invite that body to take a ride over some of the roads in order to better understand their condition. A committee on constitution and by-laws consisting of R. L. Moore, B. F. McMasters, S. M. Harman, C. M. Lide and C. T. Jones was appointed.

TEXAS AUTOISTS WORKING FOR HIGHWAYS.

BEAUMONT, TEX., Nov. 2.—Arrangements have been completed by a number of representative citizens owning automobiles in this city with J. C. Chaney, the county commissioner, under authorization from the county commissioners' court, for grading, putting in abutments to bridges, and otherwise improving the



HOUSE AND GROUNDS OF CHARLESTON COUNTRY CLUB.



THE OAKS—A COUNTRY HOME NEAR CHARLESTON, S. C.

Collier's Ferry road, leading from the city limits to Collier's Ferry, where the Beaumont Country Club has its house.

Under the arrangement which has been made, the county will defray one-half the cost of the improvements, and the other half is to be paid by the automobilists, who will be greatly benefited by the work. A liberal amount of money has already been subscribed, and work has been commenced by the contractors.

GOOD ROADS TALK ALONG THE MISSISSIPPI.

MEMPHIS, TENN., Nov. 4.—In spite of the fact that roads in this section of the country, and particularly from here southward, are as far from being what they should as it is possible to imagine, and still dignify them by the name of highways, the interest in automobiles and automobiling has been experiencing a marvelous growth during the past two years. As is the case wherever the automobile takes hold, the talk of good roads immediately becomes prevalent and there is every prospect that the benefit of its influence will soon begin to assume definite form. Local organizations do their utmost to further the movement, but naturally their capacity in this direction is limited, usually being confined to roads in the immediate neighborhood. Among the numerous projects in the way of road improvement is the proposal to utilize the tops of the levees along the Mississippi as automobile roads, and the scheme is not as fanciful as it may appear to some.



HIGHWAY COMMISSION MAKING PLANS TO WIDEN ROAD.

THE AUTOMOBILE CALENDAR. AMERICAN.

Shows and Meetings.

- Nov. 9-16.....—Philadelphia, First Regt. Armory, Automobile Show, Philadelphia Automobile Trade Association.
- Nov. 16-23.....—Baltimore, Third Annual Automobile Exhibition, Automobile Dealers' Association. B. R. Johnson, manager, Piper Building.
- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 9-15.....—Detroit, Riverview Park Auditorium, Detroit Automobile Dealers' Association. LeRoy Pelletier, manager.
- Dec. 14-21.....—St. Louis, Mo., New Coliseum, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
- Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, manager.
- Feb. 10-15.....—Detroit, Light Guard Armory, Tri-State Automobile and Sporting Goods Association, Seventh Annual Show.
- Mar. 7-14.....—Boston, Mechanics' Building and Horticultural Hall, Boston Automobile Dealers' Association. Chester I. Campbell, manager, 5 Park Square.
- Mar. 9-14.....—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dai H. Lewis, manager.
- Mar. 21-28.....—Toronto, Canada, St. Lawrence Arena, Automobile Show. R. M. Jaffray, manager.
- Apr. 5-12.....—Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Motor Boat Shows.

- Dec. 7-14.....—New York City, Grand Central Palace, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 1-8.....—Chicago, Coliseum, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 25-Feb. 1.—Boston, Mechanics' Building, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Feb. 3-8, '08....—Buffalo, Convention Hall, First Annual Power Boat and Sportsman's Show, auspices of Buffalo Launch Club. Dai H. Lewis, manager.
- Feb. 20-Mar. 7.—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsman's Show.

Races, Hill-Climbs, Etc.

- Nov. 15-16.....—Newark, N. J., 24-hour Endurance Run, Automobile Club of New Jersey.
- Nov. 26-28.....—Chicago, Three-day 600-mile Reliability Race, Chicago Motor Club.

FOREIGN.

Shows.

- Nov. 11-23.....—London, Olympia Motor Show.
- Nov. 12-Dec. 1.—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
- Nov. 22-30.....—London, Agricultural Hall, Stanley Show.
- Dec. 5-22.....—Berlin, Germany, Automobile Show.
- Dec. 21-Jan. 2.—Brussels, Show, Palace of the Cinquantenaire.
- Jan. 18-Feb. 2, '08—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.
- Mar. 21-28.....—London, Agricultural Hall, Cordingley's Show.

Races, Hill-Climbs, Etc.

- Dec. 8.....—Paris, Straightaway Aeroplane Speed Test, auspices of "L'Auto."
- Dec. 13.....—Paris, Competition for Agricultural Automobiles, auspices of "L'Auto."
- May 12, 1908....—Sicily, Targa Florio, Automobile Club of Italy.
- June 20-July 5.—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
- August, 1908...—France, Coupe de la Presse, Automobile Club of France. (Exact date to be announced.)

ACETYLENE LIGHT FOR AUTOMOBILES

By EUGENE BOURNONVILLE.*

THE pure whiteness of the acetylene flame is closely akin to sunlight in the proportion of the various colored rays of the spectrum. It is evident from the table published by Munsterberg, that the light yielded by acetylene, not only more nearly approaches sunlight in the proportion of the rays of different wave length, but is even richer than sunlight in blue and violet rays, which are most essential to the chemical action of light. For this reason there is no other light which can compete advantageously with acetylene for the purpose of automobile lighting. It is evident that when a vehicle seldom travels at a speed less than ten miles per hour and most of the time much faster, no light is too good and the best light obtainable becomes a necessity to enable the driver of the traveling car to instantly distinguish all the obstacles which may be encountered. There are several different ways of producing acetylene light, which divide themselves into two principal classes: First, the making of gas by the use of a generator. Second, the use of gas under pressure, stored in properly constructed cylinders.

There are many ways of generating acetylene gas from calcium carbide, but the best method is that of dropping a small quantity of lump carbide at a time into a comparatively large volume of water. The carbide falls to the bottom where the gas is generated and travels upward to reach the surface of the water, cooling the gas and retaining most of its impurity by washing it. This system, however, cannot be used on automobiles, the apparatus required being too bulky. Accordingly it can be employed only for large installations, such as house lighting. Two water-feed types of acetylene gas generators are appropriate for auto use.

First: The one by which the water is above the carbide or is so arranged to have its level a few inches above it, permitting the water to fall on the carbide drop by drop, the flow of the water being regulated by a needle valve. This system has almost been abandoned for the reason that it is practically impossible to feed exactly the proper quantity of water to the carbide, so as to keep a constant and uniform flow of gas to the burner at the proper pressure. If the carbide is very rich or if the water drops too fast, gas will be generated in excess and will blow at the burner. If the water feeds too slowly or if the carbide is of poor quality from having been exposed to the action of the air, the gas will not generate fast enough and the result will be too little pressure for proper combustion, producing a dim yellow light which will smoke and very rapidly carbonize the burner.

The type of acetylene generator for automobile use and the one which is in almost universal use, is the one in which the water enters the carbide chamber at the bottom. The carbide chamber is an inner compartment located in a larger one which acts as a water reservoir and at the same time serves as a water jacket. The only connection between these two chambers is a small aperture in the bottom of the inner chamber. The moment that the valve leading to the chamber is opened, allowing the gas to pass out of the carbide chamber, the water takes its place and comes in contact with the carbide, thus generating more gas and by increasing the pressure in the carbide chamber forces the water out by the same aperture that it entered, but as the gas is gradually used, the water reenters the carbide chamber, thereby maintaining an even pressure. When the generator is not in use, the pressure keeps the water from contact with the carbide.

The only other method of using acetylene for automobile lighting is to have the gas compressed in special cylinders. Acetylene, or any other gas, in empty cylinders, can only be compressed about once the capacity of the cylinder for every atmosphere, say for every fifteen pounds of pressure. Accordingly, a cylinder of a capacity of one cubic foot at a pressure of 150 pounds, would only contain ten times its capacity, or ten cubic feet. This would

*Formerly chief engineer of the Commercial Acetylene Company.

not be practical, as a cylinder would be entirely too bulky, and furthermore, compressing the gas in a cylinder without any means of checking the propagation of the explosive wave to the whole volume and contents, would render the system very dangerous in case of fire, and also for many other reasons. Acetylene being a highly endothermic gas, it is always advisable to protect it when compressed from any excessive external heating. An acetylene cylinder should never be installed next to the muffler or alongside of the exhaust pipe, as is very often the case.

This brings us to the storage of acetylene compressed in porous substances and dissolved in acetone. It is marvelous, the large quantity of acetylene which can be stored in a comparatively small receptacle at a pressure of 150 pounds, when the cylinder is constructed in accordance with the patents and methods of the Commercial Acetylene Company, controlling all the U. S. patents.

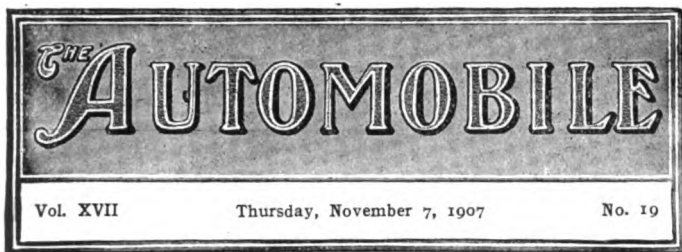
The cylinder is filled completely with a substance of very fine porosity and which, if compressed to a solid, would only fill 20 per cent. of the total volume of the cylinder; accordingly having a porosity of 80 per cent. This porous substance, in case of internal ignition caused by external heat or otherwise, is a safeguard against explosion as it will prevent the explosive wave from passing through the whole volume of compressed gas, but will localize the explosion without raising the pressure in the cylinder more than about 5 per cent., and consequently is considered not explosive when all other details of manufacture are observed, such as the entire absence of copper or its alloys, etc.

This porous material is saturated with acetone in the proportion of about 40 per cent. of the cubic contents of the cylinder. Acetone, which is a liquid, is a great solvent of acetylene gas and absorbs twenty-five times its own volume when at 62 degrees Fahrenheit, for every fifteen pounds pressure to which it is subjected by forcing acetylene gas into the cylinder with the aid of a gas compressor. For example, one quart of acetone at fifteen pounds pressure will absorb fifty quarts, and at 150 pounds pressure, it will absorb 250 quarts. When the pressure is released, the gas leaves the acetone in the same state that it entered.

When acetone is charged with acetylene gas at 150 pounds pressure, the liquid is non-explosive as has been demonstrated several times, a spark plug having been inserted into one side of the cylinder and set off without any explosion taking place or injuring the cylinder in any way, provided that the cylinder is properly constructed in accordance with the above described methods. According to my own personal observation and opinion, there are very few cylinders on the market which are properly constructed.

This is for the following reasons. First: Some manufacturers are trying to get around the patents. Second: Some are trying to manufacture cylinders as cheaply as possible so as to compete with others by cutting prices and not by making their own product worth the price. Third: Cylinders manufactured by those not familiar with the chemistry of compressed gas and who do not realize the danger of neglecting the slightest details.

As to the most suitable size burner to be used for automobile lighting, numerous tests have thoroughly demonstrated the fact that a burner consuming 3-8 cubic foot of gas per hour will project all the light that a six-inch mirror reflector is capable of handling. If a 3-4-foot burner is used, the acetylene flame being opaque will retain the rays that are reflected by the mirror within the area of the flame, so that the rays thus reflected are lost as far as the illumination of the road is concerned. Accordingly, the ideal light is a concentrated one in as small a flame as possible so as not to obstruct the rays projected by the reflector, and the use of anything larger than a 3-8-foot burner not only produces practically no more light, but is simply waste. A white flame can only be obtained with pure gas, the loss from impurities being 15 to 20 per cent. of the luminosity.



THE CLASS JOURNAL COMPANY,

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor

R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT

A. B. SWETLAND, Business Manager

LOUIS R. SMITH FRANK B. BARNETT

W. I. RALPH, 1035 Old South Building, Boston, Mass.

C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00

To subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hilffe & Sons, Limited, 20 Tudor Street, London, E. C

FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.

GERMANY:—A. Seydel Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor
Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903,
and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905	- - - - -	730,000
" " in 1906	- - - - -	791,000
" " this issue	- - - - -	18,250
" " since January 1	- - - - -	744,900

Again the Old Cars at the Old Stand in New York.

For the eighth time in the course of its existence the doors of Madison Square Garden were thrown open on Saturday last, and the manner in which the public responded to the invitation to view the same makes of American cars that they have flocked to visit for several years past appears to be ample refutation of the idea entertained in some quarters that the day of the show is already on the wane. This is the third occasion on which the Garden has been filled with exhibits of the same makers of cars, and the first on which the foreign element will be entirely lacking. Nothing radically new was to be looked for, nothing out of the way to be expected, yet the keen anticipation of the many who arrived in New York a few days previous in order to be able to take in both shows, and the manner in which they filled the Garden on the opening and subsequent nights, spoke volumes for the hold the automobile show has on the public as an institution of widespread and absorbing interest.

Lined up in imposing array in the Garden are the products of those makers who were more than the backbone of the American industry but a few years ago—who were the very industry itself, and who, even now, are responsible for a very substantial portion of the American annual output, both in number as well as in the value of the cars turned out. Familiar names, familiar faces, and familiar cars greet the visitor at every turn about the attractively decorated arena or its annexes.

It is safe to say that no one goes to a show nowadays expecting to find revolutionary designs, and confined as it is to the Selden interests, there cannot even be the expectation of seeing those new Western productions—that the independent show is responsible for—at the Garden, in view of which the attendance and the interest manifested on every hand tell a tale of their own, the moral of which would seem to be that the show is worth every dollar it costs in publicity gained. And there has seldom been as striking an illustration of this as the very successful show that is now filling every square foot of space in the Garden with American-made products.



Does It Pay to "Knock" the Other Fellow's Car?

Apart from those things that are absolutely reprehensible or downright dishonest, most of us are governed in our business relations and policies by a single guiding star. Does it pay? If it does not, we do not delay in following that sententious admonition of the vernacular to "forget it." If it does pay, we are apt to cling to a practice, the following of which has no other excuse for continued existence. The habit of what is known in the current slang of the day as "knocking" is something about which there is a difference of opinion when judged by the foregoing clear-cut standard. Some automobile dealers apparently regard the quickest and most effective way of selling their own cars is to belittle those of any the prospective customer may happen to mention. They combine not a desirable feature that the buyer is looking for, while his is an absolute paragon of all the virtues automobile.

The average man who buys an automobile gives the matter considerable thought before he invests. He is neither a child nor an idiot, nor, on the other hand, a technical expert. He does not implicitly believe every word the salesman tells him, as a boy might, nor does he permit himself to be gulled as if he were non-compos, nor can he give his informer the lie direct, because he is not familiar with automobile construction as a whole, or the good and bad points of the particular cars that the agent is at pains to condemn so roundly. No car is all good points, and few, indeed, are thoroughly bad, but even if they were, the agent is not a disinterested judge. Surely "knocking" forms no part of the art of salesmanship, for the man of common sense is far more apt to become disgusted with the prejudiced aspersions of the narrow-minded individual who is trying to sell him a car than to be decided in his choice of the latter by such petty and underhand means. The letter of a Western correspondent who appears to have suffered to the extent that he still has his money and none of them have sold him a car, shows that it does not pay, if evidence of that fact were needed.



Has the "Horsepower Situation" Been Cleared?

There has been more juggling with the term horsepower since the advent of the automobile than there had been prior to then from the time of Watts, and it does not seem as if the numerous attempts made to bring the matter of horsepower ratings down to the popular level were entirely successful. Abroad, the Royal Automobile Club, and here, the A. L. A. M., has tried its hand on the evolution of a standard. Theoretically, the latter is beautifully simple, but practically it hardly appears to work out in the manner in which even its formulators intended. Naturally it is intended for popular consumption, so to speak, and as such could not be expected to form more than an approximation, but it does not even do that. Loyalty to official standards is shown by the A. L. A. M. members and their salesmen in its adoption, but the rapidity with which the latter make haste to inform the inquirer that the real output of the motor is fully 50 to 60 per cent. greater reveals their belief in its accuracy. But apart from the fact that it tends to overrate small motors slightly, and underrate large ones grossly, the layman is as much confused by the fractional ratings as he was by the old-time hyphenated style.

TWO-WHEELERS GIVE EVIDENCE OF POPULARITY

By W. F. BRADLEY.



THOUGH in restricted quarters in the basement of the Garden, motorcycle enthusiasts display an enthusiasm which augurs well for the continuance of the two-wheeler, despite the growing encroachments of popular two-seated runabouts. Excepting that every maker has abandoned powerful heavy-weight machines in favor of a type of medium power and as light weight as possible consistent with strength, there is a wide diversity among the exhibits.

In frame design there are representatives of every school, the complete frame—that is a frame from which the entire motor might be removed without destroying the unity of the frame; the broken frame—the crankcase uniting the two stays; and the class of which the Indian is one of the best-known examples, in which the motor is combined as a part of the frame of the machine. Each class has its own supporters, its own merits and demerits, and it would

be impossible to single any machine as best merely because of these features.

Some type of shock absorber or cushion head is recognized as a necessity for every motorcycle, it being impossible without a device of this nature to travel at even a moderate speed without suffering from excessive vibration. Not only is a good cushion necessary, but the mechanical construction of the device should be of the best and give every guarantee of security. An interesting arrangement is found in the spring fork of the Thor, consisting of a one-piece stem and lower connection with triple keyed top connection. Four levers connect the fork stem of the frame with the parallel extending fork sides, making eight connecting points of ample size and all equipped with ball bearings. To obtain still easier riding the cushion fork of the Indian has been doubled, the change having been effected without in any way destroying the line of the machine. A strengthening of the spring forks forms one of the features of the new models of the R-S, the reinforcement consisting of a small tube passing from the eye in the fork end to the fore part of the crown. On the Styria common European practice is followed by a double front fork, without the use of any spring device. The Curtis has a somewhat similar construction, though a spring fork can be added at a small extra cost. A new spring fork has been de-

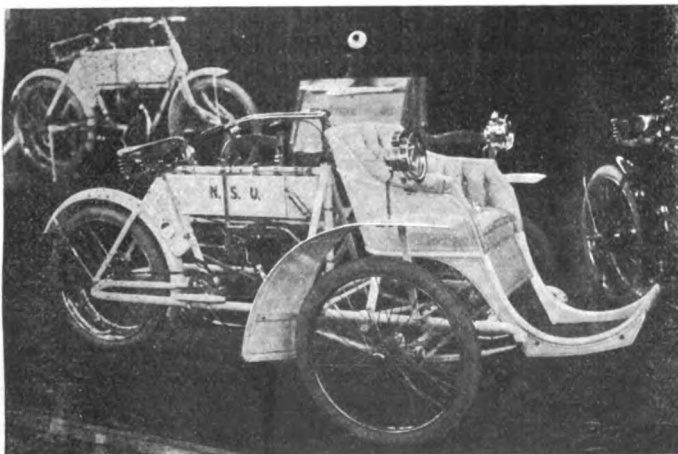
signed for the Marsh-Metz, consisting of a flat three-leaf spring held by three bolts under the fork crown; the springs act in either direction, doing away with any recoil arrangement.

Single-cylinder machines still comprise the majority of the exhibits; there are "twos"—a number of them—conspicuous being the Indian, the Marsh-Metz, and the Curtis; one "four" from the F. N. factory in Belgium, and an eight-cylinder racer, shown by the G. H. Curtis Company, conclude the departures from the small power classes. It is doubtful if all the single-cylinder machines can develop sufficient power to carry a rider over the more difficult parts of country roads, but the present tendency very wisely seems to be toward a medium power with lower weight and high efficiency.

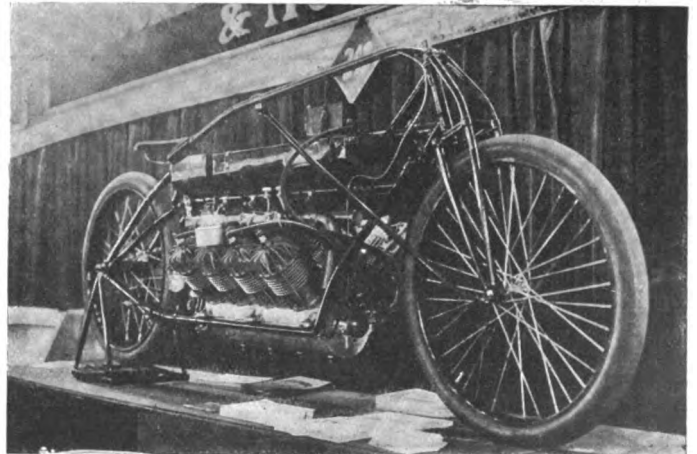
Automatic intake valves are still in a majority, but that majority is not so great as was the case even a couple of years ago. The new model of the Indian, for instance, is now made with either mechanical or automatic intake valves. The mechanical arrangement is a single cam, operating the exhaust valve direct and the intake valve by means of an operating arm fastened to the exhaust valve lift, the intake valve still being placed in the cylinder head. The mechanical intake is certainly an improvement, and owing to its simplicity and ease with which it can be fitted, doubtless numbers of Indian users will consider it advisable to have their models fitted in this way.

With magnetos at their present price it is hardly to be expected that every motorcycle will be equipped with this source of electric current. Yet there are an increasing number of medium-priced machines which now have this improvement. The F. N. of Belgium four-cylinder machine, with superimposed valves, the intake being automatic, follows the best European practice with a high-tension Bosch magneto, inverted and carried on an extension at the forward end of the crankcase. On all the Indian models for 1908 the option of a high-tension magneto is given at an extra cost. A similar offer is made by the makers of the R-S.

Between shaft and bevel gear, single chain, and various types of belts, there is sufficient variety of drives to satisfy almost everybody. In a few cases there is an option on one machine of both gear and chain drive. This is so in the Indian, where on all models but the 3 1-2-horsepower single-cylinder machine, either gear or chain drive may be obtained. All gears are fully protected by a gear case, easily removable at will. An interesting type of drive is employed on the F. N. four-cylinder motorcycle, consisting of bevel gears and shaft, all completely encased. A flexible connection is provided by four helical springs in the flywheel, to take up any shock between engine and transmission.



N. S. U. MOTOR BICYCLE WITH FORE CARRIAGE ATTACHED.



CURTIS SWIFT AND POWERFUL EIGHT-CYLINDER RACER.

PREPARING FOR FRANCE'S DECENNIAL SHOW

PARIS, Nov. 1.—In twelve days President Fallieres, surrounded by members of the Government, and escorted by Republican Guards, will pronounce the stereotyped discourse marking the invasion of the public through the front gates of the Grand Palais and the escape of an army of workmen from the rear of the building. It is one of the peculiarities of the Paris Salon that each year the big hall shall be in an impossible state of chaos two hours before the opening, and that everything shall appear in perfect shape when the Republican trumpet is blown. Having been so during the past nine years, there is every reason to believe that the tenth show, crude as it is to-day, will have every piece of brasswork polished and every lamp in position when Baron Zuylen and his helpmates stand with bared head awaiting the arrival of the President.

It has always been the design of the Automobile Club of France that their annual Salon should be in every sense a national affair. What little opposition has sprung up from time to time has been promptly suppressed and the one national show organized more on the lines of a world's fair than a trade exhibit. Although the Grand Palais in the Champs Elysées is retained, it has long been too small to contain all those clamoring for admittance. Thanks to a complaisant municipality, almost the entire Esplanade des Invalides, a huge plot of land separated from the Palais by the Alexandre III. bridge, has been placed at the disposition of the club at a rental which would appear reasonable for a Harlem flat. Three main roads had to be closed, but the diversion of vehicular traffic has never been a serious matter when the interests of the Salon were in question.

On the Esplanade des Invalides a metal and wood hall, with an area of about 36,000 square yards, equal to the total of the Grand Palais, has been erected for commercial vehicles, machinery and motor boats. Every provision is here made for exhibiting machinery in motion, all machine tool makers and constructors of stationary power plants having made arrangements for showing their products under working conditions. Judging from the shafting in position, some of the stands will contain a dozen heavy machine tools under power.

City Streets and Squares Comprised in Decorative Scheme.

Gustave Rives, the wizard of the show, has announced that the decorations for the decennial exhibition will be a big advance on those of previous years. It is difficult to understand where improvement will be made, for last year every electric power plant in the city was called upon to render aid. Yet Rives has taken charge of the two big halls, the Avenue Alexandre III., the Bridge, the Champs Elysées, and the Place de la Concorde, with the intention of clothing them in a luminous robe which will beggar even the gorgeous dress of the Russo-France fête days.

Certainly the Paris exhibition will hold its own as the largest and most gorgeous of the world's automobile shows, but it is certain to be affected somewhat by the London show opening one day earlier and closing at the end of seven days. London does not claim to have more than an excellent trade show, realizing that it is impossible to rival Paris in size, decorations, illuminations and national éclat. But the commercial side of the British exhibition has been carefully developed, and as all Continental firms must, in view of their foreign trade, exhibit in London, and British exhibits and visitors are few at Paris, John Bull believes that he has obtained commercial supremacy. The Paris show remaining open two weeks longer than the London one, there will be an opportunity for English visitors to attend both, but few will make the journey for business purposes only.

It has been customary during the holding of the Paris Salon to unite automobilists in conference on subjects of universal interest, large conference halls being set apart for this purpose within the Grand Palais. Although three subjects have been

chosen this year, alcohol, touring, and motor boats, only the discussion on alcohol is likely to create international interest. Judging from the list of scientists, technicians and statesmen at the head of the different sections, the alcohol conference will be one of the most important ever held in connection with Paris Salons. Interest is more than local, among the many distinguished foreigners having intimated their intention of being present being Frank Rutter of the United States Department of Agriculture. The four technical groups will deal with the application of alcohol to the automobile, its application to other than the automobile industry, heating and lighting, and technical matters connected with the production, denaturation and carburetion of alcohol. The economic section, also divided into four classes will discuss production, application, legislation and customs, and the use of alcohol for army transport service.

At the touring conference the conditions discussed will be those of France, foreign conditions only being involved in so far as custom and police regulations affect the home tourist. There is a desire to obtain uniform automobile laws and regulations for Europe, but it is certainly too early for any practical move to be made in this direction. During the show a meeting of club officials will be held, as in previous years, to draw up the base of an automobile calendar for the coming season. As some representative of almost every automobile club in Europe is present during the Salon, it is possible, by mutual agreement, to outline a program the events of which will not clash, and by means of which manufacturers are advised in ample time of coming events.

What New Features May Be Expected at the Salon.

Although French constructors are never anxious to give advance information of their models, and this year is no exception, mechanical features at the coming show will doubtless be more numerous than in 1906. The commercial automobile, from light delivery vehicles to Renard trains, will form a strong class. It is realized that the field for powerful high-priced touring cars has been overdone, the overproduction in this direction being almost entirely responsible for the evil reports which have gone into circulation during the past two months. Commercial vehicles will this year occupy a space almost as large as that devoted to powerful touring cars, the progress made in this section being enormous. A still newer development is the small two-seated runabout, with either a two-cylinder or a single-cylinder engine, selling for about \$500. For the most part these small cars are built by firms formed by men who have broken away from the big factories; indeed, there are not more than two firms of international repute engaged in this line. Darracq, among the big makers, is now ready with a couple of cheap runabouts, one with a single cylinder and the other with a two-cylinder engine. A large number of big factories promise a complete touring car at prices ranging from \$1,200 to \$1,500.

Contrary to certain reports, the use of side chains will not be extended. Indeed, indications are that the contrary will be the case, every firm in France now adopting shaft drive for its smaller models. Panhard and Dietrich, both of whom have persistently stuck to the chain, announce shaft drive for their lighter cars. More town vehicles and more taximeter cabs than ever before will be a feature of the show. There is a strong tendency, especially in the smaller town vehicles, to cast all four cylinders in one block. Six cylinders will be in evidence, but will certainly not be one of the features of the show. Important speed tests this year, which have much less connection with fashion than automobile shows, have failed to develop any remarkable features in the "six" that is not already possessed by the "four." Leading French makers, important among them being Renault, will produce six-cylinder models generally as a concession to a popular fad, and not because of any firm belief in their superiority.

WHY THE SIX-CYLINDER MEETS ALL REQUIREMENTS

By ALEXANDER WINTON.

A MAKER of four-cylinder cars, who is also making a few sixes, has appeared in the daily and trade press with the declaration that sixes are inferior to fours, by which admission he confesses that he is now making inferior cars—in other words, that he is retrograding. However, he explains his fall from grace by stating that he was “forced into it,” and since the force must have come from without, we can only conclude that it represented competition and public demand. He does not successfully show why the public should demand inferior cars and still be willing to pay more for them than it pays for fours.

He rightly states that one claim in favor of the six is that it runs smoother and easier than the four, adding that the torque is said to be “much more continuous.” Continuous is not a comparative term. Either a thing is continuous or it is not continuous; there is no half-way continuity. “Continuous” describes that which is absolutely without pause or break. Torque means driving pressure exerted on crank shaft and driving shaft. The only element in an automobile that exerts driving pressure is the motor, and whether the driving pressure is continuous or not depends wholly upon the number of pistons.

Performs Same Operation.

Note the operation of a single-cylinder motor, because each individual cylinder of an automobile motor (four-cycle) performs the same operations, whether there be one, four or six cylinders in the motor unit.

In the single cylinder there are four piston strokes to each complete cycle, each cycle requiring two complete revolutions of the crankshaft, as follows:

1. First half revolution of crankshaft. Gas drawn into the cylinder. Termed the suction stroke.
2. Second half revolution of the crankshaft. Gas compressed in the cylinder. Termed the compression stroke.
3. Third half revolution of the crankshaft. Combustion and expansion of gas in the cylinder. Termed the power stroke.
4. Fourth half revolution of the crankshaft. Burned gas expelled from the cylinder. Termed the exhaust stroke.

Note also the demonstrated and accepted mechanical fact that the power of the power stroke does not continue throughout the entire stroke. Hence in a one-cylinder motor power is exerted less than one-fourth the time.

Always One Stroke Behind.

In the four-cylinder motor, the four pistons are so timed in relation to the crankshaft revolution that each piston is at all times one stroke behind its predecessor. So, while one cylinder is developing power, another is compressing, another drawing in a charge and another exhausting. Thus power strokes in the various cylinders follow one another. Power impulses, however, are not continuous. They are separated by intervals of no power at the end of each power stroke, for, as already stated, power is exerted during only part of the power stroke. On this point there is no difference of opinion among mechanical engineers.

Due to this condition, it follows that the power stream of the four is not continuous, but intermittent, and that the torque of the four is never continuous, but always intermittent, and this condition is not changed no matter how fast the four motor may turn over.

Notwithstanding this truth, the four-cylinder spokesman declares that:

“It is probably not out of place to state that we claim to obtain in our four-cylinder motor the gradual and even application of torque that is talked so much about in the six. This we accomplish by means of a superior carbureter, which we have developed after ten years of constant experimenting to get a perfect gas-making apparatus.”

Any remarks relative to carbureters in relation to torque are as irrelevant as a claim of perpetual motion. The best car-

bureter in the world cannot cause a piston to be driven farther than the length of its stroke. “Argument” cannot disregard established mechanical laws.

Each Has Done Its Work.

In the six-cylinder, as in the four, two crankshaft revolutions complete the cycle, and during this period each of the six pistons has performed its four strokes. The pistons of the six are timed in relation to the crankshaft revolution so that each cylinder is not one complete stroke behind its predecessor, as in the four, but is only two-thirds of a stroke behind its predecessor. Thus in the six, the power of one power stroke is not spent before the succeeding power stroke takes hold. Consequently, the power stream of the six is never intermittent, but always continuous, and continuous means “absolutely without pause or break.” Recall also that torque means driving pressure exerted on crankshaft and driving shaft. Torque cannot be continuous if power is not continuous. Continuous torque in the four is a physical impossibility. In the six torque is ever present and cannot be prevented, no matter how slowly the motor may turn over.

Smoother Running; Easier Riding.

And continuous torque means smoother running and easier riding than is possible with intermittent torque; also it means longer life to car and lower fuel consumption.

The four-cylinder spokesman says:

“The basic argument in favor of the six-cylinder is the continuous torque—but let us carefully dissect this argument for a moment. A six-cylinder motor geared, say, two to one, delivers twelve impulses to the rear axle for every revolution of the wheels. Acting on precisely the same principle, a single-cylinder motor geared twelve to one will also deliver twelve impulses to the axle for every revolution, and the forward movement of the car is just as smooth as though six cylinders were employed.”

A six-cylinder motor geared 2 to 1 delivers six, not twelve, impulses in the period stated, and a single-cylinder geared twelve to one delivers six, not twelve impulses. This mistake on the spokesman's part is one of mathematics, an exact science. Does it increase his authority on points that may be somewhat more speculative?

The comparison of a single cylinder with a six can hardly be serious, however, for with both motors giving the same number of revolutions per minute the single would drag along one mile, while the six would cover six miles. And in doing that work the piston of the single cylinder would travel six times as far as any one piston of the six, hence being subjected to six times the wear and tear.

And beyond all that, the torque of the single cylinder can no more approach the continuity of six-cylinder torque than can two parallel lines meet. For continuous torque is obtained only from power strokes that overlap, as they do in the six.

“It has been claimed,” declares the spokesman, “that six cylinders of given size will develop 50 per cent. more power than four cylinders of equal dimensions, all other things being equal. But is this really the case? I think not. Years of experimenting have shown us that with all other things equal the addition of two more cylinders does not produce 50 per cent. more power. In fact, a much smaller percentage than that was all that could be noticed after over a year of expert testing.”

This is the prize avowal.

One horsepower is that volume of energy capable of raising 550 pounds through one foot of space in one second of time. If one cylinder of given size will develop 10 horsepower—that is, be able to raise 5,500 pounds through one foot of space in one second of time—no influence on earth can prevent two exactly similar cylinders from developing twice that power. And on the same reasoning, if four of these cylinders develop 40 horsepower, it would be a freak of mechanics if two additional

cylinders exactly similar (working under identical conditions) did not develop 50 per cent. more power. This is not a matter of individual opinion or of expert testing; it is the working out of mechanical laws.

A Pertinent Question.

Perhaps the four-cylinder spokesman contends that of four exactly similar cylinders, total rating 40 horsepower, one cylinder would develop 15 horsepower, another 13, another 7, and another 5. If so, which of the four is the 15-horsepower cylinder, and why? Again:

"The principal difficulties with the six-cylinder, which no one can deny, are that it requires 50 per cent. more mechanical parts, 50 per cent. more ignition apparatus, 50 per cent. more gas apparatus, has 50 per cent. more valves to grind, has 50 per cent. more weight, and requires 50 per cent. more radiating surface than a four-cylinder motor of equal power, and consequently requires 50 per cent. more care and 50 per cent. more repair bills."

This statement is loose. For instance, mechanics know that radiating surface increases as the square, whereas cylinder volume (horsepower) increases as the cube. The statement of radiating surface is therefore inaccurate and tends to discredit the other statements. "Fifty per cent. more ignition apparatus" might be taken to mean that if four cylinders require one magneto, six would require one and a half magnetos, and we assure an innocent and unsuspecting public that this fear has no foundation in fact. Read this:

"It is somewhat questionable whether the double complication resulting from the added two cylinders is warranted by the improvement in regularity of running and freedom from vibration secured."

This quotation is not from the four-cylinder spokesman's remarks. It is the serious talk of an American automobile authority, Albert L. Clough. One might think he were arguing against six cylinders, but he isn't. His talk was delivered two years ago, and he was arguing against the four and in favor of the two-cylinder, which to-day has as few friends to defend its cause as the four will have one year hence. The quotation is introduced merely to show that the old stock arguments, which no longer hold good against the four, are now being tried in vain against the six.

"Fifty per cent. more care and 50 per cent. more repair bills," says the spokesman.

Let us see. Does the four require 100 per cent. more care than the two? Are its repair expenses 100 per cent. greater? If not, then the relative argument against the six also fails.

Laments the Length.

The four-cylinder spokesman laments the length of the six-bonnet and wheelbase. On the Winton Six-Teen-Six the bonnet is seven inches longer and the wheelbase is but eight inches longer than on the four-cylinder Model M.

"The carburetion difficulties increase because there are two cylinders taking in gas at the same time, and great care must be used to distribute this evenly to all cylinders."

The answer is in the carbureter manifold; this can be properly made so that the difficulty is overcome. Ought to be an easy task for the maker who can produce torque by means of a carbureter.

On the Winton Six-Teen-Six the carbureter manifold is unique and efficient, so efficient in fact that no carburetion difficulty has been encountered. And in six-cylinder construction generally, since suction through the carbureter is continuous, carburetion reaches a perfection unknown where suction is intermittent, as in four-cylinder motors.

"Think," says the four-cylinder spokesman, "of an ordinary chauffeur attempting to grind in twelve valves and to time a double system of ignition, or to adjust the valve timing!"

Mercy! The man who can grind in one valve can grind in a thousand with no greater mental exertion per valve. The man who can time one system of ignition can time a dozen. And the man who can time one valve can time a limitless number of them, because an increased number of cylinders and valves does not change the relation of a single valve to its particular piston.

"Throughout the world," he declares, "it is almost invariably the case that racing machines are four-cylinders."

The most wonderful racing performance the world has ever seen—1,581 miles in twenty-four hours—was done by a six-cylinder car. And that performance hardly bespeaks carburetion or ignition difficulties either.

"We ourselves build six-cylinder cars," he adds, "to give the speed and power that a few drivers demand."

Excessive speed and power are the least important advantage of the six. The more important, due to overlapped power strokes and continuous torque, is that the six requires actually less developed power to do driving work. Take two cars of equal rated total horsepower, and the six-motor will drive its car at a slower motor speed than the four. And, accordingly, the six always has in reserve over normal work a supply of power not possible in the four. The six has a wider range of speed on high gear than has the four, requires less gear changing, is sweeter running, has less wear and tear, gets the more power out of gasoline and is more silent than the four. These, not excessive speed and power, are six strong points.

"Why, then," concludes the four-cylinder spokesman, "is it necessary to use six cylinders if the torque of the four is practically constant, the supply of gas being even and steady at all speeds?"

It wouldn't be. The fact is that these are the identical points on which all fours, irrespective of make, fall down, due not to individual shortcomings of the four-cycle principle. And these faults are overcome in the six.

6 MOTOR TRUCKS CAN DO WORK OF 15 HORSE-DRAWN VEHICLES

INDIANAPOLIS, IND., Nov. 6.—Probably the most interesting change from horse-drawn vehicles to motor trucks that has ever been made in Indianapolis has just been effected by the City Express Parcel Delivery Company. This company has just installed six gasoline 1 1/2-ton trucks to take the place of fifteen delivery wagons and twenty-two horses.

The company operates a parcel delivery service almost exclusively, although some general transfer work is done. Such service, of course, requires that a large number of small packages be delivered as quickly as possible, the tariff on each package being small. Thoroughly satisfactory service has not been obtained with horses because it required too much time to deliver a few packages. Tests have shown that six motor trucks can do the work of fifteen horse-drawn wagons without much difficulty.

Instead of training its old drivers for truck service, the company has found it more practical to employ experienced chauffeurs

at \$15 a week and place a second man on each truck for deliveries. The trucks are kept in a public garage at \$20 each per month, under a maintenance contract. This guarantees that should a truck break down en route another will be sent at once to take its place. The saving over horse-drawn wagons is estimated at \$300 per month.

DIAMOND RE-ELECTS OLD OFFICERS.

AKRON, O., Nov. 4.—The annual meeting of the Diamond Rubber Company resulted in the re-election of the old board of directors and officers. The directors are: F. A. Hardy, A. H. Marks, W. B. Miller, A. H. Noah, O. C. Barber and E. K. Hardy, Akron; R. G. Lake, Chicago. The officers elected are: President, F. A. Hardy; vice-president and superintendent, A. H. Marks; secretary, W. B. Miller; treasurer, A. H. Noah.

NO RADICAL CHANGE IS TO BE EXPECTED IN THE FUTURE

By HAYDEN EAMES, M.E.

FROM the viewpoint of the engineer the gasoline automobile of the present day does not differ radically from a type that was accepted as standard about three years ago. In the electric field, both for pleasure and commercial vehicles, the problems as far as engineers were concerned were settled about three years ago. The problems that confront manufacturers to-day are those of an educational nature, to teach the users, particularly in the commercial field, to operate their cars economically. During the past few years the automobile has passed through a crisis. Some few have failed, but the majority of the manufacturers of high-class cars have accepted a type which I do not believe will differ materially in ten years from that of the present time.

The day of "exclusive features," commonly referred to as talking points, has passed, and this is entirely logical. The automobile of to-day does not depend on sensationalism to sell, either in freak construction or price. The industry has passed through the experimental stage years ago. The typical design which has proved itself by time, and as only time can prove it, has been adopted. The evolution has been slow, but each year's experience has added valuable lessons.

Gottlieb Daimler, a name known everywhere in technical circles, gave the initial impulse to a now great industry by developing the modern four-cycle internal combustion motor from a purely experimental to an entirely practical basis. This, then, was the starting point, and it will surprise many people to learn that this was as far back as 1835. The laws that went into effect at the time that automobiles first made their appearance were so stringent and absurd that they, perhaps more than any other thing, arrested the development of the automobile. Even in 1900, the few leading manufacturers had little in common, and the cars differed radically both in design and in engineering principles. There were all types and kinds of engines, transmissions and

drives, but in 1903 and 1904 engineers began to learn from experience and to apply these principles.

The four-cycle, four-cylinder motor, sliding-gear transmission, and, in fact, some of the foreign cars at that time were built on sound engineering principles and from which the car of 1908 has deviated but little. One point that has taken a long time to determine is the question of shaft or chain drive. The best engineers at one time unanimously agreed on the chain drive. The question was not a question of material, as sometimes stated, nor was it a question of weight, but everyone realized that until the floating type of axle was invented the shaft drive was far from right. It might stand up a year, perhaps more, perhaps less, but ultimately it was sure to go.

For this reason the best engineers clung to the chain drive, not because it was mechanically right, but because it was better and more reliable than anything yet introduced. With the advent of the floating type of axle, the weight taken off the shafts, the question of alternate stresses was eliminated and the problem to be solved was simplified to producing a shaft strong enough for the twisting or torsion of driving. This floating type of axle solved the problems of drives and the best cars are using it exclusively. The chain drive was adopted principally because it worked. On some of the earlier models anything was adopted that worked. The fundamental principle of constructions had not been decided upon, and refinements were given little attention.

The automobile shows of this year do not show anything radically different from the shows of 1905. A few of the manufacturers have apparently thrown aside the hard lessons learned through years of experimenting and branched off on entirely new tracks which are not based either on sound engineering or good business judgment, but in this respect the automobile business differs little from the manufacture of any standard article.

FROM THE STANDPOINT OF THE IMPORTER OF FOREIGN CARS

By CLINTON R. MABLEY, IMPORTERS' AUTOMOBILE SALON.

AN industry is built up by the demands of human beings, no two of which are apt to agree on exactly the best method of accomplishing a result or the best result when accomplished. The consequence is that progress is demanding more strongly every day the recognition of a compromise brought about in one of two ways: either by allowing one branch to supply the needs of a people who prefer the products of that branch, and the other to supply the demand which favors its product; or, by assimilation, in which the best of each branch is eventually combined for the superior product at the highest price, and the remainder resolved into a combined product of a lower grade, which also fills an ever-increasing demand. Undoubtedly either one of those two processes will eventually apply in the solution of the American-vs.-foreign-automobile question, as they are fundamental principles applicable to any industry.

I might mention as an indication in favor of the former the increasing confidence in the American mechanical world, in foreign engineers and producers. Hitherto, Americans were loath to admit that there were any engineers or mechanical brains anywhere in the world worthy to compete with them. We may thank the imported automobile as an enlightener and educator in this respect. In addition to the great body of American automobile buyers, we have a very enlightened class of purchasers to-day who realize the value of the workmanship and selected materials of the foreign car and prefer it.

So we have continual converts to the foreign car in principle and practice, and we also have an increasing number of converts to the lower price, and all that it represents of American manufacture. The advantage in the proportion of the business is

undoubtedly with the merchant who sells at the lower prices always, on account of the original lower investment, and on account of the more numerous replacements. This condition calls for the purchase by one individual of a greater number of units in a given number of years than in the case of the foreign car, where the purchaser looks more to the permanency of his greater first investment, and naturally expects to handle fewer units in the same length of time. As an argument for assimilation, we have the daily increasing number of foreign car makers selecting and using good points of American design, and some particular desirable material pertinent to America, and the recognition of the necessity and desirability of meeting American conditions generally.

So we have the peculiar spectacle of foreign cars with American road clearance, tread, wheelbase, and American bodies, and American cars with a foreign design of chassis, German design of transmission, French and German-made coils, magnetos, springs, axles, frames, and even whole motors, castings, and a widespread recognition of foreign workmanship in many of the most important parts of the automobile.

Negotiations have been opened recently by the German military authorities and the Wright Brothers, of Dayton, O., for the sale of their flying machine. Hart O. Berg, of Philadelphia, the financial backer of the Wrights, has been favorably received by the military authorities and negotiations have been entered into which are not likely to terminate soon on account of the numerous technical difficulties. The Wrights withdrew their proposition to the French Government before visiting Berlin.

AUTOMOBILE NOTES FROM EUROPEAN CENTERS

THE international motor show at Copenhagen closed on October 8, after having been visited by about 50,000 persons, a very good percentage for the capital. Among these were the King, who, although one of the few monarchs not enthusiastic on the sport, could not but countenance an exhibition of such industrial importance. He was accompanied by his brother, the King of Greece, and as they both examined all of the exhibits most carefully, paying quite a lengthy visit to the Ford stand, it is to be hoped that motoring in Denmark, until now a sadly-treated step-child of legislation, will take a more upward curve. Business was satisfactory on the whole.

A London news agency has excited German circles by stating that the Emperor intends visiting Brooklands during his stay in England and that Mr. Edge will hold a race on the track at the time of the Imperial inspection. The Emperor has received a well-known South German king of commerce in private audience, who laid the project of a motor road from Frankfort to Berlin before the monarch. No further details of the interview have been made public as yet.

Switzerland, long notorious for its anti-motoring tendency, is weighing a proposal to prohibit motor traffic of any kind over Swiss roads on Sunday, in order to let the population use roads, lanes and by-ways freely and to its heart's content without being disturbed by the national bugbear. And this in a country which has to count on its influx of visitors for a large share of its existence.

The money-bearing propensity of motor-car taxation is once again most clearly testified to by the income derived by the Flemish province of Brabant from this source. Each horsepower here is charged at 10 francs, that is to say, if there are five cars with 25-horsepower each, that means that 125 horsepower are taxable. All in all, Brabant possesses 1,021 cars, with a total horsepower of 14,694, which, multiplied by ten, throws an annual sum of 146,940 francs into the coffers of the province.

The chauffeur of the Queen-Dowager of Italy, Cavaliere Uto Carolate, is at the same time a very clever doctor and combines both these qualities in the royal trips, which are the most frequent of any royalties. Her Majesty was in Germany in October and drove back to Italy in her car as well, her favorite and almost only mode of locomotion now.

Intending tourists through Austria will hear with satisfaction that the Austrian A. C. proposes to erect signboards bearing the different international signs throughout the Empire next year. Sub-committees have been formed, who report to a head committee in Vienna.

King Edward VII. and the Prince of Wales have accepted invitations to be official patrons of the Olympia Show, London, which opens November 11 and continues until the 23d.

A motor fire brigade train will make its appearance in Nuremberg early next year, where the city fathers have set aside 25,000 marks for the preliminary outlay.

FOR AMERICAN AUTOISTS LANDING IN ITALY

IN view of the fact that large numbers of autos are now being shipped from New York to Naples for touring purposes, Vice-Consul H. M. Byington submits the following information regarding the Italian customs regulations at Naples:

The entire charge of the custom-house agents and expenses on week days is 80 to 150 lire (\$15.44 to \$28.95) and on Sundays and Government holidays from 150 to 300 lire (\$28.95 to \$57.90). In order to clear a motor on Sundays or holidays, it is necessary to arrange on the preceding day, so as to insure the presence of the special officials. The duties payable are as follows: On cars weighing up to 500 kilos (1,125 pounds), 200 lire (\$38.60); from 500 to 1,000 kilos (1,125 to 2,250 pounds), 400 lire (\$77.20); over 1,000 kilos (2,250 pounds), 600 lire (\$115.80). These duties cover the accessories of the motor.

Owners of motor cars on a visit to Italy can deposit the amount of the duty on entering the country, to be reimbursed to them on leaving, either by sea or by land. The reimbursement of the deposit cannot be effected after six months have elapsed, and to meet such a case application must be made to the Treasury Department of the Government for the necessary extension.

The Touring Club of Italy has a special arrangement with the Treasury Department which will save owners of motor cars much trouble and inconvenience. On demand of a member of a foreign touring club and on the deposit of the maximum sum of 600 lire the Italian Touring Club will issue a special certificate to be presented to the customs authorities on entering the country. On leaving the country the certificate must be duly indorsed to that effect, and the Italian Touring Club will at once refund the amount deposited on delivery of their certificate with indorsements.

For every motor car entering Italy the following documents must be exhibited to the customs: (a) Papers giving the name and address of the owner. (b) Certificate of the chauffeur showing that he is entitled to drive a car and the number and make of the car. The charge for landing a motor car is 25 lire (\$4.83), irrespective of its size. Accessories cannot be admitted without payment of duty in cases where the car enters the country on deposit for temporary importation. Motor cars which have been introduced into the country on the deposit arrangement are free from Italian taxes until expiration of the six months or such time as extended by the Government.

WHAT THE AUTOMOBILE IS DOING FOR CENTRAL ASIA

CONSUL-GENERAL G. B. Ravndal, of Beirut, referring to Prince Borghese's feat as leading contestant in the Peking-Paris automobile race, which was started from the Chinese capital June 10, and concluded some fifty-eight days later on the arrival of Prince Scipione Borghese in Paris, quotes the following from the *Times* of India:

The car's achievement will give enormous impetus to emigration and colonization of the Asiatic wastes. The automobile is destined to be the pioneer of unknown lands, and when, through its agency, development of the country has reached a certain point, the railway will follow, binding new districts to the rest of the world.

Mr. Ravndal adds: In this connection, I call attention to my previous report on "Reclamation of Mesopotamia," of which the following is an extract:

The question of carrying tourists to Palmyra in automobiles, starting at Homs, has been seriously discussed in Beirut and Damascus, and one is led to believe in the possibility of a regular freight service between Damascus or Aleppo and Bagdad by automobile transport wagons. Experiments in the Sudan and Kongo Free State have proved their feasibility. In the plains of Syria, Mesopotamia, and Arabia, oil-motor freight cars would seem to have a future. Petroleum is comparatively cheap, owing to the proximity of the Caucasian oil fields.

AN AUTO'S CLIMB OF A ROADLESS CALIFORNIA MOUNTAIN

SAN FRANCISCO, Nov. 1.—On a recent October morning the squirrels and lizards on the summit of Mt. Diablo were startled to hear the rumble of wheels and the hiss of escaping steam. Up the hillside, slowly but surely, came a great mechanical monster, until, with one last whistling tug, the White steamer was on top! Mt. Diablo, situated in Contra Costa county, is the gauging point from which all surveys are taken, having an elevation of 3,810 feet.

The difficult ascent was accomplished by William M. Gardiner, Pacific Coast agent of the White Company, and William L. Slimmon, Claude A. McGee, Ross B. Main, and Alexander Beyfuss. Mr. Gardiner was at the wheel and the story is most interestingly told in his own words:

"We left San Francisco Saturday afternoon, spending the night at Danville, a little town about three miles from the foot of the mountain. At five minutes past 7 o'clock Sunday morning we left the hotel, and, stopping at the Boyd ranch, asked for permission from the manager of the Oakwood stock farm to use their road. He willingly granted our request, laughing in his sleeve at



WHITE STEAM CAR ON THE SUMMIT OF MT. DIABLO.

us, for he had no idea that we could make use of the permission and get to the top of the big hill.

"There are seven miles of unbroken grade from Oakwood farm to the summit, absolutely without a level spot. With regard to the road, it may safely be said that there was very little to be found. Overgrown in some places by dense underbrush, washed away in other places by the heavy rains of the winter, after which it had been baked by the scorching sun of summer, and everywhere covered with dust and loose stones, some parts were so washed away as to leave but two feet of road, the other side having been dug out by the winter torrents. Three years ago, the Sierra Club, on one of their long tramps, climbed this hill, and it is said that their provision wagons are the last to have used this road.

"We used the Diamond flat tread tires in order to get the greatest amount of traction possible, but even then the wheels skidded, and we were, in many places, compelled to jump along, or rush over the space, so that the momentum would keep the car from overturning or dashing down the cliff. Several times we were compelled to abandon what had been the road and strike off to one side, into the underbrush, which was so dense as to

make it necessary for us to cut it away. Even then, we were compelled to remove our side lamps, and our car was pretty badly scratched up. One bridge we crossed looked so very weak that even after a close investigation of the under-pinning timbers we did not linger any in getting over it.

"We arrived at the summit of Mt. Diablo at 9:25, making the record time of 2 hours 20 minutes. Of course some of this time was spent in opening gates, investigation of roads and bridges, planning detours over cattle trails, and taking photographs. We did not try to make time up the mountain, merely wishing to attain our object, that of reaching the top; but I am convinced that we could again negotiate it in one hour.

"Descending the hill was an excitingly dangerous proposition. We were obliged to hold tight and be hurled helter-skelter down the rough road, hearing the reverberations of the stones, dislodged by our wheels, as they struck the bed of the canyon, several hundred feet below. We just had to keep going, it being impossible to slow up enough to snatch a photograph. I think we were all relieved when we reached the foot of the hill without having been precipitated into some canyon. None of us are particularly anxious to again make the trip. It is enough that we have chiseled on the State monument, way up among the clouds, the words: 'White Steamer, the First Car to Reach this Eminence.'"

SOCIAL FUNCTIONS OF THE SHOWS.

"It's always fair weather when good fellows flock together," is the motto of the Fairweather Club, which, on the evening of October 30, held its first monthly dinner at Reisenweber's, with General John Tyler Cutting the guest of honor, and L. C. Humphreys as the toastmaster of the occasion. Over a hundred participated, including many out-of-town tradesmen visiting the show. General Cutting heard many things said in his favor and few to his detriment. Creswell MacLaughlin, editor of *The Schoolmaster*; Henry Duncan, William Perrett, and John C. Wetmore were the star performers in the oratorical line.

A Rehearsal of the Telharmonic Idea.

At Telharmonic Hall, Thirty-ninth street and Broadway, Friday noon, Madison Square Garden show officials and press men were given a partial rehearsal of the Garden musical program, to be supplied by the wonderful instrument which transmits music to all parts of the city. The principles of telharmony were explained and an inspection made of the entire plant, which contains 145 dynamos, generating as many kinds of electrical currents, these currents when in predetermined combination making the tone the musicians release to the absent audiences. A buffet luncheon was a part of the function, of which A. H. Chadbourne, well known in automobiling, was the energetic factor.

Flat Tires Entertain Press Visitors.

The Flat Tire Club gave its banquet to the out-of-town newspaper men at the Hotel Cadillac, Friday evening, November 1, prominent tradesmen from various parts of the country being included among those invited to buy their own tickets. The affair was capably conducted by an executive committee consisting of E. E. Schwarzkopf, Henry Caldwell, Duncan Curry, Fred J. Wagner and H. T. Clinton. In the dressing of the banquet hall much originality was shown. Flat tires formed a part of the decorations, lamps helped to illuminate, and Toastmaster Caldwell utilized a horn in his characteristic filling of the rôle of chief fun-maker. There was all sorts of speechmaking and the occasion served to bring together many leaders, both automobile trade and press.

The press agents of automobiling have a dinner scheduled for to-night, and 'tis said that no undertakers will be tolerated in the heart-to-heart spread.

INDIANA'S PROPOSED AUTOWAY.

INDIANAPOLIS, IND., Nov. 4.—It is the cherished plan of Indiana automobile owners, and also of a number of county commissioners, that within a few months there will be a speedway stretching from Indianapolis to Chicago, for the exclusive use of automobiles. Such, at least, is the hope of Indianapolis car owners, which has been given much encouragement by John McGregor, a commissioner of Marion county, who now has the plan in charge. Because of his influence throughout the State, it is believed that he will meet with much success in broaching the plan to commissioners in counties north of Marion.

It develops that at a recent State convention of county commissioners, held in this city several weeks ago, that the matter was suggested by Mr. McGregor to a number of commissioners and that he met with much encouragement. It was pointed out that a roadway set aside by law for automobiles exclusively would lend safety to travel and permit slightly greater speed, if desired.

Mr. McGregor proposes a road from Indianapolis northward to South Bend and then to Chicago by way of Laporte. This would take in Noblesville, Tipton, Kokomo, Logansport, or Peru, Rochester, and Plymouth, as might be decided on later.

There has been much opposition to automobiles by farmers in northern Indiana, who have objected to automobiles using the same highways used by horse-drawn vehicles. It is believed that these same farmers would welcome a plan to take automobiles off of the leading north and south roads between Indianapolis and Chicago. In speaking of the proposed highway, Commissioner McGregor said:

"The building of a road for exclusive use of automobiles would not entail heavy expense to any county through which it would pass. In a few years it would almost pay for itself in damage suits saved, which now result from automobiles, buggies and heavy wagons using the same roads. It would also be a great accommodation to automobile owners and would do much to lessen the hatred of unfriendly farmers for automobiles."

It is probable that Marion county will take the first step toward such a highway in the spring.

SHOULD HELP INDIANA ROAD BUILDING.

INDIANAPOLIS, IND., Nov. 6.—The Indiana Railroad Commission last week made a ruling that will be of great benefit to road building when it fixed a maximum rate for hauling road building materials. The rates become effective within thirty days and highway improvements that have been held up because of the almost prohibitive rates for hauling materials will be taken up and pushed to completion.

Although Indiana has exceeded all previous records for road building this year in counties where material is scarce, it has been almost impossible to carry on improvements because of high railroad rates.

Last June the commission directed inquiries to each board of county commissioners in the State and replies were received from fifty-three out of ninety-one counties. It appeared from these responses that at that time no less than 898 miles of new roads were under way and that in fourteen counties road materials had been exhausted. It was found also that in twenty-four counties high rates had retarded work and that about 700,000 tons of materials are needed in the State for improvements and repairs each year.

The rates as arranged by the commission are based on mileage in cents per net ton, fixes a minimum car load at 40,000 pounds and provides for both a local and joint rate. The rates range from 24 cents per ton, local rate, and 28 1-2 cents per ton, joint rate, for a ten-mile haul or under, to 81 cents local and joint per ton for a haul of 225 to 250 miles.

About thirty-five railroads doing business in Indiana are affected by the decision.

P. S. C. BLOCKS ROAD IMPROVEMENT.

NEWARK, N. J., Nov. 4.—Improvement of the plank road, which forms the chief travel route between New York and Newark, and as such the autoist's gateway to Philadelphia, Atlantic City, and other cities lying in that direction, has long formed a project close to the hearts of Jersey automobilists, as well as of vast importance to the commercial interests of this part of the State. As a matter of fact, it is one of the most traveled highways in the East where autoists are concerned, and, by the same token, is in the worst state of disrepair, being absolutely dangerous for night travel.

Many attempts have been made to have the old plank construction over the meadows replaced by modern highway construction, but all to no purpose, and it is the opinion of Joseph H. Wood, formerly president of the New Jersey Automobile and Motor Club, publicly expressed in a letter, that the Public Service Corporation is responsible for blocking the improvement. This corporation controls most of the street railways in the State, and its lines monopolize one-fifth of the plank road, but according to the Hudson County supervisor of roads the concern is unwilling to bear its portion of the expense of repair or maintenance. In the meantime the appropriation made by the Legislature several years ago for this purpose cannot be utilized owing to the attitude of this corporation.

The New Jersey Automobile and Motor Club has taken the matter up, but thus far the committee appointed for the purpose has had to rely upon its own efforts, coupled with those of local commercial interests, as no information could be obtained from the boards of freeholders in either Essex or Hudson counties regarding the reason for not utilizing the above-mentioned appropriation. The club has taken up the matter in earnest and will exert every effort to call public attention to the matter and in other ways compel the proper authorities to take action.

EN ROUTE TO LAKE MAHOPAC, WATCH OUT.

Editor THE AUTOMOBILE:

It may interest some of your readers to know that the trap at Merritt's Corners, on the road to Lake Mahopac, N. Y., is now in operation on the double curve at Echo Lake. I was arrested Saturday, and charged with covering the distance laid off at the rate of ten miles per hour, the rate allowed being four miles, although only about half the distance is on a curve, the rest being on a straight road, which should increase the average speed allowed. The judge, Ogden S. Bradley, of Ossining, would not accept jewelry as bail, so I had to pay the fine. He denied that any case had been tried as stated in "The Automobile" of October 17, so I have sent him a copy of the article, though it will probably only tickle the "judge" to see his picture in print. ROBERT N. BAVIER.

New Rochelle, N. Y.



WILLIAM JENNINGS BRYAN UTILIZES A "45" PREMIER.

Having several appointments recently to lecture in various sections of Greater New York and vicinity, and these having been scheduled at close intervals, it was determined by William Jennings Bryan that the automobile would be the most desirable mode of conveyance. The committee selected the new 6-cylinder "45" Premier to enable the distinguished statesman to meet his appointments.



FRANKLIN CAR MAKING ITS RECORD OF 49 SECONDS IN THE CLIMB OF DUGWAY HILL, NEAR ROCHESTER, N. Y., ON OCTOBER 19.

WHAT THE A. A. A. LEGISLATIVE BOARD IS DOING

A CONVENTION of members of the American Automobile Association interested in legislation was held during the Grand Central Palace show. The meeting was called to order by President W. H. Hotchkiss, and discussions and deliberations turned over to Charles Thaddeus Terry, chairman of the Legislative Board. In his address on the subject, Mr. Terry, among other things, spoke as follows:

The Legislative Board of the American Automobile Association has kept in touch with the legislative situations in the various States to whose legislatures statutes relating to automobiles or the use of the highways were presented at their last session. While the general trend of legislation, as gathered from the data collected by the chairman of the committee, seems to be in the direction of reasonableness and a somewhat larger degree of fairness than heretofore and to show somewhat of abatement of the unreasoning hostility to the automobile and its use, because of their novelty, it is to be regretted that automobile legislation is even yet of so diverse and divergent a nature throughout the several States as to indicate an imperative demand for one of two things, to wit., either the speedy enactment of a Federal law covering the field as far as may be, or the enactment throughout the States of a uniform automobile State law framed upon the model of the best of the present State laws, with improvements thereon if possible.

The best of the energies of the Legislative Board, while sometimes diverted by other work which properly comes within the scope of its duties, has been directed to the preparation of the best bills possible within its capacity and the efforts to secure their passage.

From the outset, the plan to secure a Federal enactment of the kind described has met with universal favor, and the bill pre-

pared and introduced in Congress at its last session has met with practically no adverse criticism, although copies of the proposed bill were widely distributed before it was introduced in Congress and suggestions and criticisms invited.

With regard to the proposed uniform State motor vehicle act, the task was as heavy as in the case of the Federal bill, if not more so, because the Board has met with the problem of attempting to harmonize in the proposed bill the various sentiments of various States with reference to legislative provisions in this regard, and to reach for the various States a common ground which might be defended on common sense principles as adequate for the protection of the public and the preservation of the rights of automobilists alike.

The energies of the Legislative Board will be directed toward the enactment of these two bills during the coming winter. In preparation for the campaign in behalf of the Federal bill, literature in the form of letters, of which there will always be a large supply on hand at the offices of the association, has been prepared, to be distributed by the automobile clubs and their members throughout the country and by individual automobilists not connected with any club, not only among other automobilists but among all classes of citizens, using them to communicate directly with their congressmen in support of the bill and to secure the favorable action of the committee and of Congress upon the measure. These letters have been prepared and await only the signature of any one who is sufficiently interested in the subject to use whatever influence may be at his command to secure the passage of this bill without the necessity of his expending any more time or effort than may be involved in the signing and mailing of such letters, unless he be willing to render the still more effective service of writing his own personal letters and sending them to members of Congress, particularly in his own district, and inducing his friends to do the same.

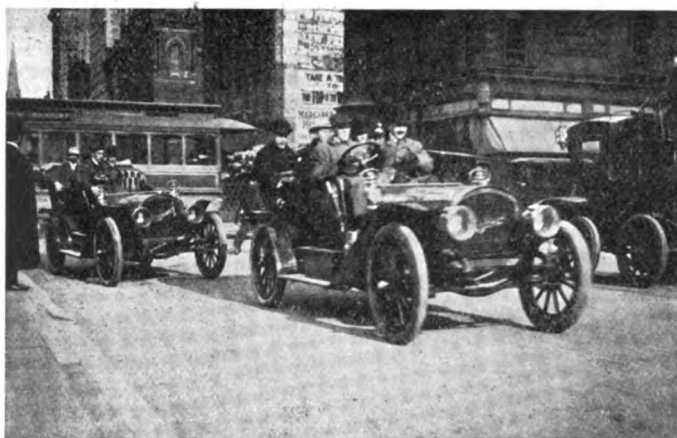
NEW YORK'S \$10 FINE RULING REVERSED.

Instead of being able to escape with a fine of \$10, regardless of the enormity of the offense or the status of the driver as a persistent violator of the law, under Justice Truax's decision handed down last August, which held that the ordinance of the Board of Aldermen had superseded the State law, offenders in the metropolitan district are now liable to spend a term in jail instead, as the decision in question has just been reversed by the Appellate Division of the Supreme Court. Justice Truax's ruling was rendered in the case of William Hainer, who was arrested and held for trial in Special Sessions, but who was released on a writ of habeas corpus. The case was appealed by the District Attorney, who is now sustained, so that the State law will again take effect as formerly. The latter imposes a fine not exceeding \$100 for the first offense, and of not less than \$50 nor more than

\$100, or imprisonment not exceeding thirty days, or both, for the second offense. This law was drawn up by President William H. Hotchkiss and Charles T. Terry, chairman of the Legislative Board of the American Automobile Association, and the ruling of the Appellate Division meets with their approval, as well as of other prominent autoists.

THAT FAULTY PENNSYLVANIA LAW.

PHILADELPHIA, Nov. 4.—After to-morrow any chauffeur who cannot produce a municipal license when called upon will feel the heavy hand of the law. A recent regulation of City Councils—which, by the way, has nothing to do with the State license—requires motor vehicle operators here to secure a license from the city's Bureau of Steam Boiler Inspection. Already upwards of a thousand permits have been issued.



HOW LICENSED MAGNATES UTILIZED THE UNLICENSED CARS.

UNLICENSED RIDE OF THE LICENSED.

In order, on Friday last, to reach the private rehearsal of telharmonic music, one of the features of the Madison Square Garden show, the members of the show committee, through a mix-up in arrangements, found it convenient to utilize Rambler cars to ride from the A. L. A. M. offices, in East Forty-second street, to Telharmonic Hall, on Broadway, near Thirty-ninth street. It so happened that Rambler cars were available in the emergency, and E. H. Cutler, George H. Day, S. T. Davis, F. L. Smith, W. E. Metzger, and Marcus I. Brock appeared on Broadway in the product of the Thomas B. Jeffery Company, which not only declines to become a part of the licensed body, but also keeps aloof from the independent association. Apparently there must have been some kind of a conspiracy in the proceedings, for a photographer was on the job, as is made apparent by the accompanying picture.

A NEW "SCORE" FOR THE MAXWELL.

That a matter of twenty youngsters can be accommodated in an automobile was demonstrated recently by Frank J. Griffin, of New York City. Mr. Griffin has several daughters attending school at the Morristown convent, at Morristown, N. J., and recently stopped at that institution with his 1905 model 16-20-horsepower Maxwell touring car. As a score of the youngsters clambered aboard the auto there was nothing to do but give them a ride, and the manner in which such a number managed to stow themselves about the car in one fashion or another in order to participate in the impromptu outing would be a revelation to the body builder who was proud to say its capacity was five passengers. It scarcely needs to be added that the bevy of future misses had the time of their lives while the fun lasted.



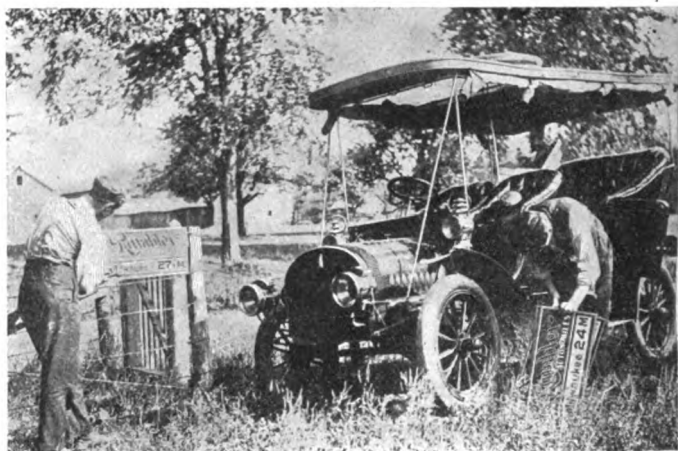
TWENTY LITTLE LADIES WHO ENJOYED A MAXWELL RIDE.

ADDING TO THE LIFE OF AN AUTOMOBILE.

"Much could be added to the life of an automobile and to the satisfaction that it gives to its owners," says J. D. Maxwell, of the Maxwell-Briscoe Motor Company, "if people would bestow upon the automobile but a part of the attention they give to other property. Take, for instance, the item of winter storage. Few people who store their cars for the winter think of taking the trouble to put the car on horses and to remove the tires from the wheels. The insides of the rims, too, should be cleaned and a coat of enamel applied to the inner surfaces where the tire rests. This will prevent corrosion and will leave the rim smooth. A good idea also is to give all polished brass surfaces a coating of heavy oil, slab oil, for instance. A tube of ordinary gum grease, likewise, will preserve the lamps, the radiator, steering post, and other parts that would be injured through corrosion. The top should be opened and cleaned with oiled waste, to keep it smooth and flexible. Of course, these rules find but little application in this section of the country, since we have a rather open winter which permits the use of the automobile practically all the year."

SIGNS ASSIST MUCH IN TOURING.

Much progress in the work of marking the motor highways with Rambler road signs is reported by Thomas B. Jeffery & Company. Twenty-five hundred signs have already been placed



PLACING THE ROAD SIGNS ON THE WISCONSIN ROADS.

by men sent out from the Rambler factory at Kenosha and from the Rambler branches. Twenty-five hundred additional signs are ready to be shipped to Rambler agents for immediate placing. The first lot of signs was used principally in the Middle West. Many were put up between Milwaukee and Chicago. The signs are of sheet steel, durable and can be seen from a distance.

CHICAGO-NEW YORK RECORD HOLDER DEAD.

HARTFORD, CONN., Oct. 28.—After partially recovering from an attack of pleurisy, Burt Holcomb, a former holder of the New York automobile record, died at Southern Pines, N. C., as the result of a general breakdown. Burton Beckwith Holcomb was born in Hartford in 1870; after working some time with the New England Railroad Company, he began testing cars of the Electric Vehicle Company, and four years ago drove a Columbia car from Chicago to New York in seventy hours. Later he lowered the record to 56:38. The interment took place at Hartford.

Woodland, Cal.—The new garage of Van Zee & Bielar, which was opened in one of the Martinelli stores, on Main street, early last summer, has had a most prosperous season. The concern is the local representative of the makers of the Buick cars, and have equipped their establishment in an up-to-date manner throughout.

LATE AUTUMN DOINGS OF THE AUTO CLUBS

SWAIN WINS BRAZIER CUP WITH "JACK RABBIT."

PHILADELPHIA, Nov. 4.—"Unofficial returns" would seem to indicate the election of Charles J. Swain (Apperson "Jack Rabbit") as next year's holder of the Brazier cup, emblematic of victory in the annual cross-country run of the Automobile Club of Philadelphia, held last Saturday in a driving rain-storm. The reason for the delay in announcing the standing of the eight contestants—the rest were evidently scared off by the ominous front put up by J. Pluvius—is that Mr. Swain failed to follow the route indicated by the official program by using Walnut street instead of Locust street to reach the finish. It may be that he will be additionally penalized, and the order of finish changed.

The conditions of the contest were that the 88.6 miles were to be covered in 5 hours 19 1-2 minutes—neither more nor less—to secure a perfect score. This time represented the maximum in which the course could be covered with due regard to the State, municipal, borough, and village speed ordinances in force. Of course, the contestants were ignorant of this official limit.

Penalties were incurred for being ahead of, as well as for being behind the schedule, and although all the contestants suffered the infliction of demerits, the officials wisely refrained from announcing whether they were imposed for overpunctuality or tardiness. According to the time dope, there should not have been an arrival at the club's quarters at 1409 Walnut street until 1:20 P.M.—the first car started at 8 A.M. sharp—yet at that hour the majority of the contestants were lined up along the curb waiting to officially finish and get in out of the drenching downpour. Here it is reasonable to presume that the penalties inflicted were in most cases for something other than late arrival at checking stations and at the finish. These checking stations were located in three unknown points out in the country, and contestants were penalized for failure to pass them "on the dot." Hence the following "unofficial" list of penalties imposed would seem to be moderate to a degree: Charles J. Swain (Apperson "Jack Rabbit"), 14 1-2; Allan Wood 3d (Ford), 15 1-2; E. L. Miller (Packard), 17; H. P. Bailey (Winton), 18 1-2; C. Yarnall Abbott (Pennsylvania), 23; Dr. W. A. Phreaner (Winton), 23 1-2; Herbert Morris (Stoddard-Dayton), 31 1-2; G. B. Fletcher (Packard), 35 1-2.

The main points on the course were West Chester, Phoenixville, and Norristown, and the roads were selected with a view of giving the contestants a little of all kinds and an object lesson in picking routes to avoid toll-gates.

CHICAGO CLUB EXPECTS THIRTY ENTRIES.

CHICAGO, Nov. 4.—Eleven entries are in hand for the 600-mile three-day reliability run of the Chicago Motor Club, November 26, 27 and 28, reports received from the scouts who went to New York raising the number from three, where it reposed for several days. Harry P. Branstetter was the man who made the "killing," and he yesterday wired Chairman Root of the contest committee that he had received two Dragon and one Wayne entries and that he had received positive assurances that the Pennsylvania, American, Overland, and Marion would forward entries the early part of this week. Eleven others are regarded as good as being in. Counting no chickens as hatched, the contest committee sees at least fifty-two cars. Letters received by Chairman Root show that the makers regard the rules as almost ideal.

LONG ISLANDERS' ANNUAL FALL REUNION.

BROOKLYN, N. Y., Nov. 4.—The entertainment committee of the Long Island Automobile Club announces that the annual fall reunion of the club will take place at the clubhouse on Friday evening, November 8. An excellent bill of advanced vaudeville will be rendered, after which refreshments will be served.

WORCESTER PREPARING FOR ANNUAL BANQUET.

WORCESTER, MASS., Nov. 4.—Thursday evening, November 14, is the day set for the annual banquet of the Worcester Automobile Club, which will be held in the hall connected with the Front street clubrooms. The board of governors is arranging to have the after-dinner speaking assume the form of a symposium of methods of transportation or travel. There will be seven forms of the subject treated by the speakers—airial travel by one, automobiling by another, and to which Frederick H. Elliott, secretary of the A. A. A., has been asked to respond; steam and electric railways will each have something said for them, the horse will have its innings, so will the bicycle, and there will be suitable consideration for those who, either from preference or necessity, are pedestrians. Last year's banquet was enlivened by clever parodies written by the club's attorney, D. M. Pardee, and there will be some more of them this year.

BERKSHIRE AUTOMOBILE ASSOCIATION FORMED.

PITTSFIELD, MASS., Nov. 4.—Monday, October 28, witnessed the formation of a new club in this city—the Berkshire Automobile Association—with the following board of officers: President, Daniel England; first vice-president, Franklin Weston; second vice-president, Samuel G. Colt; treasurer, R. P. Parker; secretary, S. H. Clapp. The lines on which the club is formed are unique, inasmuch as it will look after the protection of the automobilist and the individual citizen as well in the use of the highways.

As the Berkshires are so tremendously popular with automobilists it will prove welcome news that there is a business organization in this vicinity which will consider it a duty to post highways, unsafe roads, grades, etc., and generally protect and post the transient in his use of the Berkshire roads.

C. A. C. ANNUAL MEETING NOVEMBER 14.

CHICAGO, Nov. 4.—Members of the Chicago Automobile Club will assemble in general meeting for the first time in their new clubhouse, November 14, which is the occasion of the annual meeting and election. The administration ticket as presented by the nominating committee is as follows: For president, Ira M. Cobe; first vice-president, Frank H. Peitsch; second vice-president, T. J. Hyman; secretary, N. H. Van Sicklen; treasurer, Charles E. Gregory; directors, John Farson, Claude Seymour, Walden W. Shaw, T. N. Koehler, A. J. Banta and F. D. Countess.

Several changes in the constitution and by-laws will be given consideration, among which will be a proposition to increase the non-resident membership limit from 100 to 250, and another to extend the resident membership limit. The projected merger of the Chicago Automobile Club and the Chicago Motor Club will also be considered.

A. C. OF MARYLAND ELECTS ITS OFFICERS.

BALTIMORE, Nov. 4.—The annual election of officers of the Automobile Club of Maryland took place recently in their clubrooms, and resulted as follows: President, James Stone; vice-president, Dr. H. F. Rowe; secretary, E. A. Dolle; treasurer, Ernest J. Knabe; board of governors, C. M. Dowe, M. S. Hess, F. W. Coale, F. W. Darling, Roland Morton, and O. Y. Yellott. Following the election of officers a collation was served.

The Automobile Club of Maryland and the Automobile Dealers' Association of Baltimore have announced that the Baltimore show will be held November 16 to 23, in the show building at Maryland and Mount Royal avenues—the scene of the first and most successful show ever held in this city. The exhibition is being arranged by B. B. Johnston, the original promoter, who thoroughly understands the managing of a show.

AERO TROPHY TO GERMAN PILOT.

At a special meeting of the Aero Club of America, last Monday evening, President Cortlandt Field Bishop officially presented the James Gordon Bennett aeronautical cup to Oscar Erbsloeh, pilot of the balloon *Pommern*. According to the deed of gift, the cup will be held by the German Club until the next competition to be held in Germany during 1908.

At the meeting it was announced that the distance covered by the *Pommern*, according to official measurements, was 871.74 miles; Alfred Leblanc and E. W. Mix, who manned the *Isle de France*, were declared to have covered 866.59 miles. The world's long-distance record of 1,196 miles, established in October, 1900, by Comte de la Vaulx, in a trip from Paris to Russia, remains untouched, but the pilots of the *Isle de France* have succeeded in breaking the time record, 41 hours 5 minutes being a record stay in the air. In commemoration of this splendid performance Mr. Bishop declared that he would present a special medal to the French Club. Other awards announced were \$2,500 to Oscar Erbsloeh, given by the donator of the cup; \$1,000, given to Leblanc by the citizens of St. Louis; \$750, to Baron von Abercron; \$500, to J. C. McCoy; and \$250, to Alan R. Hawley.

GLIDDEN MAKES AERIAL TOUR.

Having qualified as a sky pilot under the most skilled foreign experts, Charles J. Glidden made his first balloon trip in this country last Tuesday, accompanied by Leo Stevens of New York. The ascent was made at Pittsfield, Mass., at 10:45 A.M., and a successful landing made at North Springfield, Vt., at 2:18 in the afternoon. The distance covered was about 140 miles, though on an air line the distance between the two points is only 85 miles. To escape a storm just after they had crossed the Massachusetts line, the balloon had to be sent above the clouds until it reached an altitude of 8,500 feet.

ATWATER-KENT TEST IN PROGRESS AT GARDEN.

With its A. C. A. seal still unbroken, the Atwater-Kent spark generator, which was officially started by Albert W. Jacobi of the A. C. A. show committee on the opening of the Palace show on October 24, is still being run at the Garden. A test is being made of the mileage obtainable from a set of dry cells, and for this purpose an Atwater-Kent spark generator is enclosed in a glass case together with a Jones speedometer-odometer, four spark plugs and six Columbia dry cells. An electric motor furnishes the power to run the apparatus at a rate corresponding to a speed of 25 miles an hour on the road. At the close of the Palace show the odometer recorded 1,700 miles and in the two-day interval between the shows the outfit was kept running at the salesrooms of Harry Houpt, the New York Thomas agent. The reason for the extraordinary mileage obtainable with dry cells in connection with the Atwater-Kent apparatus is due to the fact that the spark generator makes but one spark for each explosion, and this is produced by what may be termed an instantaneous make-and-break contact in the primary, thus minimizing the current consumption, as the contact lasts little, if any, longer than the single contact of the ordinary coil trembler when in action.

LOCATION OF HARRIS OIL CO. EXHIBIT.

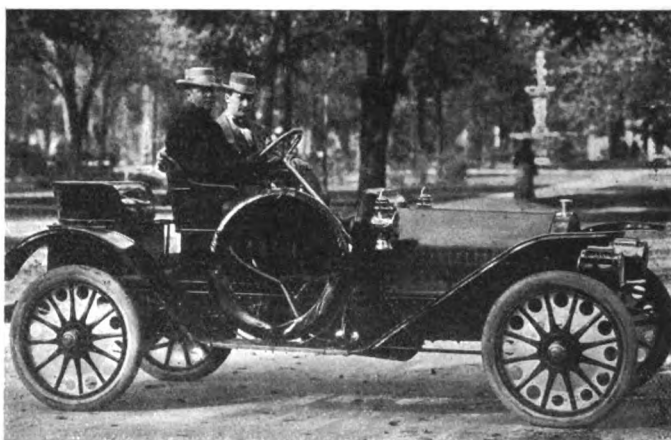
An error in the October 31 issue of THE AUTOMOBILE gave the space of the A. W. Harris Oil Company as No. 256 Balcony, and it is located in No. 256 Basement. Therefore, those who seek this company's lubricants must go below and not aloft.

Laramie, Wyo.—During the past summer Laramie's most ambitious auto establishment has been erected for Elmer Lovejoy and C. W. Brandis at 414-416 Second street. It is a one-story building with basement, floor of concrete with brick sidewalls, and front of iron and glass.

INDESTRUCTIBLE STEEL WHEELS.

Representing the most advanced creation of the metallurgist's art, combined with the highest engineering talent in metal-working, it seems anomalous that the running gear of the automobile should still continue to be made of the same material that characterized the most primitive attempts at wheel-building—wood. Wherever lightness, combined with the maximum of resisting power, has been a desirable feature, wood has almost invariably had to make way for its modern successor—high-grade steel—and in view of the amazing results forthcoming from the scientific handling of this material in automobile construction, it seems odd, to say the least, that its use has not been extended to the art of wheel-making much earlier.

The Indestructible Steel Wheel Company of Chicago, Ill., has been making a wheel of this kind for some time past, aptly named "Indestructible," but the chief objection to its use on pleasure cars has been that of appearance, as the two parts of the wheel were made of stampings in the shape of disks, reinforced by conventional spoke-shaped bosses, which made it resemble a solid wheel, making a car look heavy. This has been overcome in the new pleasure car model, now being exhibited at the Gar-



AN INDESTRUCTIBLE STEEL WHEELER THAT MADE LONG TOUR.

President Fish and Vice-President Metzel of the Indestructible Steel Wheel Company, of Chicago, in their Premier Roadster, in which they have just completed a tour of Indiana, Ohio, and Michigan.

den and demonstrated on a car outside, by making an open pattern, the disks being perforated between each pair of spokes. This gives it an appearance of lightness more in accord with its actual weight, as the wheel is transparent and resembles the ordinary type when in motion, thus overcoming the only objection to it, and its adoption on American cars as a part of their standard equipment is already under way.

LOCO HAS TWO CHASSIS, EIGHT TYPES.

Although the Locomobile Company of America produces eight different models in all, in touring, runabout, limousine and landaulet types, there are but two distinct chassis, a 20-horsepower, known as Type E, and a 40-horsepower, designated Type I. Owing to a mistake in copying, Type I, illustrated in our issue of October 31, was described as 20-horsepower. This was incorrect, the rating of this model, according to the A. L. A. M. formula, being 40 horsepower.

ALFRED REEVES SAILS FOR EUROPE.

Alfred Reeves, general manager of the A. M. C. M. A., accompanied by Howard C. Marmon, of the Nordyke & Marmon Company, sailed Tuesday on the Kronprinz Wilhelm for Europe. A large party gave the pair a royal send-off, and Mr. Reeves was the recipient of a gold watch fob. He makes the trip in the interests of his association and will visit the London, Paris and Berlin shows, being gone in all about six weeks.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

Announcement is made that *The Power Wagon* will hereafter be published in Chicago, with offices in the Metropolitan block. Heretofore the paper has been published in Cleveland.

A handbook of "Hints and Helps on the Operation of the Motor Car" has been issued by the National Carbon Company, Cleveland, O. Ignition troubles are more especially dealt with, and there are a number of hints on the most common mechanical difficulties.

The New York Automobile Trade Association has been advised by the general freight agent of the Hudson steamship line that in the future gasoline motor trucks will be allowed on its piers. This adds one more to the list of transportation lines that realizes the importance of a rapidly-growing industry.

The Schubert Bros. Gear Company, of Oneida, N. Y., is contemplating the formation of large stock company for taking up the manufacture of automobile bodies on an extensive scale. The company, which at the present time employs upwards of one hundred hands, has been very successful in the manufacture of special racing bodies.

In connection with the third annual Automobile and Sportsmen's Exhibition, to be held in Montreal, Que., for one week, April 4-11, the management has entered into an arrangement with the Automobile Club of Canada whereby the show will receive the hearty co-operation of the club. Judging from the large number of applications already received, there is no question but what the show will in every way surpass its predecessors.

Five hundred dollars has been appropriated by the Minneapolis Automobile Club to help the city in paving University avenue, the street which connects St. Paul with Minneapolis. Only one mile of pavement remains to be placed to connect the two cities. The city finds itself unable to appropriate the sum necessary, and the automobile owners have put their shoulder to the wheel, with the result that all travelers on a much used highway will reap the benefit.

Every autoist who has used cuss words because of having to take out different licenses in different States, should lend his support to the congressional bill prepared by the American Automobile Association requiring uniform laws for motor vehicles in all States. The first step toward lending support to the bill is for those who are not members of A. A. A. to join the national body. Information about the law and other matters of the organization may be had from Secretary F. H. Elliott, 437 Fifth avenue, New York.

Philip S. Flinn, Arthur Banker, Rob McCurdy, Mr. Austin and three others drove No. 14, the four-cylinder Great Arrow of Mr. Flinn, from Pittsburg to New York in twenty-two hours' running time. The party came to attend the show, and will return in the car. The trip over was rough, for the roads were very bad as compared to their condition at the time of the A. A. A. Tour, when they were reviled by all. The trip was made without incident. The hood was not lifted throughout the trip and the tires were not touched. The car, which seven people occupied in all, has been driven 15,800 miles, and runs perfectly to-day.

In years past most of the imported and other highest-priced cars have been sold in New York and other big cities of the East, but according to recent experience the western cities are increasing their patronage of the highest class of cars remarkably. James Joyce, general manager of the American Locomotive Automobile Company, which has had a show of its Berliet cars in the Waldorf-Astoria for two weeks, says that the number from the West who are taking an interest in high-priced cars, and are willing to pay for them, is astonishing. He says that the visitors from a hundred miles beyond New York made light of all panic talk, and seemed prepared to indulge themselves in the best things to be had, even more freely than usual.

RECENT BUSINESS CHANGES.

Announcement is made that the Rainier Motor Car Company will remove its headquarters in New York City on January 1 from its present location, Broadway and Fiftieth street, to the big corner building at Broadway and Fifty-sixth street, now occupied by the Hol-Tan Company. In the new building the Rainier company will be able to conduct under one roof the business which is now distributed in three buildings. The new quarters contain more than 43,000 square feet of floor space, is five stories high and has a basement.

NEW AGENCIES ESTABLISHED.

M. J. Wolff, proprietor of the Williamsburgh Auto and Storage Company, 159-161 Clymer street, Brooklyn, N. Y., has taken the agency for the Matheson in that borough.

The Henshaw Motor Car Company, of Boston, has been appointed Eastern Massachusetts representative of the Olds Motor Works, and will handle the Oldsmobile exclusively with the Columbus electric. Associated with Manager Henshaw will be A. E. Adams, who has been connected with the Olds Motor Works for a long period.

The Empire Automobile Tire Company, of Trenton, N. J., has opened a branch house in New York City on Seventy-third street, at the juncture of Broadway and Amsterdam avenue, in the building formerly occupied by the Aerocar Company. The branch is under the management of Marcus Allen, who was for several years manager of the Auto Equipment Company, of Detroit. He is a New Yorker, however, and well known in the trade of the metropolitan district. A complete stock of Empire clincher tires and tire accessories has been installed.

NEW AGENCIES FOR YORK.

YORK, PA., Nov. 4.—James A. Kline, general manager, and H. R. Averill, sales manager of the York Motor Car Company, upon their return from the Grand Central Palace automobile show, announced the new agencies for the Pullman cars. They are: F. E. Randall Company, Boston; Grout Gasoline Car Company, Providence, R. I.; J. P. Sullivan Company, New London, Conn.; Star Motor Car Company, Newark, N. J.; N. A. Barnett & Company, Cranford, N. J.; E. Gibson Company, Indianapolis, Ind.; Thomas & Tolman Auto Co., Washington, D. C.; Allenbyrg Auto Company, Spokane, Wash.; Hernandez Au-

tomobile Company, Havana, Cuba; Automobile and Marine Motor Company, Charleston, S. C.

With an order of 100 taximeter cabs, the local firm is considering the advisability of building them. This will necessitate an increase of the factory force and plant.

PERSONAL TRADE MENTION.

H. T. Whittlesey, formerly of John R. Keim Company, of Buffalo, N. Y., is now with A. O. Smith Company, Milwaukee, Wis., traveling in their interests.

Warren T. Walker, formerly with the G & J Tire Company, is now connected with the Locomobile Company as general New England sales representative.

E. A. Sontag, formerly of the Frederick Sontag Company, of Boston, has associated himself with the Empire State Motor Company, of Houston, Tex., as manager.

A. M. Archer, American representative of Hotchkiss et Cie in the United States, sailed, October 31, on the *Baltic* for a four weeks' visit to England and France. He was accompanied by Mrs. Archer.

H. G. Martin, formerly with the Harburg Tire Company, has recently joined the forces of the Republic Rubber Company, of Youngstown, O., and will represent that firm in Brooklyn and Long Island.

C. G. Stowe, formerly New England representative for Speare's oils, has resigned and accepted a similar position with the Columbia Lubricants Company, of New York, which company will open a branch in Boston on or about January 1.

Oscar Warner has severed his connection with Wyckoff, Church & Partridge, of New York City. He has not announced his future connection in the industry, but it is understood he will be prominently identified with one of the large manufacturers.

W. J. Lamb has been appointed manager of the New York branch of the Fisk Rubber Company, at 1725 Broadway. Mr. Fisk has been an exponent of Fisk tires for the past six or seven years in and about Detroit, where he was manager of the local branch house.

Col. Charles Arthur Carlisle, purchasing agent for the Studebaker Automobile Company, of South Bend, Ind., has completed a very enjoyable trip with his family, in his Studebaker "30" car, through New York State, Connecticut, Massachusetts, Vermont, and New Hampshire.

E. W. Heddington has been appointed manager of the New York branch of the Haynes Automobile Company, to succeed C. B. Warren, who has been appointed sales manager for the company, with headquarters at the factory at Kokomo, Ind. Mr. Heddington has been associated with the New York branch for two years, the past year as Mr. Warren's assistant.

The Firestone Tire and Rubber Company, of Akron, O., has transferred J. V. Mowe to its Chicago branch, where he will look after the sale of the Firestone tires in the Chicago territory in the future. Mr. Mowe has been connected with the Philadelphia branch of the Firestone company during the past year. E. M. Eldridge, of Seattle, Wash., has joined the selling forces of the Firestone in New York City.

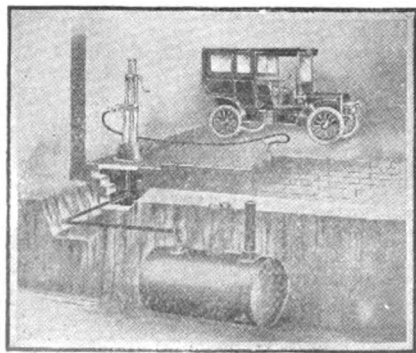
INDEX TO ADVERTISERS

Acetylene Gas Illuminating Co. 64
 Acme Motor Car Co. 153
 Adams Co. 68
 Add-Wear Tire Sleeve Co. 65
 Adjustable Lighter Co. 63
 Ajax-Grieb Rubber Co. 138
 Alum. Solder & Refining Co. 111
 Am. Brass & Alum. Works. 66
 Am. Locomotive Auto Co. 130
 Amer. Motor Car Sales Co. 95-139
 American Die Casting Co. 80
 American Distributing Co. 103
 American Ball Bearing Co. 114
 American Motor Truck Co. 117
 American Veneer Co. 91
 Anderson Forge & Machine Co. 66
 Apperson Bros. Automobile Co. 169
 Arc-Toledo Spark Plug Co. 80
 Ashton Valve Co. 65
 Auburn Automobile Co. 68
 Audel & Co., Theo. 81
 Aurora Motor Works. 126
 Austin Automobile Co. 122
 Auto and Power Appliance Co. 66
 Auto Pump Co. 63
 Autocar Co. 117
 Automobile Blue Book. 77
 Automobile Supply Co. 65
 Automobile Utilities Co. 63
 Autoshine Co. 64
 Auto Car Equip. Co. 122
 Avery Portable Light'g Co. 74-75
 Badger Brass Mfg. Co. 71
 Baker Motor Vehicle Co. 68
 Baldwin Chain Mfg. Co. 63
 Barndt-Johnson Auto Sup. Co. 67
 Barnett Drop Forging Co. 90
 Bartholomew Co. 103
 Beaver Mfg. Co. 64
 Beifuss Motor Co. 93
 Behen-Faught Motor Car Eq. Co. 66
 Bemus, T. Alton. 66
 Berkshire Motor Car Co. 68
 Bethlehem Steel Co. 90
 Billings & Spencer. 62
 Blasler Mfg. Co. 67
 Blomstrom Mfg. Co. 103
 Bosch, Robert. 109
 Boston Auto Gage Co. 80
 Boker & Co., H. 64
 Bowser & Co., S. F. 114
 Boyle & Co., John. 130
 Briscoe Mfg. Co. 65
 Brownell Motor Co. 108
 Brush Runabout Co. 170
 Buckeye Jack Mfg. Co. 102
 Buckeye Mfg. Co. 167
 Bullard Automatic Wrench Co. 91
 Bullard, J. H. 65
 Buob & Scheu. 67
 Buffalo Carburettor Co. 94
 Byrne-Kingston Co. 105
 Cadillac Motor Car Co. 127
 Cameron Car Co. 68
 Car, F. S. 67
 Chadwick Engineering Works. 141
 Champion Co., A. 69
 Chandlee & Chandlee. 82
 Charter & Co. 63
 Chicago Automobile Show. 132
 Clark, E. S. 63
 Cleanola Co. 81
 Cleveland Canton Spring Co. 98
 Cleveland Cap Screw Co. 107
 Cleveland Motor Car Co. 120
 Coates Clipper Mfg. Co. 92
 Coes Wrench Co. 140
 Colgan Co., J. W. 63
 Colt Runabout Co. 82
 Columbia Lubricant Co. 102
 Connecticut Gauge Co. 91
 Conn. Tel. & Elec. Co. 110-111-112
 Conover Motor Car Co. 128
 Continental Auto. Mfg. Co. 68
 Continental Caoutchouc Co. 123

Continental Motor Car Co. 126
 Continental Motor Mfg. Co. 115
 Corbin Motor Vehicle Corp. 126
 Cornish-Friedburg Motor Car. 122
 Correspondence School Motor Car Practice. 63
 Cotta, Chas. 80
 Covert Mfg. Co. 64
 Crescent Parts Co. 65
 Crown Soap Co. 101
 Crouse-Hinds Co. 102
 Cullman Wheel Co. 65
 Daimler Mfg. Co. 68
 Davis Robe Co. 73
 Dayton Electrical Mfg. Co. 83
 De Luxe Motor Car Co. 63
 Diamond Chain & Mfg. Co. 119
 Diamond Rubber Co. 133
 Dien, C. H. 98
 Dietz Co., R. E. 85
 Dixon Crucible Co., Joseph. 83
 Dorris Motor Car Co. 122
 Dover Co., Geo. W. 62
 Dow Portable Electric Co. 151
 Duff Mfg. Co. 65
 Eclipse Machine Co. 63
 Eco Mfg. Co. 114
 Edmunds & Jones Mfg. Co. 65
 Eldredge Electric Mfg. Co. 84
 Electric Vehicle Co. 171
 Elite Mfg. Co. 106
 Ellsworth, J. M. 99
 Elmore Mfg. Co. 163
 Empire Automobile Tire Co. 115
 Excelsior Supply Co. 83
 Fay, Thos. J. 99
 Firestone Tire & Rubber Co. 72
 Flisk Rubber Co. Cover
 Ford Motor Co. 103
 Forest City Motor Car Co. 126
 Franco-Am. Auto Supply Co. 63
 Franklin Mfg. Co., H. H. 175
 Fry, T. C. & W. L. 65
 G & J Tire Co. 107
 Gabriel Horn Mfg. Co. 120
 Garford Co. 66
 Gearless Transmission Co. 159
 General Electric Co. 118
 General Accumulator & Battery Co. 66
 Gibney & Bros., Jas. L. 65
 Goodrich Co., B. F. Cover
 Graves & Condon Co. 98
 Grout Bros. Auto Co. 68
 Gumelastik Tire Co. 102
 Ham Mfg. Co. 134-135
 Hardy Co., The R. E. 80
 Harris Oil Co., A. W. 102
 Hartford Rubber Works Co. 113
 Hartford Suspension Co. 156
 Hatcher Auto Parts Co. 93
 Hatfield Motor Vehicle Co. 98
 Haynes Automobile Co. 157
 Healy Leather Tire Co. 65
 Heinz Electric Co. 114
 Heitger Carburetor Co. 64
 Hercules Auto Specialty Co. 111
 Hercules Electric Mfg. Co. 64
 Herschell-Spillman Co. 63
 Herz & Co. 81
 Hess-Bright Co. 89
 Hicks Speed Indicator Co. 90
 Hine-Watt Mfg. Co. 65
 Hoffecker Co. 66
 Hoffman, Geo. W. 64
 Holley Bros. Co. 77
 Holsman Automobile Co. 92
 Hopewell Bros. 81
 Hotchkiss Mfg. Co. 64
 Hotel Westminster. 93
 Hotel Fredonia. 93
 Hotel Rudolph. 93
 Hub Lubricator Co. 91
 Hyatt-Roller Bearing Co. 90
 Hydraulic Pressed Steel Co. 66
 Imperial Motor Car Co. 174
 Importers' Automobile Salon. 153

Indestructible Steel Wheel Co. 104
 Index Speed Indicator Co. 98
 Jackson Automobile Co. 165
 Jamesville Mfg. Co. 81
 Jeffery & Co., Thos. B. 172
 Jeffery-Dewitt Co. 65
 Jenckles Motor Mfg. Co. 83
 Jenkins Specialty Co. 94
 Jersey Brake Co. 87
 Johnson Sporting Goods Co., I. 85
 Kansas City Motor Car Co. 68
 Kellom Co., Chas. F. 80
 Kent Mfg. Works, A. 131
 Kilgore Mfg. Co. 64
 Kimball Tire Case Co. 36
 Kinsey Mfg. Co. 67
 Kinsler-Bennett Co. 94
 Kissell Motor Car Co. 162
 Konigslow, Otto. 65
 Lavalette & Co. 79
 Lavigne Mfg. Co. 65
 Lear Automobile Co., Oscar. 68
 Leather Tire Goods Co. 88
 Limousine-Carriage Mfg. Co. 67
 Lindsay, A. M. 66
 Lipman Mfg. Co. 63
 Lobe Pump Co. 81
 Locke & Co. 106
 Locomobile Co. of America. 117
 Logan Construction Co. 62
 London Auto Supply Co. 67
 Long Mfg. Co. 108
 Long-Turney Mfg. Co. 113
 Loring, E. J. 86
 Lozier Motor Co. 137
 McClellan, Chas. P. 67
 McCord & Co. 87
 Mandeville Steering Wheel Muff Co. 119
 Manhattan Electrical Sup. Co. 63
 Maple City Mfg. Co. 87
 Martini Import Co. 90
 Mason Car Sales Co. 93
 Masury & Son, John W. 145
 Mesker, C. A. 146
 Merchant & Evans Co. 103
 Merritt & Co. 63
 Mich. Crucible Steel Cast. Co. 66
 Michelin Tire Co. 65
 Midgley Mfg. Co. 66
 Miller Bros. 84
 Miller, Chas. E. 147
 Mitchell Motor Car Co. 68
 Moline Automobile Co. 68
 Maxwell-Briscoe Motor Co. 164
 Monarch Motor Car Co. 68
 Monogram Crest & Sign Co. 63
 Mora Motor Car Co. Cover
 Morgan & Wright. 142-143
 Mosler & Co., A. R. 63
 Moss Photo Engraving Co. 105
 Motor Car Equipment Co. 96-97
 Motz Clincher Tire & Rub. Co. 65
 Muller, Albert. 63
 Muttly Co., L. J. 67
 Myers Auto Top Co. 67
 National Auto Accessories Co. 64
 National Brake & Clutch Co. 132
 National Carbon Co. 87
 National Motor Vehicle Co. 168
 National Oil Pump & Tank Co. 58
 Neustadt Auto & Supply Co. 94
 Never-Miss Spark Plug Co. 108
 N. Y. Gear Works. 85
 N. Y. & N. J. Lub. Co. 63
 N. Y. Sporting Goods Co. 69
 New England Motor Co. 104
 Niagara Falls Brass Works. 109
 Nordyke & Marrison Co. 68
 Northern Motor Car Co. 78
 Northway Motor & Mfg. Co. 85
 Nuttall Co., R. D. 66
 Nutting Machine Co. 91
 Ofeldt & Sons. 63
 Okey Motor Car Co. 68
 Old Colony Light Co. 90
 Olds Motor Works. 68

Oliver Mfg. Co. 116
 Owen & Co., R. M. 68
 Pacific Tucking & Mfg. Co. 63
 Packard Electric Co. 102
 Packard Motor Car Co. 173
 Page-Storm Drop Forge Co. 62
 Palmer & Singer Mfg. Co. 68
 Pantasote Co. 128
 Parish & Bingham Co. 66
 Parker, Stearns & Co. 94
 Peerless Motor Car Co. Cover
 Penna. Auto Motor Co. 116
 Penn. Rubber Co. Cover
 Perfection Spring Co. 66
 Peugeot Chains. 66
 Pfanstiehl Elec. Laboratory. 64
 Picrome Hide Co. 66
 Pioneer Brass Works. 66
 Pirelli Tires. 65
 Pittsfield Spark Coil Co. 82
 Precision Appliance Co. 104
 Prest-O-Lite Co. 87
 Progressive Mfg. Co. 86
 Prosser & Sons, Thos. 82
 Quad Mfg. Co. 81
 Quinby Co., J. M. 67
 Quincy, Manchester, Sargeant Co. 64
 Raimes & Co. 63
 Rainier Co., The. 154-155
 Rajah Auto Supply Co. 80
 Randall-Falchney Co. 114
 Ranger Motor Works. 108
 Rapid Motor Vehicle Co. 116
 Reeves Pulley Co. 64
 Reliance Motor Car Co. 114
 Remington Tool & Machine Co. 90
 Remy Electric Co. 110
 Renault Freres. Cover
 Richardson Eng. Co. 66
 Robert Instrument Co. 64
 Roberts Motor Co. 64
 Rose Mfg. Co. 112
 Ross Gear & Tool Co. 66
 Royal Battery Co. 80
 Royal Equip. Co. 64
 Royal Motor Car Co. 127
 Rushmore Dynamo Works. 149
 St. Johns Mfg. Co. 115
 St. Louis Car Company. 121
 Salisbury Wheel & Mfg. Co. 84
 Samsou Leather Tire Co. 64
 Sanford Mfg. Co., F. C. 65
 Saxon Lamp Co. 118
 Schacht Mfg. Co. 127
 Schraeder Sons, A. 110
 Selden Motor Car Co. 76
 Shaler Co., E. C. 84
 Shawver Co. 83
 Smith Auto Co. 129
 Smith Co., A. O. 103
 Smith Mfg. Co., R. H. 150
 Speed Changing Pulley Co. 81
 Speedwell Motor Car Co. 117
 Spicer Universal Joint Mfg. Co. 72
 Splittdorf, C. F. 102
 Sprague Electric Co. 116
 Sprague Umbrella Co. 92
 Springfield Portable Auto House Co. 67
 Stackpole Battery Co. 107
 Standard Automatic Lub. Co. 64
 Standard Battery Con Co. 85
 Standard Co. 70
 Standard Connecting Rod Co. 83
 Standard Roller Bearing Co. 64
 Standard Welding Co. 86
 Steam Carriage Boiler Co. 68
 Stearns Co., F. E. 121
 Stevens-Duryea Co. 121
 Stewart & Clark Mfg. Co. 81-144
 Streit Machine Co. 84
 Studebaker Auto Co. 136
 Success Auto Buggy Co. 68
 Supplementary Spiral Spring. 86
 Swinehart Clincher Tire Co. 80
 Syracuse Alum. & Bronze Co. 105
 Teel Mfg. Co. 85
 Thomas Motor Co., E. R. 158



The Safest Way to Store Gasoline

The NATIONAL is the only pump that discharges gasoline at every movement of the crank; it saves one-half the labor and one-half the time to pump gasoline; there is no evaporation or leakage; the tank is buried underground; the pump may be put in the building in a convenient place. It is the safest way because it meets all of the requirements of The National Board of Fire Underwriters.

For a Garage owner the National portable wheel tank will enable you to fill a car quickly by pushing the wheel tank by hand to the car. It is easily handled even in case the car would be at the curb.

The NATIONAL is also adapted to private motorists, also for lubricating oil storage. Ask for catalogue—it will explain all about the National System.

The National Oil Pump and Tank Co., Dayton, O.

THE AUTOMOBILE

VOL. XVII

NEW YORK—THURSDAY, NOVEMBER 14, 1907—CHICAGO

No. 20

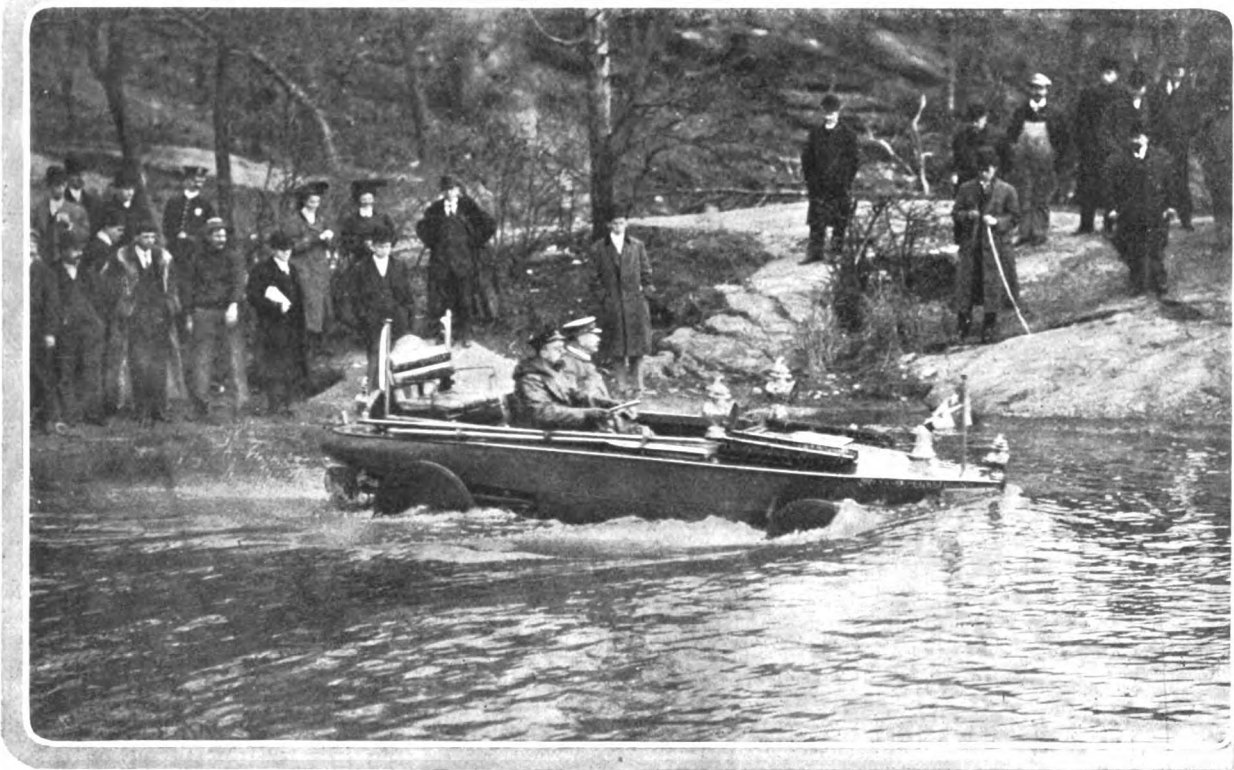
ON LAND AND WATER WITH CANOT-VOITURE

THREE hoots from a passing tugboat greeted the appearance of the *Waterland* in the calm waters of the Hudson last Tuesday afternoon. Whether they were notes of defiance or a shrill cry of welcome is impossible for a landsman to say, but certainly the recipient was worthy of an official welcome, and the skipper of the tug had his weather-eye open when from mid-stream he discovered in the small craft on the edge of the water something more important than usual.

The launching of the *Waterland* really took place on Broadway, opposite the Oldsmobile store, where for an hour a crowd

A Frenchman from Paris, M. Ravillier, conceived the idea of an automobile which would be equally at home on water as on land. He constructed his *canot-voiture*—one is at a loss whether to call it a craft or a machine—succeeded in interesting the army and the navy, and in selling the foreign patents to George E. Crater, who promptly shipped the boat, inventor, and the entire crew of one man to New York for demonstration purposes.

Externally the production has all the appearances of a motor-boat deprived of its screw and mounted on steel wheels. A front axle lodges in a space provided for it in the fore-end of



FIRST PLUNGE INTO AMERICAN WATERS OF THE FRENCH AMPHIBIOUS AUTO "WATERLAND," INVENTOR AND PILOT ON BOARD.

of sightseers had gathered around the boat on wheels, and had exhausted all its imaginative powers in an effort to discover its object in life. When the small boy hanging on the rear had been cuffed until he was glad to fall off, the blue-painted *Waterland* swung her bow round and scurried up Broadway, followed by a string of official cars and as many chauffeurs as happened to be passing and had half an hour to spare. Arriving at Fort Washington Park, the land and water production wormed her way down to the water's edge, halted an instant until her propeller case had been removed, then plunged into the stream under her own power, and bobbed in acknowledgment of the tug's salute.

the boat, and suspension is provided by a couple of semi-elliptic springs attached to brackets from the side of the craft. In the same way the rear wheels are suspended, drive being by means of side chains from a countershaft projecting through each quarter to a sprocket on each rear wheel.

Within the boat is a two-cylinder De Dion motor developing about 15 horsepower, which will drive the screw in regulation fashion, or will communicate power to the road wheels merely by a change of gear through a side lever. Shifting from either land or water drive is performed in the same way as an automobilist drops from fourth to third speed. Steering is by the ordi-



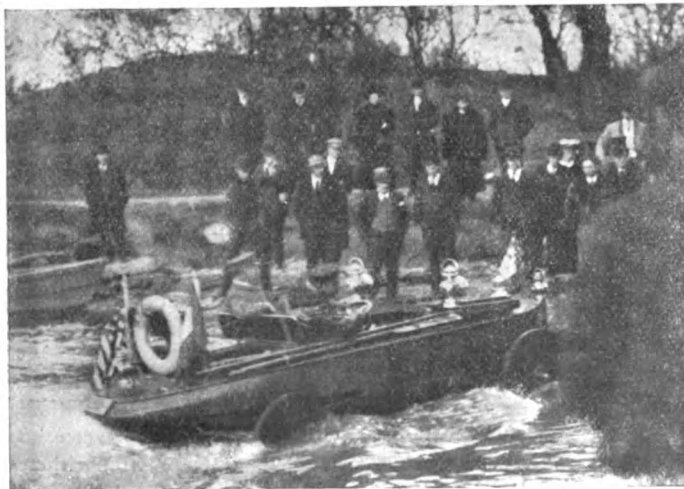
READY FOR THE RUN FROM BROADWAY TO THE RIVER.

nary method of an inclined column surmounted by a wheel, with the addition that the front wheels and the rudder are operated simultaneously whether on land or water.

Pressed steel is employed for the hull, this type of construction having been adopted, according to the inventor, to fit the boat for military service. In the French government tests the craft was made into a target with results visible to anyone caring to examine the paint work. With three passengers on board *Waterland* had but a small amount of freeboard, and although assurance was given that she could not capsize, none of the passengers asked for a demonstration or cared to inquire as to what would happen if a wave came aboard.

A dozen times in succession the boat came back to land, came completely out of the water under its own power, took a fresh consignment of passengers, then backed into stream again. The arrangement of the gears allowed either the road wheels and propeller to be used together or independently; thus, although the ground was so soft that the solid tired wheels sank almost immediately, the craft was able to come in and out without any external aid, notwithstanding the soft ground.

When everybody had been given an opportunity of testing the nautical ability of the *Waterland*, her Gallic crew ran her completely ashore and the spectators stood round in anticipation of a hill-climbing contest through unmacadamized Fort Washington Park. Instead of speeding up the engine, though, the crew took off the forward hatch and fitted a small capstan on the forecastle. A tow rope was flung overboard, one end attached to a tree, the other wrapped round the capstan in nautical manner, and the De Dion's two cylinders induced to develop power. From a pulley on the forward end of the crankshaft a belt communicated with a countershaft, transmitting movement to the



COMING ASHORE—NO OUTSIDE HELP NEEDED.

capstan through bevel gears. A loose and a fixed pulley, and an ordinary belt shifter allowed the capstan to be either operated or remain idle. With this arrangement the steep, rough hill was climbed with very little difficulty, and as soon as the worst portions had been surmounted the rope was rolled up, the capstan dismounted and a non-stop homeward run made under the critical gaze of Broadway's bicycle policemen and automobile experts at a speed of twelve miles an hour.

Arrangements for the demonstration were made by the Oldsmobile Company of New York, details being in the hands of George E. Crater, the holder of the American and English patents. It is announced that steps are to be taken to build the *canot-voiture* in America and to place it on sale here. The *Waterland* will form one of the attractions at the motor boat shows at New York, Boston and Chicago.

PRESIDENT OPENS TENTH PARIS SHOW.

PARIS, Nov. 12.—President Fallieres formally opened the tenth annual automobile show in the Grand Palais and the huge temporary building on the Esplanade des Invalides this morning. Owing to it being the decennial exposition, the A. C. F. has decided on a more brilliant spectacular display than ever before, and will keep the exhibition open three weeks instead of two as formerly. Practically all the streets and squares within a three-quarter-mile radius have been included in a brilliant electric display, easily surpassing the outside illuminations of last year.

Within the main hall the electric decorations are of a particularly artistic and ingenious nature, the big glass dome being set with blue and gold lamps to give the effect of illuminated lace work. For the most part stands are those of last year with a few embellishments, illuminated wrought iron work predominating. De Dion is one of the few making an entire change with a Chinese pagoda in commemoration of the journey from Peking to Paris by one of their cars.

An attraction of the show is the "stand of honor" on which are displayed Nazzaro's Fiat, winner of the Grand Prix; the Peugeot which won the Coupe de la Presse, a Darracq racer, and a De Dion which traveled from Peking to Paris.

Prominent among the changes are shaft-driven cars for Dietrich and Panhard, high-tension magneto for Mercedes, a new gear box for the Renault, and several gasoline-electric tow vehicles, one of the most important being a machine designed by Girardot, formerly of the C. G. V. firm.

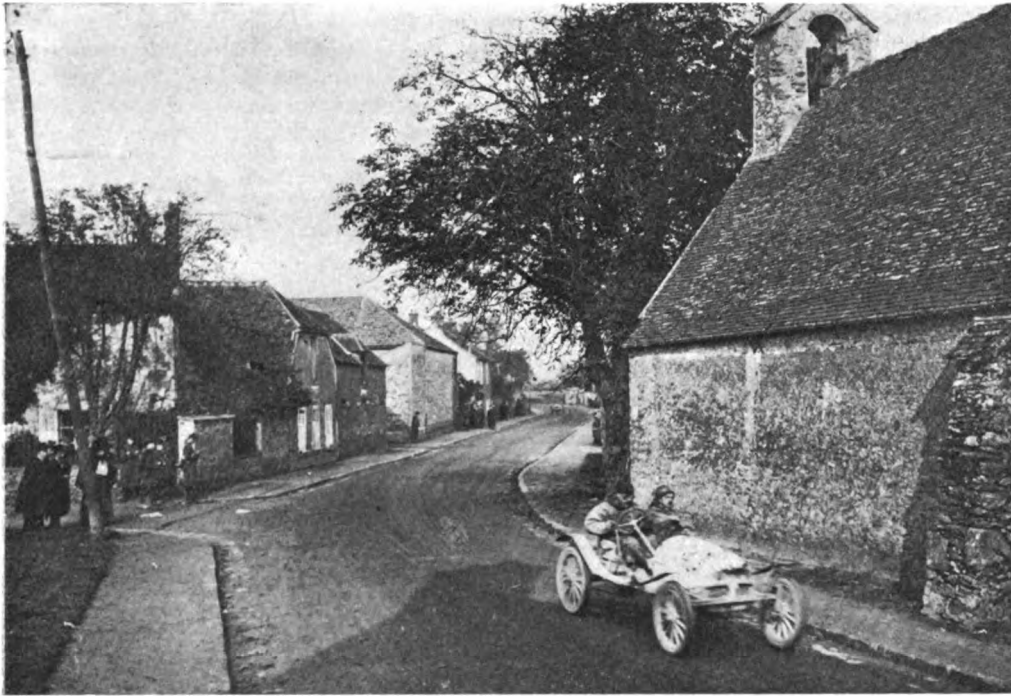
Commercial vehicles of all kinds, motor boats, and machine tools and stationary plants in motion occupy a space on the Esplanade des Invalides equal to the entire Grand Palais. All the prominent American makers of machine tools show their products in motion. The commercial side of automobiling appears to have been enormously developed. Pleasure vehicles of moderate power are more to the fore than ever, while high-powered cars have in most cases undergone a slight reduction in price. For the first time cheap small-powered runabouts form a really interesting class from a business standpoint. During the show international conferences will be held on the use of alcohol, touring conditions, and motor boats. Arrangements have been made with all railroad companies for cheap transportation of those connected with the industry from the provinces to Paris.

American Firms in the British Show.

LONDON, Nov. 11.—Without any very imposing ceremony, the sixth annual British motor exhibition, organized by the Royal Automobile Club and the Society of Motor Manufacturers and Traders, was thrown open to the public to-day and will continue until November 23. Although clashing with the Paris exhibition, there is no diminishing of interest in the British event, the big Olympia hall receiving a record attendance on the opening day. About six hundred pleasure vehicles are on show from every British firm and all the most important houses of France, Germany, Belgium and Italy. America is represented by Ford, Winston, White, Buick, and Reo.

TINY RUNABOUTS SHOW RECORD SPEED

PARIS, Nov. 5.—Over forty miles an hour for a distance of nearly two hundred miles, by the aid of a tiny cylinder measuring 3.9 by 4.7 bore and stroke, is such a remarkable performance that it is not surprising our French friends find even their extensive stock of adjectives altogether too meager.



NAUDIN, SON SIZAIRE & NAUDIN, WINNER OF VOITURETTE RACE.

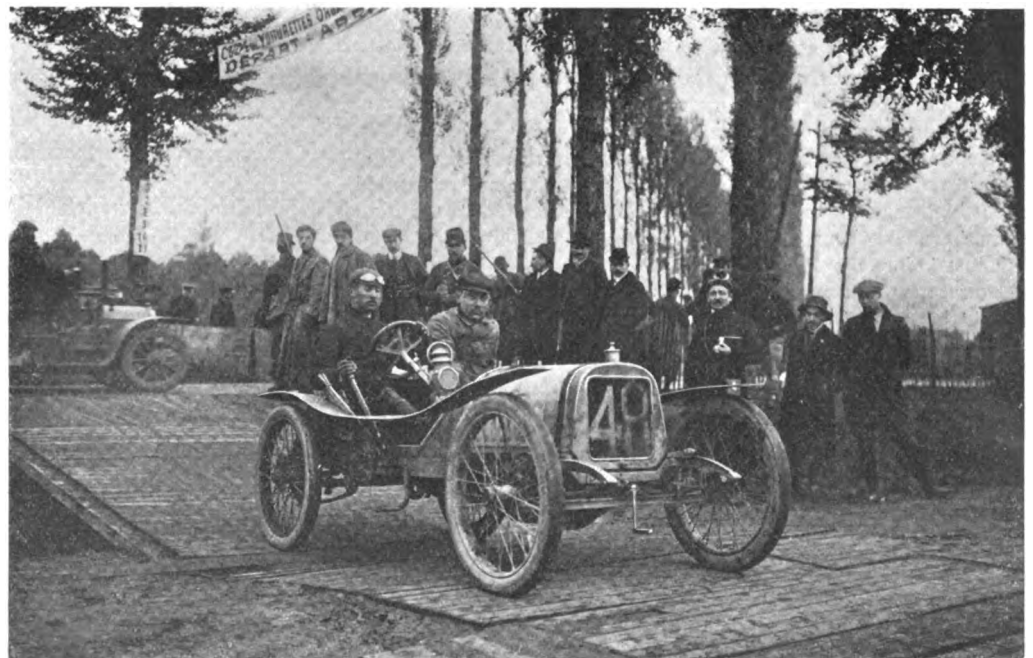
The occasion was the final of the Coupe des Voiturettes, which started with 63 little runabouts on a 21-mile circuit near Rambouillet. After a six-day grind of 147 miles a day, at an average speed of not less than 18.6 miles an hour, 41 remained for the seventh day's speed test of 189 miles over the same circuit. The only result of the six days' preliminary running had been to eliminate a dozen machines which would have fallen out in half an hour of speed work, and to prove that any decently constructed machine, even if it has but one cylinder, can turn indefinitely at an average of eighteen miles an hour. True it had given the drivers an opportunity of studying every inch of the course, thus making possible a little faster speed than would have been attained otherwise; but its practical result was so slight that next year's "tour" will probably be a race only.

At intervals of thirty seconds the forty-one were sent away in the presence of not less than ten thousand spectators brought in from Paris by train or on the 783 automobiles which, according to the gendarme officer in charge, formed a line four kilometers in length. Money had not been spared to ade-

quately protect the course, \$2,800 having been spent by the organizers in obtaining the daily services of 800 troopers and a contingent of gendarmes and in barricading every part of the 21-mile course likely to be invaded by spectators.

Although the Sizaire & Naudin was an almost certain winner, interest in the race was keen throughout, the cars all being speedy and the men excellent drivers, most of them having earned a reputation on racing motorcycles. The dangerous would-be-racing element had been eliminated during the six preliminary days. Sizaire, on the little machine produced at his own factory, set a fast pace with an initial round at a speed of over forty miles an hour. Giupone, on a Lion-Peugeot, was only three minutes behind, with Rigal, on a two-cylinder Werner, Naudin on another Sizaire & Naudin, Cissac on an Alcyon, and half a dozen others finishing within five minutes of the leader.

Sizaire maintained his lead on the second round, with his partner, Naudin, five minutes behind him, and Peugeot, Werner and Alcyon all finished at intervals of a few seconds. When six of the nine rounds had been run off, Rigal and his Werner got into first place, Sizaire, the favorite, being held up twenty minutes with a burst tire and a broken valve. Rigal, the ex-Darracq man, was not to remain at the head long, for Naudin captured the lead at the end of another round, and as soon as Sizaire had made his repairs he came to the attack with redoubled fury, doing the last three rounds at an average of forty-nine



LION-PEUGEOT, FIRST FOR TEAM REGULARITY, THIRD FOR SPEED.

miles an hour, his driving calling forth unanimous praise.

There were some exciting scenes on the sharp turn known as the Fourche, for with forty-one machines on a twenty-one-mile course it was impossible for them to be far apart at any time. Two or three missed the turn and had to drop out of the day's race with either a broken wheel or a bent axle. Giuppone furnished a few seconds of intense excitement when his single-cylinder Lion-Peugeot swung completely round on the bend and entered into the fence. In a second the ex-motorcyclist had dropped in his reverse, swung round again and had avoided the end-on collision which seemed certain for a moment. Mechanical defects developed during the race were slight—three cases of defective ignition, two cars with broken valves, one with a broken gasoline tank, and one with a defective axle.

Sizaire finished first, but as he had been one of the earlier starters he had to drop behind his team-mate Naudin by a fraction over two minutes, the winner covering the nine rounds, or 189 miles, in 4:38:52, being an average of 40.6 miles an hour. Goux, on a single-cylinder Lion-Peugeot, finished third, one minute behind the second. Cissac, on an Alcyon, took fourth place, the Rigal, with one of the two-cylinder Werners, unfairly handicapped on weight, took fourth place. Although finishing first and second, Sizaire & Naudin did not win the regularity prize, the total time of their three cars being eleven minutes slower than the total elapsed time of the Lion-Peugeot team. So close was the competition, however, that had classification been arranged on the usual point basis Sizaire & Naudin, finishing 1, 2 and 13, would have got it with 16 points, compared with 18 for Lion-Peugeot, finishing third, sixth and ninth. No international race for big cars was ever so keenly contested as this speed test for machines which would have been considered toys two years ago. The first Lion-Peugeot had a regularity record equal to that of Nazzaro in the Grand Prix, the average difference between his rounds being less than a minute, and the difference between his initial round with a standing start and his fastest being four minutes. Of the 41 starters 32 finished the race, six firms having complete teams at the end of the seventh day.

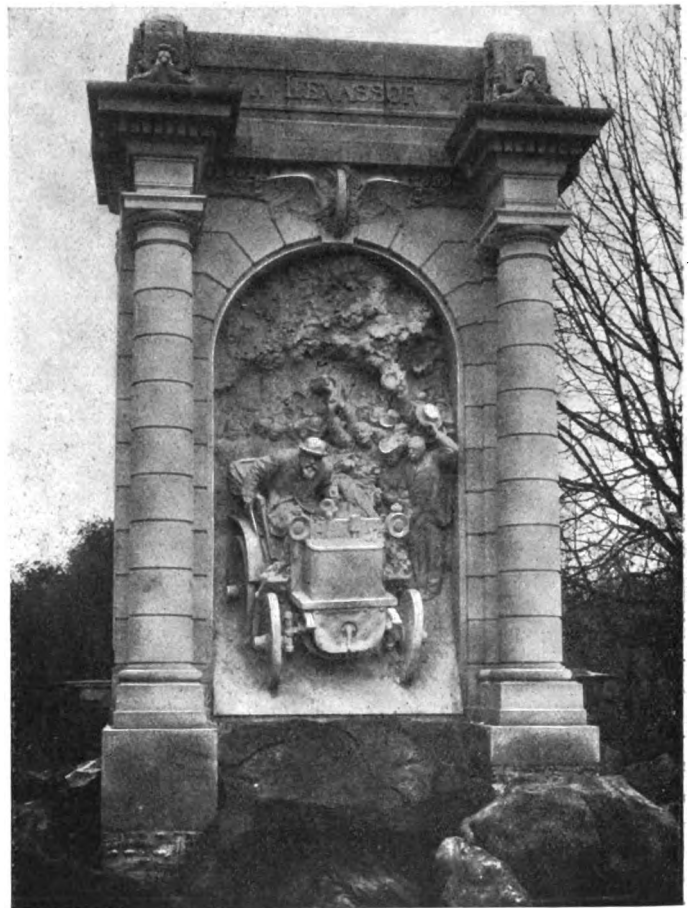
So much surprise has been caused, even in technical circles, at the amount of power and speed obtainable from a diminutive cylinder that rumors of doping have gone abroad. The machines are certainly stock so far as their essential features are concerned, and there is no reason to believe that the gasoline received any additions. To put the matter completely at rest, however, the technical committee of the A. C. F. took a sample of the gasoline from the leading cars and after analysis will announce the result. Last year the maximum bore was limited to 4.7 inches; when the A. C. F. decided that a voiturette must not exceed 3.9 inches for a single cylinder, Sizaire & Naudin protested. They built a new car, and, although nearly an inch had been clipped off their bore, increased their average speed from 36 miles an hour to over 40.

A feature of the winning machines, all of which are selling from \$500 to \$800, is that over 90 per cent. of them were fitted with high-tension magneto. Simms-Bosch equipped the first six, other makes represented being Eiseman and Nilmelior. Coming just before the Paris salon, there is now an enormous boom in voiturettes, and under efficient management a record business should be created in popular runabouts.

MONUMENT FOR WINNER OF FIRST AUTO RACE.

Twelve years after the Paris-Bordeaux and return race, and ten years after his death, Paris has decided to erect a monument to the memory of Emile Levassor, winner of the first automobile race the world ever saw. The site chosen is almost the exact spot on which Levassor stopped his car on the termination of the run from Bordeaux in the two-cylinder machine that asked for water every thirty miles, but which succeeded in proving to the world that there were some powers of movement in the automobile. Enthusiasts were few at that time, even Panhard, the partner of Levassor, having little faith in the new road vehicle they had produced.

Eight years ago an effort was made to erect a monument to the memory of Levassor, but the response was feeble; recently a renewed effort was made and subscriptions came in a flood,



MONUMENT TO LEVASSOR AT PORTE MAILLOT, PARIS.

notables in the automobile world and workers in the Panhard-Levassor factory contributing with eagerness. The monument, which will be inaugurated during the Salon, represents Levassor arriving at Paris at the end of the first automobile race, the winning car bearing No. 5 on its radiator.

ENTRIES PLENTIFUL FOR 600-MILE RELIABILITY RUN

CHICAGO, Nov. 11.—Charles P. Root, chairman of the contest committee of the Chicago Motor Club, returned this morning from New York, bringing with him definite promises of at least eleven more entries for the 600-mile reliability run of the Motor Club the latter part of this month. With these eleven and the fourteen already in hand, the entry list, tentatively speaking, foots up to twenty-five cars, while there are assurances enough to make it seem more than probable that there will be

fifty in when the entries finally close on Thursday, November 21.

Those brought back by Chairman Root were from the Peerless, Autocar, White, Stevens-Duryea, Knox, Lozier and Locomobile. In some instances there are two and three cars promised, particularly in the case of the White Company, who are so intensely interested they are taking three cars. Two Locomobiles are on the fire and maybe two Stevens. The Knox talk two and the Lozier are debating the proposition.

PHILADELPHIA SHOW SUCCESSFULLY IN PROGRESS

PHILADELPHIA, Nov. 12.—The seventh annual show of the Philadelphia Automobile Trades' Association, in the First Regiment Armory, was opened at 8 o'clock Saturday evening without any formal fuss and feathers. The attendance was a remarkably large one in view of the fact that Secretary Beck dealt out "paper" with a none too liberal hand. But the conditions are getting to be such that the practice of passing out "slows" to every Thomas, Richard, and Henry who may think he is entitled to them had to be cut out. People with real money in their hands nowadays clamor for a chance to purchase their way into the show, and with a building remarkable only for its utter inadequacy in size, it goes without saying that the show committee knew their business.

The advance in the show date from the snowball season to that of the harvest probably inspired the autumnal foliage idea in the decorative scheme, and that those in charge of that branch of the work made no mistake was evident from the exclamation of pleasure which accompanied the visitors' first view of the show from the entrance. To carry out the outdoor effect still further, all the booths are carpeted alike with grass-green burlap, while similar material of a gravel color represents the paths leading through the expanse of tree-dotted lawn. Overhead and around the side walls are draped thousands of yards of yellow and white bunting, and at night the usual lighting facilities of the armory are helped out by scores of universal lights ensconced in huge inverted flowers of a color to harmonize with the reds, yellows, and browns of the color scheme. There are no signs in evidence in the main hall, except the golden banners hanging from the roof or walls, and on which are the names of the cars in crimson lettering.

While Saturday night saw the exhibits still incomplete by reason of the fact that cars from the Garden show had not yet arrived, Monday midday saw all the exhibits in place.

Anyone who has ever endeavored to get a quart foot into a pint shoe will realize what the show committee was up against when it came to dividing up the space at its disposal among the exhibitors. This year the spaces were not assigned until all the applications had been filed, and none of the applicants was allowed more than two of the rather small spaces. True, the members of the association were given the preference when the locations were considered, but otherwise all hands were on an equal footing. And the fact that few complaints were heard is evidence that the committee has acted fairly with all. Some few of the accessories exhibitors claim to be unable to give an adequate display of their wares in the limited gallery spaces, and are holding individual shows at their respective salesrooms, all within a few minutes' walk of the armory. Other local dealers who delayed their applications until too late are doing likewise.

There are 58 exhibitors packed into the armory—32 showing 45 different makes of cars and 26 exhibiting accessories of various kinds, eleven of the latter being made up of tire displays. Two makes of motorcycles are exhibited. Of the 32 exhibits of complete cars and chassis in the drill hall, the majority are necessarily cramped owing to the desire of the exhibitors to show their respective lines as fully as possible. There are 110 complete cars and 22 chassis in the armory. Under the circumstances this is a most creditable showing.

To insure plenty of inspection room for those who contemplate buying, the committee has followed in the footsteps of the Garden show managers, announced Tuesday and Thursday as dollar admission days. The necessity for such an innovation was demonstrated at the last show, when the crowds were so thick as to seriously interfere with business.

To point out any exhibit as pre-eminent in a show where every effort is made to put all of them on an equal footing is, of course, impossible, but it is, nevertheless, a fact that the local crowds gather thickest where the "long, low, piratical craft" of

the roads are in evidence—those rakish runabouts and tourabouts which, while resembling racing cars in outward appearance, are equally as comfortable as the larger and more luxurious looking touring cars.

Among those concerns which either failed to apply for space in time or which preferred to run shows at their near-by salesrooms rather than attempt to do justice to their cars in cramped quarters are: A. G. Spalding & Bros., Stevens-Duryea, directly opposite the armory; Berl Segal, the newly-appointed Imperial agent, also opposite the armory; Panhard and Simplex, in the lobby of the Bellevue-Stratford Hotel; Studebaker, "on the street," having recently broken with their local agents; the Philadelphia Motor Car Company Frayer-Miller, at 236 North Broad street; Harry S. Houpt Company, 139 South Broad street; Dragon, 143 South Broad street. All of these concerns will make their salesrooms specially attractive to visitors during show week with music, flowers, and the "trimmin's."

This is the complete list of concerns exhibiting:

AUTOMOBILES (Main Floor).

ACME: John L. Scull.	MERCEDES: West - Stillman Motor Car Co.
AMERICAN: International Motor Car Co.	MITCHELL: Pennsylvania Motor Car Co.
AMERICAN MORS: Girard Motor Car Co.	NATIONAL: Tloga Automobile Co.
APPERSON: Philadelphia Automobile Co.	OLDSMOBILE: The Motor Shop Inc.
AUTOCAR: Autocar Co.	OVERLAND: International Motor Car Co.
AUTOCAR: General Motor Car Co.	PACKARD: Keystone Motor Car Co.
BAKER: Foss-Hughes Motor Car Co.	PEERLESS: Quaker City Automobile Co.
BUICK: Keystone Motor Car Co.	PENNSYLVANIA: Penna. Auto Motor Co.
CADILLAC: Foss-Hughes Motor Car Co.	PIERCE-ARROW: Foss-Hughes Motor Car Co.
CARTERCAR: Carter Motor Car Corp.	POPE-HARTFORD: Titman-Leeds & Co.
CLEVELAND: Girard Motor Car Co.	PREMIER: Reo Motor Car Co.
COLUMBIA: Prescott Adamson.	PULLMAN: L. E. French.
CRAWFORD: T. M. Twining.	RAMBLER: Thos. H. Jeffery & Co.
ELMORE: Gawthrop & Wister.	REO: Reo Motor Car Co.
FORD: Ford Motor Co.	ROYAL TOURIST: Hills Motor Car Co.
FRANKLIN: Quaker City Auto Co.	STEARNS: The Motor Shop, Inc.
JACKSON: Spencer Motor Car Co.	STODDARD-DAYTON: Hamilton Auto Co.
LOCOMOBILE: Locomobile Co. of America.	WALTER: International Motor Car Co.
LOZIER: General Motor Car Co.	WAVERLEY: West - Stillman Motor Car Co.
MARION: International Motor Car Co.	WAYNE: Rittenhouse Garage.
MARMON: Brazier Automobile Works.	WHITE: The White Co.
MATHESON: Titman-Leeds & Co.	WINTON: Winton Motor Carriage Co.
MAXWELL: Kelsey Motor Car Co.	

TIRES (Second Floor).

Diamond Rubber Co.	Home Tire Co.
Firestone Tire & Rubber Co.	Morgan & Wright.
Fisk Rubber Co.	Pennsylvania Rubber Co.
Gibney, James L. & Bros.	Sanford Co., Wm. (Sampson).
Goodrich Company, B. F.	Standard Rubber Tire Co. (Republic).
Goodyear Rubber Co.	

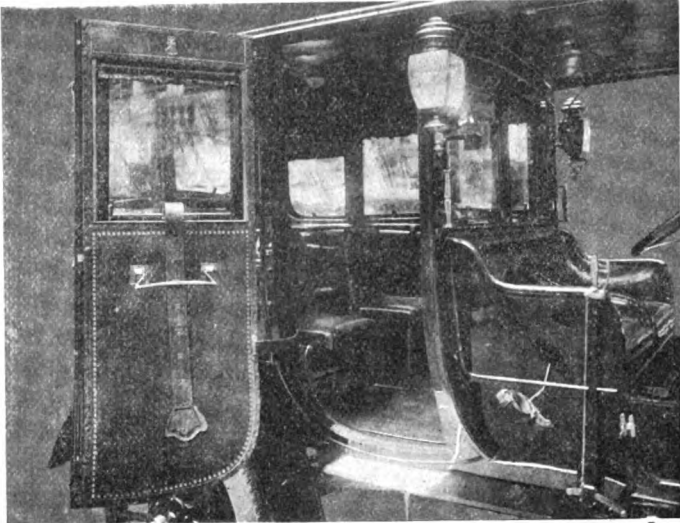
MISCELLANEOUS.

Auto Equipment Co.	Manufacturers' Supplies Co.
Autolight & Motor Supply Co.	Miller, Charles E.
Brown Auto Top Co.	Nock Co., George W.
Columbia Lubricants Co.	Phila. Auto Accessories Co.
Hans Co., Edmond E.	Puritan Soap Co.
Home Tire Co.	Richter Electric Co., Eugene L.
Indian Motorcycle Agency.	Rose Manufacturing Co.
Kellom & Co., Charles F.	Snyder, M. L.

REFINEMENTS OF THE AMERICAN AUTOMOBILE

By W. F. BRADLEY.

AS the mechanical features of the automobile attain higher and higher degrees of efficiency, more and more attention is being paid to refinements and finish. In the early days the automobilist asked for nothing more than a piece of machinery which would carry him over the roads at a faster rate than the

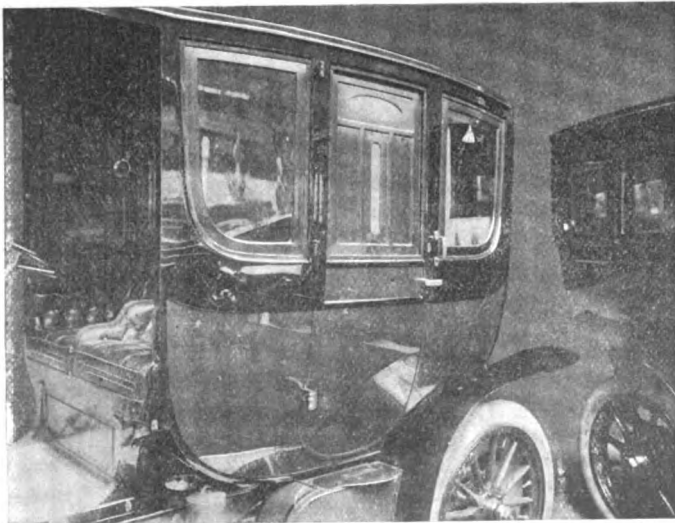


ELEGANCE AND PRACTICABILITY OF THE PIERCE LIMOUSINE.

horse; he willingly put up with obvious imperfections and was never exacting in the matter of body refinements.

To-day the automobilist must not only have a vehicle capable of carrying him from place to place without falter, but must be moved about with a host of refinements never dreamed of in connection with other modes of locomotion. An inspection of the models at the Madison Square show revealed the fact that not only is the public demand met, but manufacturers anticipate the desires of users, with improvements and refinements calculated to satisfy the most critical.

Instead of being satisfied with an open car all the year round, closed bodies are now deemed an absolute necessity by every user of an automobile with sufficient power to carry the extra weight. Limousine and landaulet bodies are more frequent than ever, some of the leading makers now producing as many closed as open bodies. Road conditions in this country are prejudicial to the extensive use of heavy closed bodies, with the result



OLD ENGLISH STAGE COACH ON APPERSON CHASSIS.

that the closed type is more or less of a city vehicle with few provisions for extensive touring.

An important exception is a closed touring car shown at the Pope-Toledo stand. It is a type of vehicle in frequent use over the better roads of Europe, but up to the present a complete stranger to America. The Pope-Toledo closed touring coach is a special limousine body mounted on the firm's standard four-cylinder 50-60-horsepower chassis. Ample protection is afforded the driver by a folding leather top and a swinging windshield with a leather apron attachment from its base to the top of the dashboard. Accommodation for luggage is provided by three special trunks on the top of the car, secured by straps to the metal gallery. On a rear platform two specially shaped trunks are carried; being inclosed in a black leather casing, they are completely protected from dust and rain and in no way mar the lines of the vehicle. It has not been forgotten that the exhaust from the engine can have a more evil effect on rear platform trunks than flying mud, for the fumes from the four cylinders of the Pope-Toledo are allowed to disperse nearly a couple of feet from the platform. Within the car two medium size dress suit cases can be carried under the front seats. They are prevented from shaking by being made to fit the space, are secured by a door, and the door hidden by the carriage trimmings, there being absolutely nothing to indicate their presence. With these seven trunks there is certainly ample luggage provision for an extensive tour by a full load of passengers.

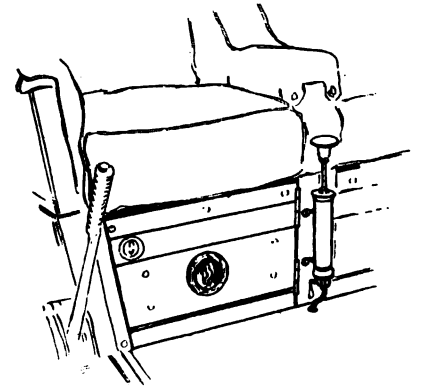
The limousine is upholstered in gray broadcloth with whipcord trimmings, the upper portions of the walls and the ceiling being in polished white mahogany; the abolition of cloth is certainly an improvement, its presence not only harboring dust, but making an interior uncomfortably stuffy. The side windows let down, and the doors are fitted with wood screens provided with fine gauze panels to admit air. Among the refinements are electric lights, annunciator, and mirrors, which fold back against the wall, forming decorative panels when not in use. The external color scheme is pale yellow, black trimmings.

Luxurious Refinement.

Kimball, of Chicago, has a very original body mounted on an Apperson chassis. Opinion is likely to be divided on the effectiveness of its

lines, but there will certainly be no two opinions regarding the excellent workmanship and careful finish of the old English stage coach. Side panels inclose the driver's seat, these panels being a continuance of the main body, with their base rounded off to harmonize with the rear of the body. Color scheme is black and red. At the rear of the body are a couple of lamps, showing a green and red light on the road and a white light inside. A projecting pocket between the two lamps is a reminiscence of more eventful days, when such a receptacle was needed to carry pistols and swords as a precaution against highway attacks. A tool box in the rear is of sufficiently ample dimensions to be useful, but not projecting more than four inches does not spoil the harmony of lines. Interior fittings are of the highest class, the refinements comprising speaking tube, electric lights, annunciator and convenient pockets.

As an example of luxuriousness and originality in internal fittings, the limousine on a 45-horsepower Pierce chassis stands



COIL UNDER DRIVER'S SEAT.

alone. In all structural features both chassis and body are of the standard type and are produced entirely at the Pierce factory. It is in the upholstery and fittings that special skill and labor have been exerted, H. M. Dawley, the Pierce Company's color designer, being specially responsible for the excellent result. All the upholstery below the line of the windows is carried out in a heavy buffalo hide ornamented by plain tooling. Above this line the trimming is hand-tooled Cordovan leather enriched with

dainty accents of colored lacquer and gold leaf. The same decorative scheme is worked out in the ceiling, also upholstered in leather, four lacquer and gold leaf bands radiating from a central electric dome. Harmonizing with the deep russet of the interior, all the interior metal is of an antique design and a sober gun-metal finish. Although an exceedingly dainty piece of work, the special Pierce limousine has the advantage of being thoroughly practical for constant use, leather being good wearing material and not a harbinger of dust. Judged from the standpoint of the user, the all-cloth style of upholstery is not the most satisfactory production.

Runabout bodies on powerful cars are to maintain their popularity, judging by the show exhibits. A general tendency is to

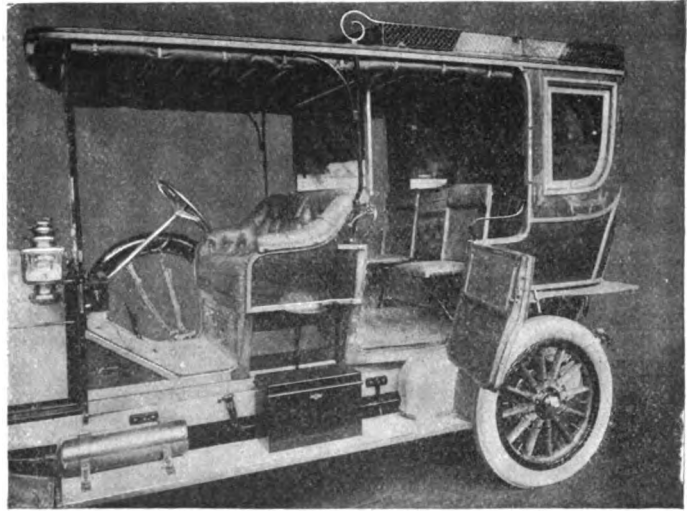
TIRE IRON HINGED TO FOLD AGAINST BODY.

put a double seat on the rear instead of the single rumble, this double seat being readily dismantlable, leaving a large platform for luggage. Developing this idea still further, the Stearns people have produced a five-passenger runabout, in which the seat to the left of the driver is placed several inches rearwards, and the two rear seats are a small detachable tonneau, entered from the right-hand side of the car only. Seating accommodation is provided for the chauffeur by means of a detachable seat hung over the running board by brackets to the side frame and strengthened by one leg. To make the position of the user more secure, a foot rest is fitted to the forward end of the running board. The entire seat can be removed by merely slackening a couple of bolts, and the rear seats can be taken off almost as readily, transforming the five-seater into a two-passenger runabout.

There are some original features in a demi-limousine made by Barr and fitted to a Matheson chassis. Bodywork is finished in a light natural wood, and the interior is upholstered in pigskin. The roof and upper portions of the interior are finished in plaited straw work, the general appearance of the car being one of delightful coolness for summer touring. The side windows let down into pockets and the glass screen between the rear compartment and the front seats can be raised or lowered at will. External finish is in harmony with the interior, the mud guards, for instance, being covered with the same material as the interior upholstery.

Minor Improvements Are Visible Everywhere.

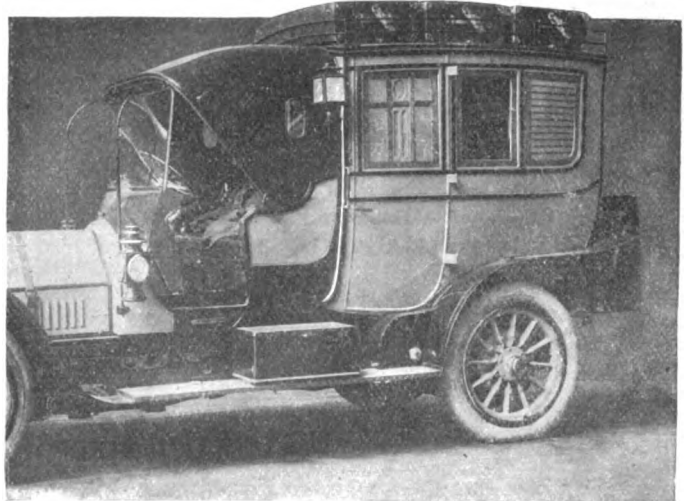
Apart from the special bodies, some of which are certainly more attractive under the glitter of the limelight than they would be after a few weeks on the road, there is a wealth of improvements and refinements in bodies and fittings calculated to interest the genuine tourist. There is a strong tendency towards soberness in both color schemes and fittings; not only are gaudily painted touring bodies the exception, but there is a commendable tendency towards less glitter in the metal fittings of the car. This is clearly exemplified in a Studebaker and in a Thomas landaulet finished to special order with headlights, lamps, tank, steering column and all other external metal work in gun metal.



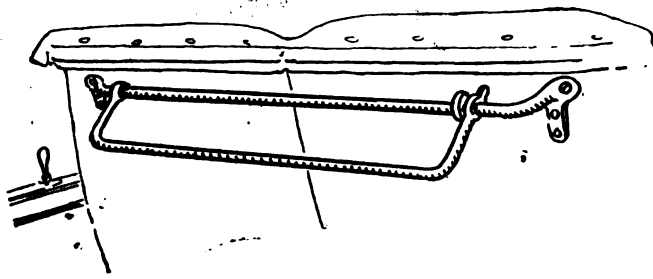
STRAW LINING, A FEATURE OF THE MATHESON.

Apart from the labor involved in keeping brasswork clean, its free use around the car has the effect of dazzling the driver to such an extent that some chauffeurs when driving in the face of the sun invariably smear dirt on their headlights. A large number of cars are shown with all metal work given a black finish, the result in nearly every case being pleasing. An excellent example is a Pope-Toledo touring car. On this machine, also, such metal work as door handles, robe rack, etc., has been covered with fine dark colored Morocco leather.

Provision has been made in a very large number of cases for more effectively keeping mud off the car, front mud guards being provided with a backing of either leather or metal, running to the side frame and completely protecting the bonnet. The use of a protector between running board and frame is a wise addition, for not only does it prevent mud being thrown upon the running board and the car, but it hides such unsightly organs as muffler, cables and transmission gear. On the better class closed vehicles, where its presence is almost a necessity, the guard is frequently in metal and not easily detachable. On touring cars leather fastened by means of buttons is the rule; on a certain proportion of the cars the attachment is made in such a rough and ready manner, and the brass buttons are so conspicuously brassy that cleanliness is only obtained at the expense of appearance. There are at least half a dozen cases, however, conspicuous among them being the Pope-Toledo, in which the leather apron is neatly cut and well fitted, the attachment being made by almost invisible buttons.



POPE-TOLEDO DESIGNED FOR COMFORTABLE TOURING.



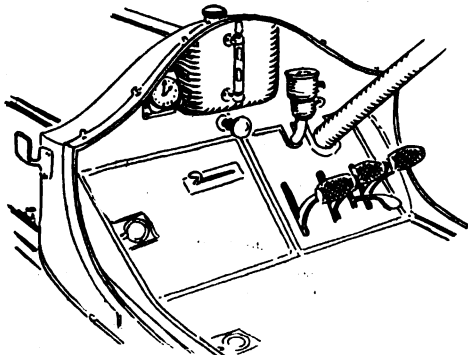
DOUBLE LEATHER-FACED HINGED RUG RACK.

The trend towards simplicity and neatness is nowhere more pronounced than in the matter of dashboard arrangement. Fashion used to be to treat the driver to a display of automobile accessories. Studebaker, in one model, has gone to the other extreme, removing everything but a short circuit button, hardly visible a couple of feet away. Another model by the same firm has only a clock on the dashboard, surmounted by a small electric lamp reflecting onto the dial. Locomobile has a very neat dashboard arrangement, the only articles displayed being a small sight feed oiler, pump, and primer for carbureter—the whole group could be carried in the coat pocket. A similar clearing tendency is shown on the Lozier, the dashboard carrying the coil, a switch, and a small tubular oil indicator. Sunk

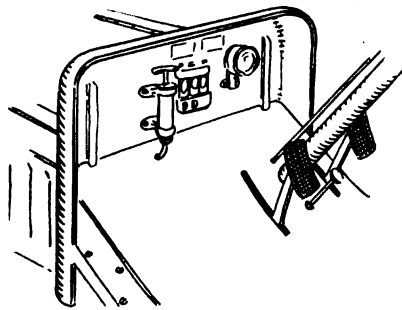
driver's seat. Oldsmobile also uses metal footboards covered with rubber except where the driver's feet rest.

How Tools and Spares Are Accommodated.

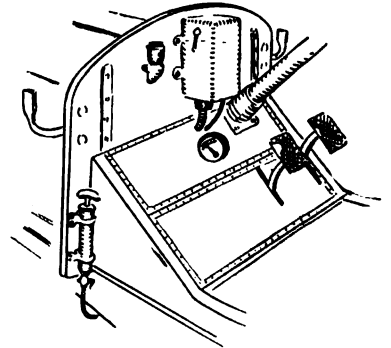
Provision for carrying tools and such supplies as the driver is likely to need is more generous than formerly. As an example, on the same Pope-Toledo model one running board carried a steel tool box with compartment for pump, tray with a complete set of tools displayed, each one having its own notch; on the opposite side is a smaller box, also of pressed steel, containing a storage battery, two oil cans, and one spare box. Oldsmobile also employs metal boxes. Studebaker has combined a tool box with the running board in such a way that it forms an easier step into the car and at the same time fills up the space between running board and frame. The usually empty space within a spare shoe is made to do service in the Pope-Toledo touring car, a leather case, the face of which is in three pieces fastened by a padlock, occupies this space, and forms a very convenient receptacle for inner tubes and other tire accessories. When not used for the purpose for which they were intended, tire irons are apt to be unnecessarily in the way. To avoid this on a Stearns touring car they are hinged at their extremity, allowing them to fold against the body when not required. One of the straps fits around a hook on the frame, keeping them securely held down. The Studebaker car was shown with the



Pope-Toledo.



Locomobile.



Lozier.

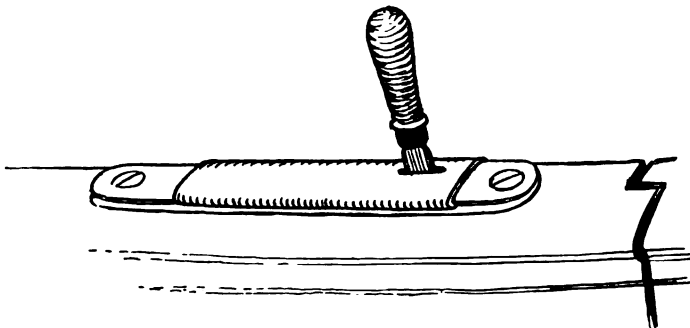
SIMPLIFICATION AND NEATNESS IN DASHBOARD ARRANGEMENT ON THREE LEADING CARS.

level with the sloping footboard is a pressure indicator. The pressure pump has been taken off the dashboard and placed in an equally accessible but less conspicuous position in the angle formed by the dash and the frame. A pleasing dash and foot-board arrangement is that of the Pope-Toledo, where the footboards instead of being of wood covered with rubber, are two steel plates with an aluminum finish. The forward plate is considerably sloped, leaving a very short dash, in the center of which is an auxiliary gasoline tank with sight feed and handle for shutting off supply at its base. The only other article on the dash proper is a speed indicator, though in the sloping foot-board there is a projecting level by which the flow of gasoline from the main tank is either shut off or opened. The coil is hung on the inside of one of the doors to the locker under the

inner arm of the iron loose on its sleeve, allowing it to be opened or closed to any desired width. A couple of broad brass bracelets fastened to the rear of a Lozier allowed for carrying a spare shoe there.

Small refinements for the comfort of travelers show more and more perfection. As an example of what is being done, the vertical knob by which the side doors of a touring car can be released generally necessitates a slit in the wood binder forming the top of the door. Rain enters and the spring mechanism becomes rusted. On two cars at least, a Studebaker and a Pope, this is avoided by a brass slide which automatically closes with the door, leaving no opening whatever. On the Stearns the two revolving armchairs are provided with a stop released by means of a convenient side lever. Instead of the cape top iron by the side of the forward seats being permanently fixed outboard, on the Lozier it is pivoted, folding inwards close to the upholstery; thus when not in use the iron is practically invisible. Another useful but minor improvement on the Lozier limousine is that the forward windows instead of letting down into pockets are made to slide one upon the other. A rack for rugs is a necessity in all touring cars, and forms a standard equipment. An improved design is attached to the Pope-Toledo car, consisting of two bars, both bound in leather, and made to hinge down when not in use.

Gasoline gauges on tanks are not very common as a standard equipment, only two cars in the show being fitted in this way. To protect against accidental puncturing of the rear gasoline tank, the Stearns runabout is equipped with a wood guard formed of laths laid on a metal frame and secured by a leather strap.



SLIDING COVER FOR LEVER OPERATING DOOR.

SIMULTANEOUS BRAKING OF ALL FOUR WHEELS*

By P. D'ESTIVAL.

FRONT-WHEEL braking has long been considered as offering a solution of the difficult problem of overcoming side-slip, particularly when the latter results from sudden stopping of the car as well as of better distributing tire wear. It is a subject of considerable general interest, that of retarding the car through brakes placed on the front wheels, as is evident from what has been aroused by the experiments of M. Arnoux. The center of gravity of a car always being located above the plane of its axles, its inertia combines with its weight, and both applied at the center of gravity, at the moment the brakes are applied there is a force set up, obliquely directed forward. It follows, as a consequence, that braking, whether effected at the front or rear wheels, always has the effect of overloading the front axle and relieving the rear axle of its load.

Hence, it seems logical, in order to obtain the best possible conditions of adherence, to retard the forward wheels, as they skid less than the rear wheels. However, there is considerable risk of blocking the front wheels and herein lies a serious danger, as in such a case they would no longer serve to direct the course of the car. Generally, the center of gravity is not sufficiently elevated to permit the overloading of the front axle, as a consequence of braking, to assume proportions greatly increasing the limit of adherence of the front wheels, which would be very dangerous, as the front wheels would then slide forward and the vehicle upset in attempting to turn about as a result.

It is evident from this brief exposition of the principles involved the sketch Fig. 2. A helical spring tends to maintain the brake substantially augmenting the negative acceleration, it may, on the other hand, be accompanied by dangerous consequences, particularly if the road surface be at all slippery, or if the car encounters an obstacle such as a (*dos d'ane*) "thank-you-ma'am." But the fact that the rear wheels carry the major part of the weight, something like 60 per cent. of the total, must be taken into consideration, and from this the conclusion is inevitable that the braking force on the front wheels must always be confined to a moderate value, not approaching a dangerous limit, and must also be applied at the same time as the rear brakes.

In the system devised by M. Hamon, he has allowed for imposing an amount of braking force to the wheels of each axle that shall be proportional to their static load. This is accomplished by means

of a central control, operated either by pedal or by a hand lever in connection with a system of flexible cables actuating the brakes themselves, with the intervention, in the case of the forward pair, of an apparatus for automatically applying the front wheel brakes should the steering gear accidentally give way. As shown by

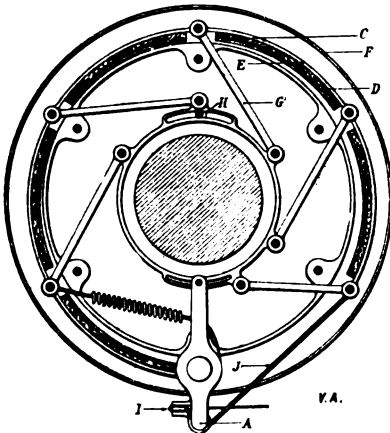
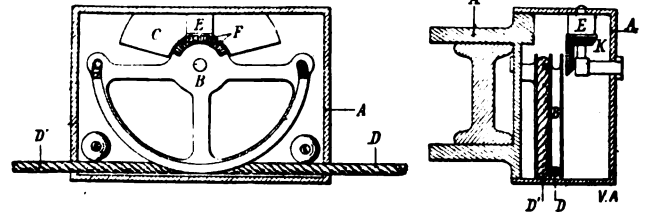


FIG. 1.—Hamon front wheel brake.



FIGS. 3 and 4.—Equalizing apparatus and automatic stop.

the illustrations, Figs. 1 and 2, the front wheel brakes consist of a friction drum *B* attached to the spokes of the wheel. The constricting band *E* is provided with a series of wooden blocks lined with camel's hair felt *D*. The latter are articulated by a series of levers *G*, all of which are attached to a circular retainer, this being permitted to oscillate concentrically with the wheel itself within the limits allowed by the sector *H*. The controlling cable *J* is attached to the last lever of the series *G* after passing through a guide and the pulley on the end of the fixed piece *A*, which is solid with and practically a continuation of the steering spindle of the wheel, this being shown particularly by the sketch Fig 2. A helical spring tends to maintain the brake

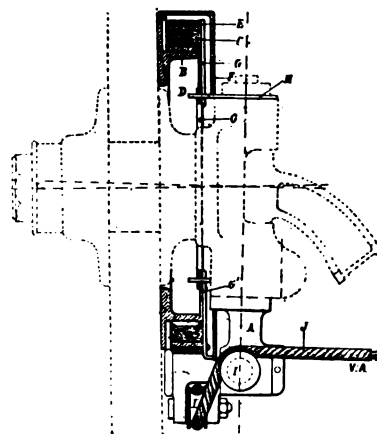


FIG. 2.—Constructional details, front wheel.

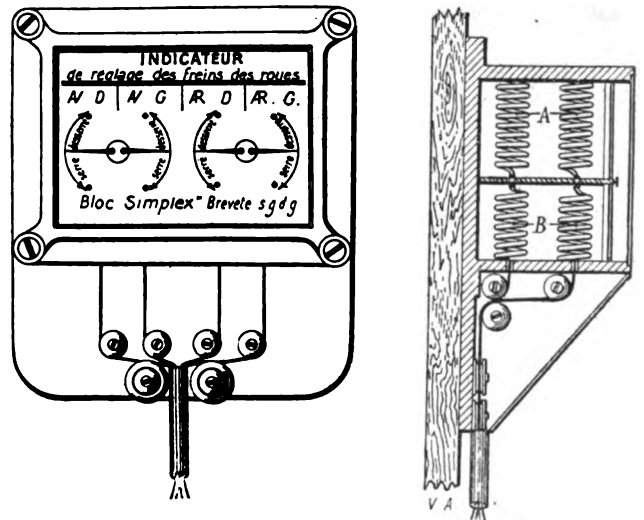


FIG. 5.—Details of dashboard indicator of Hamon four-wheel brake.

off the drum constantly, the whole device being well protected by the sheet iron housing *F*.

Putting a tension on the cable causes the circle *G* to oscillate to the right, carrying with it the levers, and the band is applied, commencing at the left, the wooden segments coming into contact progressively. Figs. 3 and 4 illustrate the connecting device which is attached to the center of the front axle, and which serves in case of an accident to the steering gear to automatically apply the front wheel brakes and at the same time releases the control lever of the rear wheel brakes. It will also come into action in case the chauffeur loses his head in trying to avoid an obstacle and throws the wheel over too quickly, which might result in colliding with a second obstruction. The details of the apparatus are outlined in the sketches, Figs. 3 and 4. *A* is the housing attached to the front axle, while *B* is the sector and *C* the stop; *D* is the brake-controlling cable, and *E* is the drum on which the cable attached to the hand lever is wound, while *F*

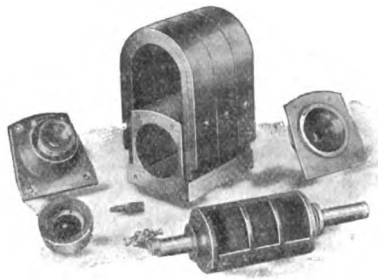
*Translation from *La Vie Automobile*, Paris, by Charles B. Hayward.

is the geared connection between the drum *E* and the sector *B*; *I* is the sheave over which the cable passes and *K* the shaft or axle of the drum *E*.

In order that the braking effort be not only efficient but entirely free from danger, it is necessary that the resistance created by each be identical in amount and simultaneously applied. In order to be able to know at any moment whether all the brakes of a car are in perfect working order, the inventor has evolved an additional device to be placed on the dash in plain sight of the driver, which permits the latter to tell at a glance the condition of the car's brakes. This device is very simple (see Fig. 5) and consists of two sets of opposing springs, *A* and *B*, attached by means of flexible cables directly to the springs, which serve to hold the front and rear brakes away from their respective drums. As soon as the brakes are properly regulated, the four pointers all assume a horizontal position, corresponding to zero. Regulation is accomplished very easily by means of turnbuckles, placed in the cables in an accessible position, any defect being considerably multiplied by the indicating hands. In order to avoid confusion as well as to protect the controlling cables, the latter are passed through flexible tubes fixed on with staples.

A NEW LOW-TENSION MAGNETO.

It has long been considered somewhat strange that a concern having at its command such unequaled facilities for the production of such work as the General Electric Company, Schenectady, N. Y., should not have devoted its attention to the manufacture of ignition magnetos for automobile use. There has been a very marked increase in the adoption of this type of ignition during the past few years, so that the magneto is no longer considered merely as an adjunct to the highest-priced cars, but provision is made for it on the great majority of light cars, the selling price of which does not permit of its inclusion in their regular equipment. Reliability, ease of maintenance, simplicity, uniform sparking and freedom from trouble are qualities in which a well-built magneto has been found to excel. The machine is simple, self-contained, and eliminates much of the complicated wiring, besides being free to a very much greater extent from those petty annoyances that have long characterized the average ignition system, owing to the fact that its operation is purely mechanical and its speed does not exceed that of the motor.



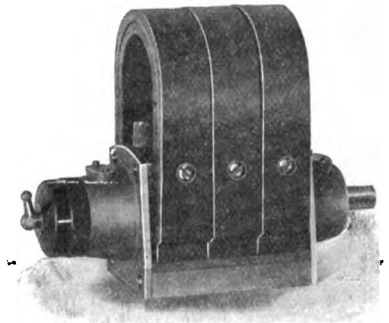
ESSENTIALS OF THE NEW MAGNETO.

The General Electric Company's experts have been making a study of the situation for some time past, and as the result of this, as well as the company's long experience in other lines of electrical work calling for the fulfillment of most exacting requirements, they have evolved a low tension magneto embodying all those desirable features of design and construction that experience has shown to be essential to the proper working of such a machine.

The general construction of the new magneto is of the most substantial nature and avoids all superfluous trimmings. Both the base and bearings are of bronze, finished with a sand blast, giving it an attractive appearance. A number of especially desirable features are noticeable in the construction of the armature. One end of the wire is brought out through the hollow shaft by means of steel conductor, the insulating bushing between the latter and the shaft being of bone and is, therefore, little affected by moisture or light. From this conductor it passes to a phosphor bronze helical spring and to the lower nut forming the outside terminal, thus avoiding any loose contacts. A hard

rubber cover with a knurled exterior is screwed to the bearing and houses the contact completely. The grounded side of the winding is firmly fastened to the core, and a carbon brush insures good contact between the winding and frame.

The magnets are compounded and are fastened by springing on to the frame and securing with a single screw on each side, thus minimizing the detrimental effects of drilling the members. In this most important part of the generator, the experience of its makers in producing millions of permanent magnets for meters and other apparatus over a period of many years, has proved invaluable, and it may be taken for granted that the magnets forming the field of the new machine are surpassed by none, whether of foreign or domestic origin. The demagnetizing of the field is prevented by making the armature core slightly overlap the pole gap when it is in the vertical position, thus avoiding a complete rupture of the permanent magnetic flux at any time. Both bearings are secured to the top and base of the frame rather than to the pole pieces.



G. E. CO.'S NEW LOW-TENSION MAGNETO.

Tests have shown that, on open circuit, the magneto's voltage is slightly in excess of 100 volts, this being easily obtained at a comparatively low speed, while a short-circuit current of approximately 4 ampere is available. In order to secure this high short-circuit current, the resistance of the armature winding has been made as low as possible, yet with a sufficient number of turns to give an adequate open-circuit voltage. It is the intention of the company to enter this branch of manufacturing on a large scale.

RUBBER IN ROAD DUST.

Everyone knows that in the dust of the London streets, among much more harmful constituents, there is much iron from the tires of wheels and the shoes of horses, says *The Autocar*. In fact, every road shows traces of iron from these sources. It struck us the other day when we were regarding somewhat sadly the flatness of a badly worn tire cover that there must be traces of rubber in the dust of an ordinary country road. Here was a tire which had once been circular in section which was now flat on the tread. The rubber had gone somewhere, and surely some of it must be found upon the roads which had taken their tribute.

Analyses of several samples of dust taken from different parts of the country show this conclusively. In the dust taken from the surface of a straight part of the road there was .042 per cent. of rubber, such as would come from a rubber tire. In the dust brushed from the road at a sharp corner there was .170 per cent. Careful examination of the sample reveals pieces both large and small of rubber tire, one piece being about 3-4 inch long and 1-2 inch wide. The result of this analysis is interesting in more ways than one. As we have said, it stands to sense that, as the tires wear, the rubber must go somewhere, and one would expect to find some of it on the road, though doubtless much of it is blown away in very finely divided particles. Another point shown by this investigation is that at a sharp corner the percentage of rubber in the road dust is more than four times as great as on a straight. It shows that not only are tires strained by corner work—a fact which everyone admits nowadays—but it also demonstrates that pieces are positively torn from them. When a cover has been in use for some time, and there are a number of surface cuts, any strain like sharply turning a corner puts so much work upon the parts of the cover that pieces are torn right out.

A NEW GEARLESS CHANGE-SPEED MECHANISM

By ERNEST COLER.

A NEW type of gearless transmission, which is noteworthy in more than one respect, has been invented by Robert Miller, a mechanical engineer, of 26 Beech Terrace, New York City. Though originally designed for use in commercial vehicles the Miller transmission also is well adapted for use in pleasure vehicles. In the ordinary friction drive, in which two discs are placed at right angles, a great many speed ratios are theoretically possible, but the amount of slippage inseparable from this type of friction drive has prevented its general adoption.

In the Miller transmission all the thrusts are self-contained, involving no stresses upon the engine crankshaft, and a much heavier spring than is used in ordinary friction drives can be used for keeping the friction surfaces in contact. In the older friction drives, in which the discs are placed at right angles, there is mathematically only a single line of contact relied upon to produce the required amount of friction. The discs, moreover, must be made of soft material and are subject to wear.

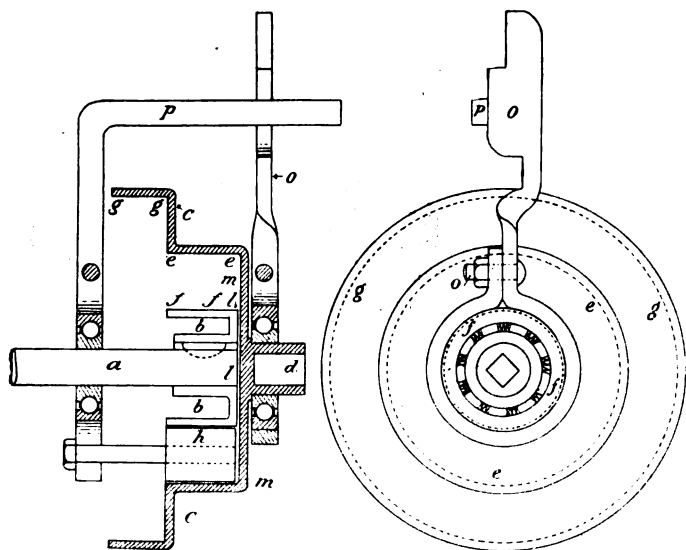


FIG. 1.—Section and elevation of the Miller friction change-speed gear.

The appliance illustrated herewith depends upon the principle of the osculatory circle, which, according to the calculus, is a circle having three consecutive points in common. With a given curve, if these circles be made short cylinders, the points of contact become lines of contact and the area between these lines becomes a surface. This greater contact surface, of course, makes it possible to make the friction surface of more substantial material than that ordinarily used in friction drives. Aluminum, cast-iron, or steel, lined with leather or provided with cork inserts, can be utilized, giving an exceedingly efficient drive.

Another peculiarity of the right-angle disc drive is that the portion nearest the center of the horizontal surface moves with less velocity than the portion near the periphery, with the result that a certain amount of slipping or grinding cannot be avoided even in the best constructions of this kind. Since it is possible to enclose the Miller Gearless Change-Speed Mechanism entirely it is rendered immune to the effects of dust, mud, water, etc.

Another of its advantages is that it can be connected to a selective lever control; it may have a "clutch" pedal for disengaging the contact without changing the speed ratio, a feature that is valuable in rounding curves and in driving through congested traffic. The light weight of the contrivance, its extremely low cost of manufacture, its durability, and its ease of operation give the Miller device many advantages over other forms.

The mechanism is shown herewith as a three speeds forward and two speeds reverse combination, but reference to the cut shows that by providing additional "steps" more speeds are obtained.

The device is shown in detail in Figure 1, in which *a* is the end of the engine shaft, *b* a friction pulley mounted thereon; *c* is a step friction pulley (similar to the step-cone on a lathe). It is obvious that if the pulley *c* be mounted at *d* on the propeller shaft, with a universal joint and its slip joint, and clamped

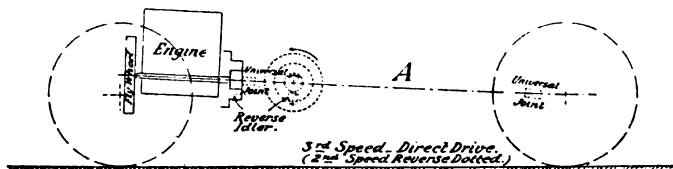


FIG. 2.—Showing the relation of the parts on the third speed or direct drive.

against the pulley *b* the two will rotate together like an ordinary multiple-disc clutch. If now the pulley *c* be so placed that its surface *e* comes into contact with the surface *f* of pulley *b*, and sufficient pressure be applied to force them into contact, the pulley *c* will travel around the pulley *b* and the ratio of the speed will be the ratio between the diameters of the two pulleys. If, further, the pulley *c* be moved bodily backward, so that the surface *g* is above *f* and both come into contact, the pulley *c* will again revolve, but at a lower speed, because of the greater diameter of the pulley *g*.

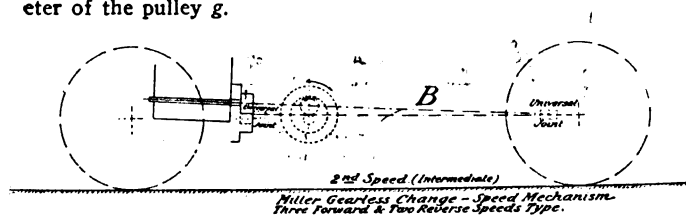


FIG. 3.—Position of the members on the intermediate or second speed.

To obtain the reverse, the idler *h* is interposed between the pulleys *c* and *b*; forcing *c* against *h* forces *h* against *b*. The rotation of *b* being in the same direction, the direction of *c* will be reversed, and if the surface *g* of the pulley *c* be utilized, the low-speed reverse will be obtained. To lock the change-speed mechanism together for the high speed forward the surfaces *ll* and *mm* are brought into contact much in the manner in which a multiple-disc clutch is engaged.

The thrusts are self-contained, because if the pulley *c*, controlled by the link *o*, be forced into any of its notches against the link *p* (which contains the spring member) the pulling up on the spring is counter-balanced by the pushing down of the

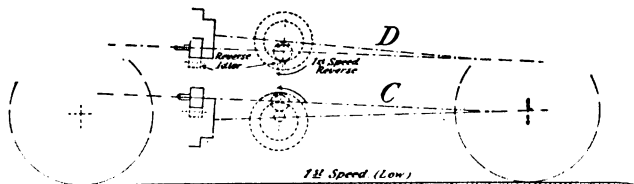


FIG. 4.—Illustrating the positions of first or low speed, and the first reverse speed.

one pulley into the other. The clamping of the high-speed plates is similarly self-contained. With certain types of ball and roller bearings not only radial but also axial thrust can be taken, so that two bearings are sufficient for all purposes.

Figure 2 shows the outlines of a car with a wheelbase of about 90 inches, 30-inch wheels, equipped with an engine of about 16-horsepower located in front. Four views are shown, *A*, *B*, *C*, and *D*, and from the illustrations the relative positions of the change-speed mechanism giving three speeds forward and two speeds reverse can be observed. The propeller shaft is shown with a universal joint at each end, a slip joint being assumed.

A LIGHT-WEIGHT "AIR BOTTLE" FROM FRANCE

TIRE pumps appear to be in danger of extinction. For a couple of years racing automobilists in both Europe and America have made use of compressed air tanks for inflation of tires, but the general public has remained true to the pump for want of a safe and practical appliance of the compressed air type.

The Michelin people have just brought out what they name their "air bottle," by means of which inflation, if not simplified, is certainly made less arduous than formerly. A compressed air tank weighing less than nine pounds, containing 450 liters of air compressed to 150 atmospheres, provides inflation for eight to ten large tires with no other labor than turning a tap. A couple of brackets hold the tank to the frame in the same manner as gas tanks so generally used in this country, or it may be kept in a box specially prepared for that purpose.

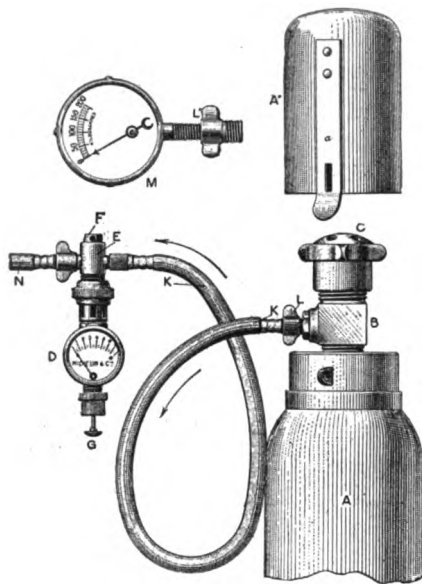


FIG. 1.—Head of bottle, with rubber connection and pressure indicator. Manometer, for measuring quantity of air in tank.

The illustrations of the tank and its component parts are reproduced from the French review, *Omnia*.

Simple as the improvement may appear at first sight, its realization was not possible until enormous progress had been made in metallurgy. As every person is aware who has had occasion to handle them, the compressed air tanks used by tire firms at race meets and other occasions are so heavy as to make their use prohibitive on a car. Nine pounds for 450 liters, or nearly one hundred gallons of air at 150 atmospheres, is a triumph for the metal working industry.

A further difficulty in the use of a compressed air tank was the construction of an automatic outlet. If a pneumatic tire were linked up directly to a tank of air compressed to 150 atmospheres the intruding charge would inevitably cause a blowout, for the pneumatic tire is not made to withstand a pressure of much more than a dozen atmospheres. The outlet, or *détendeur*, as it has been named, needed to be simple in construction in order to be cheaply produced, for half the value of an appliance of this nature lies in its being procurable anywhere and an ubiquitous article must necessarily be sold at a moderate price.

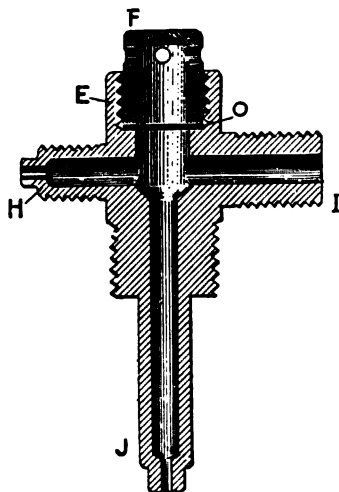


FIG. 2.—Cross section of air outlet, showing safety valve.

is through the two small channels *H*, through *C*, and out by *E*. A very important rôle is played by the small disk *P*, a circular steel plate, slightly cone shaped. If the pressure in the tank is high, the steel disk is flattened against the head of the chamber in which it is lodged, allowing only a small amount of air to filter through. As the pressure in the tank diminishes, the steel disk assumes its normal shape by reason of its elasticity, thus allowing more air to pass through. This arrangement provides for a constant rate of outlet whatever the pressure of the air within the tank, the disk being calculated to allow of the filling of a tire in about three minutes. If the cock were opened suddenly the compressed air would momentarily flatten the disk, allowing only a slight outlet, the right proportion, however, being obtained automatically in a few seconds.

Although a pressure controller is fitted to the apparatus and overcharge could only be possible through carelessness, pro-

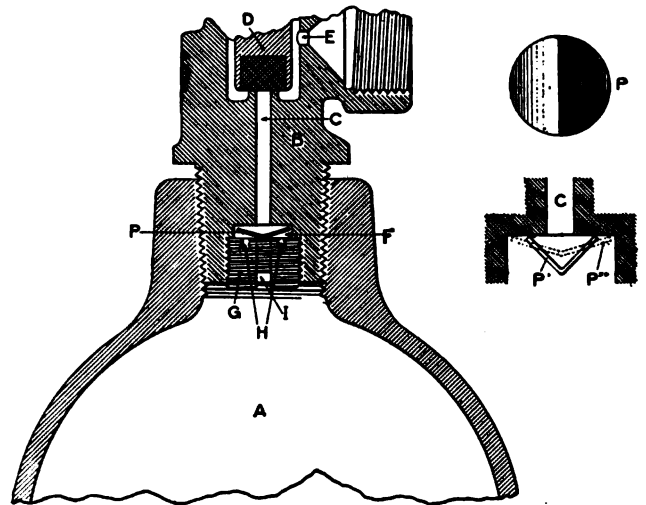


FIG. 3.—Cross of bottle head, showing details of pressure equaliser. Small drawing at right shows equaliser on enlarged scale.

vision has been made for automatically shutting off the flow of air when the pressure within the tire exceeds seventeen pounds. This is provided for by the paper washer *O*, Fig. 2, which will blow out at seventeen pounds pressure, allowing the air to escape through the opening *F*. A new washer can be inserted in a few moments. An independent indicator is provided, *M*, Fig. 1, to be screwed on at *L*, Fig. 1, in order to gauge the contents of the tank. A printed table pasted on the base of the tank indicates how many tires of a given size can be inflated with any given quantity of air.

OBTAINING MAXIMUM MILEAGE FROM TIRES.

Many automobilists, especially those driving heavy cars, make it a rule never to repair an outer shoe, their contention being that the most economical method is to use a tire until it bursts and is incapable of further service. It is certain that many tires are thrown on one side while still capable of giving several hundred miles of service, users declaring that they prefer to lose a little of the life of a tire rather than run it to the last thread and sacrifice an air chamber also. There is no reason, however, why a tire should not be used until the fabric is worn through, for it is rare that it quits active service without giving signs of its approaching demise; and to avoid the loss of an air chamber also, the oldest one should be used in the old casings. As a precaution, any weak places on the interior should be patched, otherwise the tire may suddenly blow out, although no external signs of weakness of the fibers are present.

LETTERS INTERESTING AND INSTRUCTIVE

QUERIES CONCERNING HORSEPOWER, ETC.

Editor THE AUTOMOBILE:

[959.]—Will you kindly give me some information in your "Letters Interesting and Instructive" column?

Horsepower, as I understand it, is a relative term. It may show itself either in speed or in ability to climb hills, depending to a certain extent on gear ratio. In what manner can the ordinary mortal who is not an expert mechanic ascertain whether a certain specified machine, rated at so many horsepower, will have the desired hill-climbing powers? In other words, if one is after a high-powered, low-speed machine, what formula can he follow to know what he is getting before he buys?

Is there any method to test a double Pittsfield coil, to ascertain the amperage that is being used in running the engine?

During a period of eight or ten months my coil was very economical in the use of dry batteries, consuming in that time only three sets, and giving the best of results and satisfaction. The platinum points were then slightly pitted and a friend (?) filed the points, but in so doing must have changed the adjustment or tension of the spring, as the coil has consumed more batteries in the last six weeks or two months than all the time before. Where shall I look for the adjustment, and how shall I make it? TREMBLER.

Walden, N. Y.

Formulae are of little or no value in such a case as this. Why not get into the machine and try it on some of the worst hills in the locality and note its performance? Agents are always willing to demonstrate their cars to the satisfaction of prospective purchasers, and "being shown" is worth more to the "ordinary mortal" than all the figuring; he can possibly do. Take any high-powered modern car, and its hill-climbing capacity is almost entirely a matter of gear ratio. If its owner wishes to be able to climb unusually steep grades without dropping to a lower gear he must naturally sacrifice something of the car's speed on the level. But in choosing a car for hill climbing it is advisable not to gear it too low, as it then becomes necessary to race the engine in order to obtain anything more than a moderate speed on the level.

Take a coil-current tester, or low-reading ammeter, calibrated from 0 to 3 amperes by tenths and insert it in series in the primary of the coil to be tested—that is, connect one terminal of the instrument to the primary terminal of the coil and the other to the battery wire, so that all the current being used by the coil must pass through the ammeter. Start the engine and let it run, meanwhile adjusting the trembler of the coil until the instrument gives as low a reading as possible consistent with regular running of the engine. Do the same with the other coil. Probably the tremblers of your coils have been screwed down so that the current consumption is excessive, as any coil can be adjusted to take 3 to 5 amperes, though when working efficiently it should not require more than .3 to .8 ampere; some coils, however, will not work on less than one ampere or over. The ammeter mentioned can be procured from any supply dealer and is similar to the ordinary battery "tester."

DATA ON FLYWHEELS FOR SIX-CYLINDER MOTOR.

Editor THE AUTOMOBILE:

[960.]—Will you kindly inform me through the columns of "The Automobile" which is the best location for a flywheel on a six-cylinder engine, to give best results, and also about what weight should they be? W. S. REID.

Indianapolis, Ind.

Opinions differ as to what is exactly the best point to place the flywheel on a multi-cylindered engine, considered entirely from a theoretical point of view, but current practice favors the inboard end of the engine owing to the custom of combining the flywheel and clutch. Your second question is rather difficult to answer without other data than the fact that the engine has six cylinders. Its speed and size are somewhat important factors.

EFFECT ON GEAR RATIO OF LARGER WHEELS.

Editor THE AUTOMOBILE:

[961.]—I am an interested reader of "The Automobile," and have derived considerable benefit from the columns devoted to questions and answers, and should appreciate it if you will advise me in regard to the following in your next issue.

I have a 40 horsepower touring car, geared 3 to 1, with 34-inch wheels, and should like to know, in the event of putting on 36-inch wheels, how much higher it would gear the car, and how much speedier it would make it; also, if it would make any appreciable difference in the ability of the car to climb hills, as I do not want to make the change if it is likely to result in the car being weak on stiff grades, such as are encountered in general touring.

New York City.

SUBSCRIBER.

So far as the actual gear ratio of the car is concerned, putting larger wheels on cannot effect this. The road wheels will turn once for every three turns of the motor crankshaft regardless of the size of the driving wheels. To make an alteration in the gear ratio, it will be necessary to change the relative size of the bevel and driven pinions at the rear axle, or the chain sprockets, according to whether the car is double-chain or shaft-driven. Increasing the wheel size has the effect of increasing the gear ratio, of course, as owing to the greater size of the new wheels, the latter can make only .942 revolution in the same time that the 34-inch wheels would make a complete turn, this difference being accounted for by the greater speed attained. As the 34-inch wheel travels approximately 8.9 feet per revolution, at a motor speed of 1,000 r.p.m., it would cover about 2,970 feet per minute on the direct drive, or a little better than 33 miles per hour. The 36-inch wheel covers 9.4 feet per turn or 3,133 feet per minute, making the speed a little over 35 miles per hour at the same number of revolutions per minute. We should think the fitting of the larger wheels would make little appreciable difference in the car's ability to climb hills, particularly in view of the size of the motor, and in any event it cannot make the car *weak* whatever the grade may be. It may necessitate dropping to a lower gear on hills a little oftener than is now the case, but the increase in comfort as well as in the appearance of the car and the greater clearance should more than compensate for this.

IS THE USE OF ACETYLENE GAS DANGEROUS?

Editor THE AUTOMOBILE:

[962.]—Herbert G. Andrews, of the U. S. Title Guaranty & Indemnity Company of Brooklyn, advised us a few days ago at the show that, having read some letters in your paper of April 25 in regard to acetylene gas passing through copper tubes, he had decided not to use any more acetylene, as he was afraid of the danger of explosion. It seems that in a few of the other later papers there were some replies to this original letter, stating that acetylene gas passing through copper tubes was absolutely dangerous. We have never heard of this, and would be glad to have you take the matter up and enlighten your readers one way or the other.

AUTOLYTE MANUFACTURING COMPANY,

New York City.

A. H. Funke, Manager.

"When at the end of last season's use my car was put away, the lamps and generator were removed, leaving the rubber gas tubing which attached the copper tubing to the lamps and generator hanging loose with the ends open. A short time ago when overhauling the car, parts of the copper tubing were found bent in places, and upon taking the copper tubing in my hands to straighten these bends, was very much surprised to hear, as soon as the bending was started, a very considerable explosion and to see flames shoot out at the ends of these tubes. The explosion was nearly as large as a pistol discharge, and of sufficient force to tear loose the section of rubber dangling on the ends and throw it clear across the garage—a distance of 20 or 30 feet.

"There was no fire or open light to ignite any charge of gas that may have remained in the tube during its weeks of idleness, and as can well be imagined, the writer was considerably surprised. On bending the other copper tube leading to the other lamp, the explosion was repeated in exactly the same manner, and it seems quite improbable that the slight bending of the tube could

create sufficient frictional heat to ignite the gas that might have remained in these tubes."

This letter from B. A. Burtiss, Schenectady, N. Y., was published in the issue of *THE AUTOMOBILE* on March 14, 1907, and the letter of April 25, to which you refer, was but one of the many explanations offered by a number of correspondents. The first of these was from F. R. Covert, Hovington, Kan., and was published in the issue of April 11, 1907. It gives a layman's explanation of the phenomenon and is as follows:

"I have experimented to quite an extent with acetylene gas and generators, and find that acetylene gas leaves an explosive deposit on brass, copper and silver, which will explode under very slight friction. This deposit seems to be greatly increased if the generators are overworked, and the hot, freshly generated gas comes in contact with any of these metals. This certainly was the cause of the explosions Mr. Burtiss experienced while bending the copper tubes. The writer was quite badly burned at one time, five or six years ago, while removing a copper spray pipe from a large generator, the deposit igniting and causing the gas to explode, and has since often wondered why generator manufacturers use so much copper and brass under such circumstances."

The letter of April 25 referred to was from L. P. Lowe, San Francisco, Cal., and gave a somewhat fuller explanation of the matter, while a later correspondent, E. T. Senseny, M.D., St. Louis, Mo., gave the chemistry of the phenomenon. His letter follows:

"The accident was caused by the explosion of the cuprous salt of acetylene C_2H_2 , Cu_2O . It is a reddish-brown substance insoluble in water, but dissolves in hydrochloric acid, with the evolution of acetylene. When dry it loses the molecules of water and becomes carbide of copper, C_2Cu , and when dry it explodes violently at $120^\circ F.$, or by friction. (See Keyser, Remsen, Newth on Acetylene and Its Compounds.) Dr. Keyser of Washington University is an authority on this subject."

A more detailed technical explanation of the chemistry of the matter was given by C. J. Frankforter, of Lincoln, Neb., in *THE AUTOMOBILE* of May 16, 1907.

A DISSERTATION ON THE SELDEN PATENT.

Editor *THE AUTOMOBILE*:

[1963.]—If the following contains sufficient of public interest, which I hope you will believe, you may publish it as a donation to public information, and as a tribute of one early inventor to another.

I am minded to take up the cudgels along with the writer in the October 10 issue, upon the Selden controversy. Knowing Selden as I did in 1880-85, at which time I, as well as he, had pursued every patent and important publication in the English language upon gas and steam engines, and road locomotion; I having practical and patent experience, and interested then, as now, both for and against sustaining patent claims.

Previous to this I had heard of a steam buggy at Albany fair about 1865. The first traction farm engine (in this country) was made by my townsmen about 1868, and I had helped to make the first steam wagon, which was used three years, carrying its load and another wagon anywhere.

That the automobile would have come without Selden, and the telephone without Graham Bell, I certainly believe, but that he labored toward its accomplishment with money, experiment and counsel I certainly know, and this was with discouragement and ridicule, as was the case with Edison, Bell (telephone), Goodyear, Howe and others.

Selden then had an engine of Lenoir principle; a two-cycle pump compression engine, and also multiple cylinder engines.

In 1882 I made an indicator, and took with his engine the first indicator diagrams (to the best of my knowledge) ever taken from a gas engine in this country; and these, reaching 225 pounds, were the first definite knowledge of the pressure or action of gas, except that an explosion was supposed to be "destructively and dangerously unmanageable." (Steam practice then was 60 pounds; now it is 100 to 250 pounds.)

This was previous to the blowing up of Rochester's streets by naphtha, and Selden's court testimony thereat, that naphtha would not explode; which evidence included the first public exposition of facts now well known, viz., that only critical mixtures of vapor with air are explosive. This occurred previous to the use of the first engine operated with liquid hydrocarbon; which he then predicted and was experimenting with, being, of course, ridiculed therefor.

One of my own inventions for the then future vehicle I was advised to patent, but believed that the term of my patent would

pass before such development would be realized, which was the case, but which feature was patented by a later inventor (my townsman), and now in general use upon the best cars, to his financial benefit.

The patent law reads that "an application for a patent is a legal reduction to practice," and, as an instance, Bell's crude patent is practically held to cover all transmission of speech by electricity; notwithstanding the fact that it was not operative until made so by others. Whereas Draughbach, who claimed to speak first, was decided against.

It should be remembered that where a patent is valid, that a monopoly to the extent of the patent exists as a matter of right; also that monopolies exercise both a beneficial and non-beneficial influence.

A peculiarity, in contrast to the defense: Mr. Selden does not talk much for publicity, but does his talking before the court; hence his legal success, as well as public obscurity. However interesting to the public, it is established that "pro-publicity loses the respect of the court," and prejudices it against that side of the case.

This, nor any amount of open controversy will not decide such a case, which, like that of Thaw, Haywood, and Bismarck's war problems, will not abide by public demonstrations, theorists, nor effusions of attorneys or elaborations of trials, but will turn upon features, like iron and blood, entirely different from which the valuable counsel laboriously promulgated.

The talk of the dear public, which is always right at first, and most of the way through, to find they were wrong at last, reminds me of Barnum's "The public want to be humbugged," and Prof. Sweet's "Things that are usually wrong" (in "The American Machinist"), and somebody else's adage, "the public knows it all beforehand, and finds it aint so behindhand," or "threshed out in public one way, and found legally to be another."

But it's lots of fun for the dear, fond public, so why stop them?
Syracuse, N. Y. F. R. WILLIAMS.

MAKING BATTERIES IN THE FAR EAST.

Editor *THE AUTOMOBILE*:

[1964.]—It may be of interest to you to know this company has opened up a new industry in the Far East, for the manufacture of a first-class dry battery. The writer is an automobilist and constant reader of your paper, and after experiencing the troubles and tribulations of trying to operate machines in this country with batteries imported from the States, at least three months old to start with, decided him to put in an up-to-date factory and produce fresh dry cells.

The great trouble with the imported (American) cells is caused by sea voyage of 60 to 70 days, the internal consumption being increased by the great heat of the vessel's hold, and such cells seldom give over 15 amperes, and 10 to 12 are the average. We do not allow a cell to go on the market that does not show 25 amperes, and the average is above 27 amperes.

Automobiling is becoming more and more popular, and the demand for good dry cells is constantly increasing. We have a branch in Manila, and are just opening another in Sydney, New South Wales. We have in the city of Manila over 150 automobiles, which, I am sorry to say, are mostly of French manufacture.

ORIENTAL BATTERY COMPANY,

Hong Kong, China.

F. H. THOMPSON, General Manager.

EASE WITH WHICH MACHINES ARE STOLEN.

Editor *THE AUTOMOBILE*:

[1965.]—It might be of some news interest and also put others on the alert to know of my misfortune and afterward good fortune.

On the night of September 25 a thief broke into the garage at this place and took my auto, a Model F Buick. Every effort was exerted to get the machine back, with the result that it was recovered on October 4. It shows how easily a machine can be taken and gotten away without the thief being caught at the time. The machine was taken just twenty-eight miles, left in the timber, and even the farmer on whose place the machine was left knew nothing about it. I have the Buick agency at this place.

Iola, Kan.

P. S. MITCHELL, M.D.

FOR FLORIDIAN WHO WANTS A WIDE GAUGE.

Editor *THE AUTOMOBILE*:

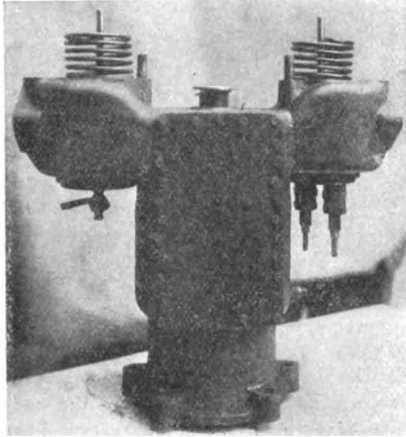
[1966.]—In your issue of October 10 a letter appears, signed T. A. Ansley, inquiring for a runabout built for Florida roads. The Cadillac Company manufactures a runabout with the standard Southern gauge. If he will address the Cook Auto Co., Orlando, Fla., he will be able to obtain all the information he desires on the subject.

R. J. THOMPSON.

Cleveland, O.

CONSTRUCTIONAL DETAILS OF THE ELLSWORTH

IN the course of several years' experience, every autoist, particularly if he be technically skilled, evolves in his own mind the design of a car embodying his own ideas of construction, but it is not given to many to be able to see such an ideal materialized. However, this has been the case with John M.



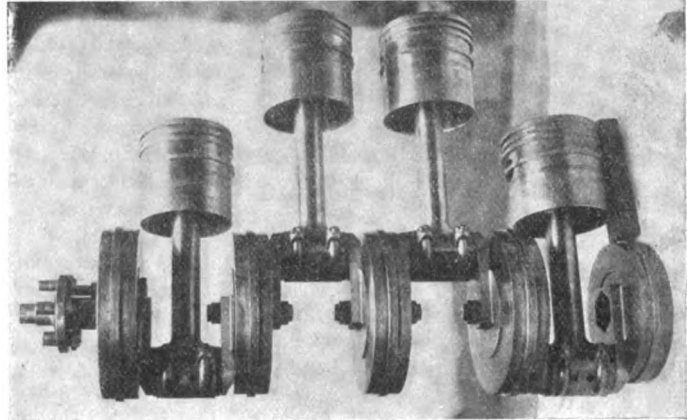
CYLINDER CASTING AND VALVE ASSEMBLY.

Ellsworth, and on that account the new Ellsworth car is unique. Commercialism has been relegated to the background entirely in its design and construction, the prime object of its builder being to see those features that have appealed to him as superior to existing forms perpetuated on a car of his own design. To do this Mr. Ellsworth has established his own shop, employing a large force of skilled workmen, and collaborating with Thomas J. Fay, has turned out a car

which is of far more than passing interest, owing to the many novel features of design and construction that it involves. The materials employed are chrome steel, chrome nickel steel and chrome vanadium steel wherever alloy steels could be utilized, all such parts being in the shape of die forgings.

The motor is of the four-cylinder type, mounted forward and attached directly to the side members of the main frame, no sub-frame being employed. It is placed slightly to the rear of the forward axle, so that the face of the radiator about comes flush with the latter. This not only greatly enhances the appearance of the car as a whole, but places the entire weight between the two axles, in addition to facilitating the steering. That the motor is of the four-cylinder vertical, water-cooled type is the only conventional thing about it, as in practically every other respect it differs considerably from standard practice as represented by current types and involves numerous features of merit which have been very cleverly worked out. For instance, as will be apparent from the accompanying photographs, the cylinders are separately cast with open water-jackets, subsequently closed with light steel plates at either side and screwed on. The valves are oppositely disposed, being located in outboard chambers of the Mercedes type, and are mechanically operated from above by a novel superimposed form of camshaft, completely encased in an aluminum housing, the details of this part of the engine also being well illustrated by the photographs. The rocker

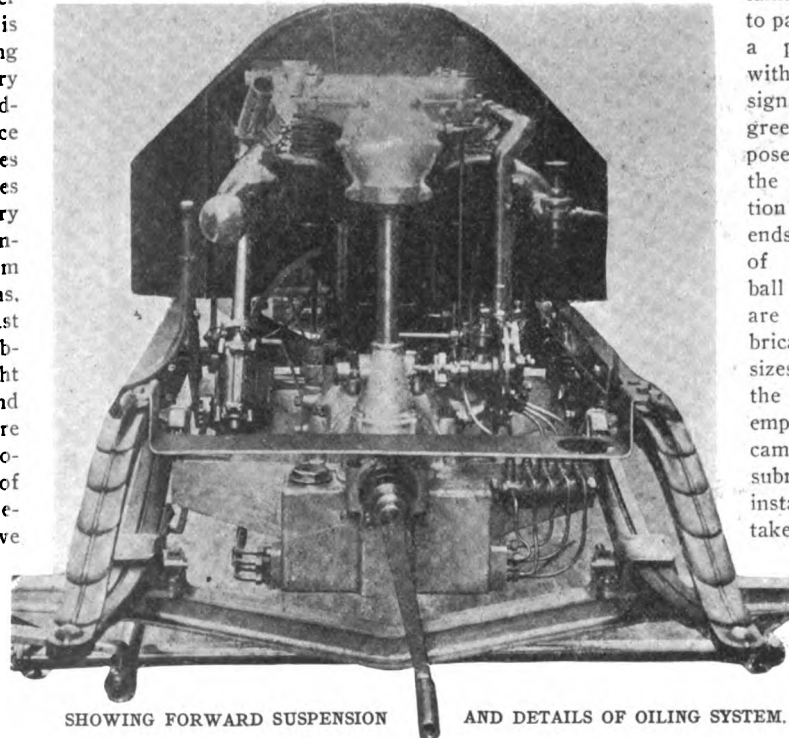
arms are of special design, are made of bronze and work on Hess-Bright ball bearings, which also characterize the majority of the other moving parts of the motor. This is true of the crankshaft, which is of the built-up type, supported on very liberal sized bearings inclosed in special bronze retainers, which house them completely. The camshaft is driven from the crankshaft through a vertical shaft and bevel gearing, placed forward. Such accessories as the oil and water pumps are driven from separate shafts, the latter being located to the right and the former below the vertical shaft mentioned, as will be plain in



BUILT-UP CRANKSHAFT SHOWING LIBERAL SIZE OF BALL-BEARINGS.

the forward view of the motor shown at the bottom of this page. An extension of the camshaft, which is carried through the dash at the rear, is utilized for driving the magneto, which, together with the carbureter, is located in the specially recessed dashboard in a very accessible position. The crankcase is of a special aluminum alloy, which is also true of the remaining housings about the motor, the dash and the gear-case. In fact, throughout every part of the car it has been the aim of the designers' and builders to use only the very finest materials obtainable, the alloy steels having

to pass a flat bending test under a powerful steam hammer without showing the slightest signs of rupture at the 180 degree bend. With the same purpose in view, every bearing on the car, with the single exception of the wrist-pins and big ends of the connecting rods, is of the Hess-Bright annular ball type. All these bearings are housed and separately lubricated, and in every instance sizes considerably in excess of the maker's ratings have been employed. In the case of the camshaft the ball bearings are submerged in oil, and in every instance great pains have been taken to mount these bearings in a manner that marks a considerable advance. On the chrome-nickel steel crankshaft, the design of which is patented by Mr. Ellsworth, the ball bearings are fit-

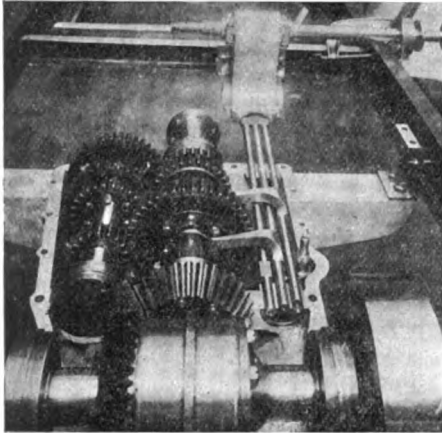


SHOWING FORWARD SUSPENSION

AND DETAILS OF OILING SYSTEM.

ted directly to the crank members without the intervention of any packing member and are inclosed in special bronze housings.

Though the placing of the motor accessories such as the carbureter and magneto will seem strange at first, it is doubtless the experience of every autoist that protection against the elements



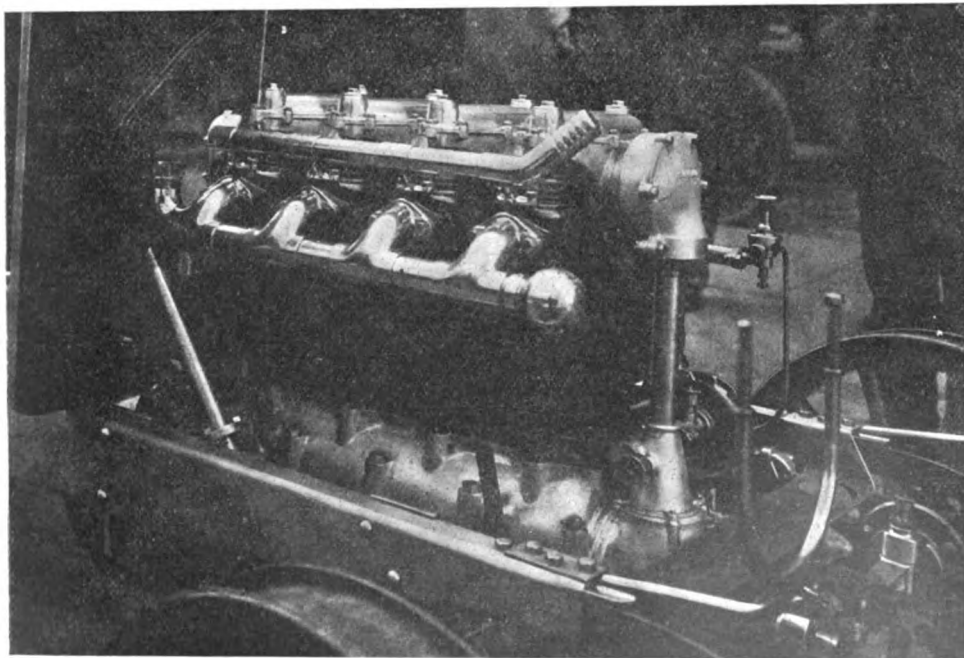
CHANGE-SPEED GEAR AND DIFFERENTIAL.

is an essential thing in their case, and the dashboard location combines this with accessibility.

The low-tension timer for the battery side of the ignition system is also located in the same place, and it will be noted that the duplicate spark plugs are set in the under side of the inlet valve. The design of the inlet manifold is particularly noteworthy as representing such a departure from current practice.

But the features of interest of the new Ellsworth are not confined to the motor by any means. The clutch is of a special type evolved by Messrs. Ellsworth and Fay and on which they have taken out patents. It consists of a hardened drum attached to the driven shaft and a spiral band made fast to the driving member, so arranged as to be constricted at will. This drum is tapered, as is also true of the spiral band, the whip end of the latter being pinched between the drum and the housing. The result is that the band constricts automatically when its other end is held as the motor tends to wind it up on the drum. Chrome nickel steel is used throughout in its construction, and the clutch as a whole runs in oil, so that it can be made to slip at will, or hold as tightly as if the shaft were a single piece of metal.

The change-speed gear is of the sliding type, giving four speeds forward and reverse by the usual method of selective operation, and, as in the motor, special pains have been taken with the mounting of the bearings, which are all of the annular ball type, while the shafts and pinions are of the finest alloy steel. The gear-set and differential are inclosed in the same aluminum



NOVEL INTAKE MANIFOLD, SIDE VIEW OF CAMSHAFT DRIVE AND WATER CONNECTION.

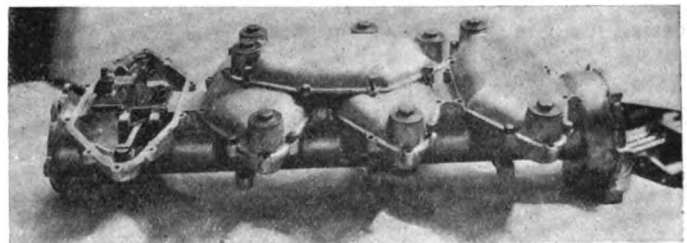
housing, final drive being by means of side chains, though it is the intention of the builders to construct a shaft-driven type of car for those who prefer it. The braking system is of especial interest, as in addition to the regular differential and emergency brakes the car is equipped with an auxiliary differential brake. All the brake drums are of special steel and are of unusually liberal proportions. The surfaces are heat treated to make them more durable, while the bands are of special steel lined with pure annealed copper, ingenious and simple means for making adjustments being provided and also for equalizing, which is effected



BALL-BEARING BRONZE ROCKER ARMS WHICH ACTUATE THE VALVES.

without the introduction of an inertia component, such as a heavy cross bar or similar means.

The chassis suspension consists of full elliptic springs in the rear, with three-quarter elliptics in front, but the latter are of unusual design in that their ends are riveted directly to the ends of the frame without the use of dumb irons or shackles. They



ALUMINUM HOUSING FOR CAMSHAFT AND ROCKER-ARMS.

are of Krupp alloy steel and are made without any joints. The steering gear has been constructed throughout of similar material, and great pains have been taken to make it absolutely proof against breakdown. Considerable ingenuity is revealed in the design of the control, which consists of four small bronze levers

with finger ends. These levers pass through racks in a housing located directly beneath the mahogany trimmed steering wheel, and do not rotate with it. They may be operated by either hand at will and are so located with regard to the wheel rim that they can be used without removing the hand from its accustomed position. Speaking of the steering gear, every part of this, such as the lever arms, connecting rods and the like, are all of chrome nickel steel, the cross rod being made of a solid bar of this material accurately drilled out. It is absolutely free from uncertain joints or fastenings, but, despite its alloy-steel, jointless construction, safety devices are provided in addition, and the makers feel quite certain that nothing has been left undone to evolve a steering gear that shall be as safe and reliable under all conditions as it is possible to build. The result of using alloy steels is manifest in the low weight of 1,900 pounds.

AMONG THE BUSY CLUBS OF AUTODOM

ST. PAUL'S CLUB IS GROWING AND PROSPEROUS.

ST. PAUL, MINN., Nov. 11.—Perhaps the most enthusiastic meeting in the history of the St. Paul Automobile Club was the annual meeting held on Monday of last week at the rooms of the Commercial Club, when officers were elected for the ensuing year, and plans for the future of the organization, especially those pertaining to the new clubhouse, were discussed. The building committee reported that the clubrooms are about ready and will be turned over to the club next week. The rooms will not be ready for occupancy for some little time yet, as the decorating has not yet been done, nor is the furniture ready. The furniture has been contracted for, however, and so has the heating. The lighting contract has not yet been awarded. The furniture will be mostly of the mission style. The club is planning to hold a formal house-warming towards the latter part of December, or as soon as the clubrooms have been entirely decorated and furnished. In March the State Association will hold its annual meeting in the St. Paul clubrooms, and it is planned to make this a notable function.

H. S. Johnson, the secretary, who has been one of the most persistent workers in behalf of the club, will probably have a paid assistant to help him with his work and take charge of the building as soon as the club moves to its new quarters. The treasurer reported that there is about \$2,000 in the treasury, \$1,000 having been made on the race meet held last summer. The secretary reported that there are now 140 members in the club, against eleven at this time last year.

The following officers were elected: President, Reuben Warner; vice-president, R. M. Neely; secretary, H. S. Johnson; treasurer, W. O. Washburn; board of directors, Oscar L. Taylor, F. B. Lynch, T. W. Ingersoll, and W. R. Edwards.

Plans are being formulated for an automobile day during the convention of the Mystic Shriners in St. Paul next July, and for a race meet at the State fair grounds.

HARRISBURG PLANNING 1908 ENDURANCE RUN.

HARRISBURG, PA., Nov. 11.—Plans for the annual endurance run of the Motor Club of Harrisburg, which will be held early next May, are now being made by the contest committee. Three routes have been mentioned, but the one leading to Baltimore via Hagerstown, with the return via York and Lancaster, seems to be the favorite. The second route mentioned is to Philadelphia via Allentown, while the third leads through the coal regions with the night stop at Wilkes-Barre. Many cars are expected to be entered in the contest, which will be made much stricter than last year in order to prevent any abundance of perfect scores. The four cars tied for the touring car trophy last year will enter the next contest as competitors for both the 1907 and 1908 trophies. R. H. Johnston, of New York, will likely act as referee for the run.

Active steps taken by the Motor Club of Harrisburg for the betterment of roads in the vicinity of the Capital City of Pennsylvania has led to operations on three country roads and plans for the building of a five-mile boulevard along the Susquehanna river, just north of the city.

The Motor Club has appropriated a sum of money to pay off part of the debt on the Fort Hunter turnpike with a view of converting the road into a sixty-foot wide boulevard.

WILKINSBURG CLUB HOLDS ANNUAL ELECTION.

WILKINSBURG, PA., Nov. 11.—The annual election of the Wilkinsburg Automobile Club resulted in choosing the following board of officers for the ensuing year: President, Dr. W. R. Stephens; vice-president, S. L. Smith; secretary and treasurer, Dr. W. C. Cook.

SUCCESS ASSURED FOR THE NEW JERSEY RUN.

NEWARK, N. J., Nov. 11.—Conducted on lines entirely different from those that have been customary in previous events of a like nature, the 24-hour endurance run of the New Jersey Automobile and Motor Club, which will be held on Friday and Saturday of the present week, November 15-16, promises to be a great success. Over twenty entries have been received to date and more are promised. The contest will be a road test, the contestants being required to traverse a circuit five times, going through Newark, Bloomfield, Glen Ridge, Montclair, Verona, Caldwell, Pine Brook, Parsippany, Rockaway, Dover, Kenil, Morristown, Bernardsville, Far Hills, Bedminster, Somerville, Bound Brook, Dunellen, Plainfield, Scotch Plains, Springfield and Irvington. The single circuit is about ninety miles in length.

The competing cars will start from the clubhouse, 1034 Broad street, Newark, between 2 and 3 o'clock Friday afternoon. Contestants are limited to members of the club, and a silver cup will be awarded to each competitor finishing with a perfect score. Each car will carry an official observer and its full complement of passengers. Traffic regulations must be strictly observed. A system of penalizations has been provided for, including a loss of two points for arriving at a control either three minutes before or after the scheduled time, and a loss of four points for stopping the motor to make repairs. There will be no class division, all cars, irrespective of horsepower or selling price, being eligible. The race committee in charge of the event consists of W. C. Shanley, N. B. Niblette, J. H. Wood, Paul E. Heller, L. T. Wiss, F. A. Croselmir and H. A. Bunnell.

The first issue of the *Motor Record*, the official organ of the New Jersey Automobile and Motor Club, has made its appearance. William S. Thomas, a well-known Newark newspaper man, is responsible for the appearance of the *Record*, which is well printed and newsy, and will go to every member of the club, which now has some 800 members.

VISITING AUTOISTS HAVE 48 HOURS IN PHILA.

PHILADELPHIA, Nov. 11.—The Automobile Club of Philadelphia is notifying its members of the recent announcement of the Director of Public Safety that he intends to enforce the State ordinance requiring drivers of automobiles in Philadelphia to obtain a license from his department. This license is obtained at the Bureau of Boiler Inspection at a cost of \$2 for the first year and \$1 for renewals for each succeeding year. Visiting autoists from other cities are given forty-eight hours grace while in Philadelphia. There has been much opposition expressed by Quaker City autoists to the special tax imposed by the city, and its enforcement will undoubtedly prove a very unpopular measure. Far seeing automobilists hope its enforcement will result in its

The club committee on routes and sign posts has arranged for the erection of numerous signs at different points and also have signs bearing the words "Blow Your Horn" for cross roads which the local authorities deem dangerous. The State law provides that a gong or other alarm shall be sounded when approaching any street or road crossing.

NEW CLUB IS ORGANIZED AT JOHNSTOWN, PA.

JOHNSTOWN, PA., Nov. 11.—This city now has a full-fledged auto organization, known as the Johnstown Automobile Club. The movement for the club's organization was started some time ago, and culminated in meeting for organization, at which the following board of officers were elected: President, Charles S. Price; vice-president, W. F. Murdock; secretary, Walter Dowling; treasurer, John L. Stibich; board of trustees, J. Leon Replogle, Dr. Francis Schill, Jr., and F. B. Cook. The members of the new organization are very enthusiastic over the pros-

pects and will at once establish a permanent headquarters. The club will undoubtedly become a member of the Pennsylvania Motor Federation in the near future.

CINCINNATI'S CLUB HAS AN ORGAN.

CINCINNATI, NOV. 11.—The first number of the Automobile Club of Cincinnati *Bulletin* has made its appearance, and contains some interesting statistics which show that a very large proportion of the autoists of this city belong to the organization. There have been issued since the first of the year 750 license tags to automobile users in Cincinnati, and as the club has a membership of 230 it will be seen that almost one-third of the automobile owners in the city are club members. The report of the sign-board committee of the club shows that during the past season 148 signs have been erected on the roads in the vicinity.

ANNUAL CLIMB OF RHODE ISLAND A. C., NOV. 16.

PROVIDENCE, R. I., NOV. 11.—The annual hill climb of the Rhode Island Automobile Club for the Prescott Knight trophy will take place Saturday next on the hill leading to the residence of the donor at Riverpoint. The Knight cup has been won twice by L. F. N. Baldwin, and should he be successful again on Saturday, the trophy will become his permanent property. Eugene M. Swain is chairman of the committee having the event in charge.

AURORA AUTOISTS WANT CLUBHOUSE.

AURORA, ILL., NOV. 11.—There is well authenticated talk among the members of the Aurora Automobile Club in favor of a clubhouse, and as soon as a suitable location can be secured a house will be leased and furnished. The Aurora club is growing fast and the necessity for new quarters is becoming more than ever apparent.

ROAD WEARING OBSERVATIONS OF AN AUTOIST.

Angus Sinclair, president of the New Jersey Automobile and Motor Club, tells, in the club's official organ, *The Motor Record*, of his experiments in the matter of alleged damage to roads by automobiles:

When a fast-running automobile is seen rushing along in a cloud of dust, the beholder naturally receives the impression that the car is carrying with it a considerable portion of the roadway material, and that a succession of cars would quickly sweep bare the surface of the highway. This is the superficial impression, and it has given rise to persistent lamentations concerning the destructive action of automobiles in disturbing the materials which bind the surface of macadam roads together. Things are not always what they seem, as every engineer and investigator finds out many times, so moved by knowledge of mistakes being made through superficial impressions, I determined to make some tests to ascertain with some exactness how much the surface of the roadway is moved by passing vehicles.

Some portions of the main road leading from Springfield towards Scotch Plains have the surface badly attenuated by the action of horses' feet, and the individual stones stand out like blunt spurs or short harrow teeth. Last September during a dry time I collected about one hundred pounds of road dust and spread it over part of one of these bare spots and watched results. I examined the place every third or fourth day, and at the end of eleven days could distinguish no particular difference. On the twelfth day after the experiment began there was a heavy shower of rain. Having been caught in the shower near the scene of my experiment, I proceeded to the spot to examine the effects of the rain, and found that numerous miniature river beds had been cut through the dust covering. When the surface dried the covering scattered flat again, but it had become decidedly thinner. About a week later there was a severe rain storm, and when I ventured the trip to examine my road covering, all traces of my labor had been obliterated.

From constant observations of the Munn avenue, East Orange, road surface, which was covered with a dust-preventative material some months ago, I am persuaded that the real need for the preservation of our roads is a surface covering that will prevent the rain from washing away the binding material.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Nov. 16-23.....—Baltimore, Third Annual Automobile Exhibition, Automobile Dealers' Association. B. R. Johnson, manager, Piper Building.
- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 9-14.....—Detroit, Riverview Park Auditorium, Detroit Automobile Dealers' Association. LeRoy Pelletier, manager.
- Dec. 9-14.....—San Francisco, Coliseum, First Annual Automobile Show, Automobile Dealers of California. N. R. Cooper, manager.
- Dec. 14-21.....—St. Louis, Mo., Jai Alai Building, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association. D. M. Strauss, manager.
- Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, manager.
- Feb. 10-15.....—Detroit, Light Guard Armory, Tri-State Automobile and Sporting Goods Association, Seventh Annual Show.
- Mar. 7-14.....—Boston, Mechanics' Building and Horticultural Hall, Boston Automobile Dealers' Association. Chester I. Campbell, manager, 5 Park Square.
- Mar. 9-14.....—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dai H. Lewis, manager.
- Mar. 21-28.....—Toronto, Canada, St. Lawrence Arena, Automobile Show. R. M. Jaffray, manager.
- Apr. 5-12.....—Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Motor Boat Shows.

- Dec. 7-14.....—New York City, Grand Central Palace, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 1-8.....—Chicago, Coliseum, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 25-Feb. 1.—Boston, Mechanics' Building, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Feb. 3-8.....—Buffalo, Convention Hall, First Annual Power Boat and Sportsman's Show, auspices of Buffalo Launch Club. Dai H. Lewis, manager.
- Feb. 20-Mar. 7.—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsman's Show.

Races, Hill-Climbs, Etc.

- Nov. 15-16.....—Newark, N. J., 24-hour Endurance Run, Automobile Club of New Jersey.
- Nov. 16.....—Providence, Annual Hill Climb, Rhode Island Automobile Club.
- Nov. 26-28.....—Chicago, Three-day 600-mile Reliability Race, Chicago Motor Club.

FOREIGN.

Shows.

- Nov. 12-Dec. 1.—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
- Nov. 22-30.....—London, Agricultural Hall, Stanley Show.
- Dec. 5-22.....—Berlin, Germany, Automobile Show.
- Dec. 21-Jan. 2.—Brussels, Show, Palace of the Cinquantenaire.
- Jan. 18-Feb. 2, '08—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.
- Mar. 21-28.....—London, Agricultural Hall, Cordingley's Show.

Races, Hill-Climbs, Etc.

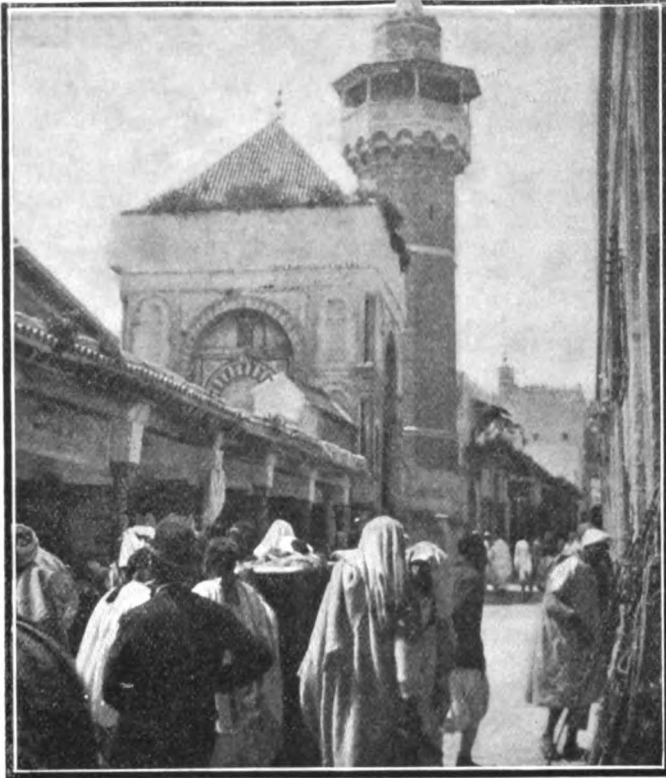
- Dec. 8.....—Paris, Straightaway Aeroplane Speed Test, auspices of "L'Auto."
- Dec. 13.....—Paris, Competition for Agricultural Automobiles, auspices of "L'Auto."
- May 12, 1908....—Sicily, Targa Florio, Automobile Club of Italy.
- June 20-July 5.—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
- August, 1908....—France, Coupe de la Presse, Automobile Club of France. (Exact date to be announced.)

Autoing in Northern

PART III

Africa:

TUNIS, CARTHAGE and
EASTERN TUNISIA
By C. H. Jones



IN ONE OF THE PRINCIPAL STREETS OF TUNIS.

THE city of Tunis is less attractively located than Algiers. Low-lying on a deep inlet of the sea known as the Lake of Tunis, even its "casbah" or citadel, which stands on the highest land within its limits, is hardly distinguishable from the hovering mass of buildings when the city is viewed from a distance. Yet for the visitor from America or Europe it possesses more of interest. In the first place, it is less Franch and more Oriental. The Arab city within the old walls has wisely been left almost intact, while the foreign quarter has been built outside the walls, mostly on the made land redeemed from the swamp that formerly extended from the city walls to the water's edge of the "lake." In the second place, the native life and customs have been less interfered with. Equally effective in essentials, the French domination is less obvious and pervasive here than in Algiers. As soon as he steps from the hotel into the street, the visitor can feel no doubt that he is in the real East. In the passing throng, giving it its distinctive character, are Arabs and Barbères, Bedouins from the desert, negroes black as ebony and clothed in gorgeous colors, women swathed in white but with faces veiled in black (these are the Arab women), others in white silk and unveiled (these are Jewesses). If he enters the old Arab city he finds bazars (called "souks"), smaller but nearly as interesting as those of Constantinople or Cairo—the perfumers, the jewelers, the tailors, the carpet merchants, the shoemakers, the sellers of dry-goods, the silk-weavers, the blacksmiths, the brassware merchants, each trade in its own "souk," yet all grouped together in a wonderful tangle of intersecting alleys or arcades; the shops, about as large as a hall bedroom at home, but crowded with workers

and tradesmen. If he walks the narrow thoroughfares leading from the gates in the old city wall, he is jostled by a motley crowd that will remind him of the changes in a keleidoscope.

In its history Tunis reaches back into the twilight of antiquity, and, unlike its more famous neighbor, Carthage, it has been continuously a more or less prosperous city ever since it was settled by the Phœnicians, about 860 B. C.

There are four garages, of which one is spacious and well equipped, and a still more spacious one is nearly completed. Tires and other usual auto supplies may be obtained at these garages at slightly enhanced prices, and by telegraphing almost anything may be had from Paris in four or five days. The usual price of gasoline is 60 centimes per liter, but it may be bought at 50 centimes, the same as in Algiers. In all respects Tunis is most attractive for a stay and as a center for automobile excursions, the first of which will pretty certainly be to Carthage.

Fêtes at Carthage, "the City That Is No More."

With all who are even superficially acquainted with history there is no name save Rome that wakes such an echo in the imagination as that of Carthage. And the fate that anciently befell the two rivals still persists. Rome remains, and promises to remain, the "Eternal City." "Carthage is no more." Every visitor to Tunis who learns that he is so near the site of Carthage is eager to go there. But disappointment awaits him. To the casual observation the only conspicuous object that now marks the site is the painfully new and modern-looking Cathedral of St. Louis, which surmounts the summit of the Byrsa, where stood the citadel of both Punic and Roman Carthage. Of the ancient mistress of the Mediterranean there are fewer and less striking remains than of many a fifth-rate city whose ruins still serve to remind us of the Roman dominion in Africa.

The site of Carthage—there is not even a village there now—is 16 kilometers from Tunis by an excellent macadamized road. From Tunis itself and all along the road the white mass of the Cathedral of St. Louis catches the eye, and on arriving the first impulse is to climb the hill on which it stands.

The best preserved of its ruins is the ancient Roman Theater, and here "a fête antique" took place on April 3 at which our party was fortunate enough to be present.

Some Seaside Resorts "Around the Lake."

As already explained, the city of Tunis is not situated on the sea, or even on the Gulf of Tunis, but on the inner curve of a nearly land-locked bay, known locally as El Bahira, or the Lake of Tunis. It is a very shallow body of water, through which the Canal of Tunis has been constructed to the entrance of the Gulf at La Goulette, thus making a seaport of Tunis. A pleasant morning or afternoon excursion may be made by circling the lake and visiting interesting places near its shores.

One afternoon about 2 o'clock we left Tunis by the Avenue de Paris and turning to the right just before reaching the Belvedere, the pretty park of Tunis skirted the northern shore of the lake to La Marsa (20 kilometers). La Marsa stands on the site of ancient Megara, which was part of Punic and Roman Carthage, but it is now simply a pretty seaside resort, with many villas set in gardens and the favorite residence of the present Bey of Tunis. About two miles beyond is Sidi-bou-Said, the summit of Cape Carthage and extending down the steep slope to the sea. Its houses are all whitewashed, and from sea or land it is perhaps the most conspicuous landmark near Tunis. The lighthouse here, built on a Roman foundation, towers 440 feet above the sea, and the tomb of the saint for whom the town is named is so venerated that it is an object of Mussulman pilgrimage from all parts of North Africa.

Returning to La Marsa from Sidi-bou-Said, we turned eastward and by a road passing the foot of the hill of Carthage soon reached and traversed the frequented seaside resorts of Khéredine and La Kram, containing a spacious casino and numerous detached villas that are occupied in summer by wealthy Tunisians. Next comes La Goulette, formerly the port of Tunis, but

deprived of its commercial importance by the construction of the ship canal and harbor of Tunis. Nearly every building in it was constructed with stones taken from the ruins of Carthage. Here we crossed the canal on a primitive looking ferryboat and proceeded over a sort of dyke or causeway 10 kilometers to Radès, situated between the Lake of Tunis and the sea and a favorite summer resort of the French residents of Tunis.

Some ten kilometers east of Radès by a rather rough road, situated directly on the shore of the Gulf of Tunis, is Hammam Lif, the most frequented bathing resort in Algeria or Tunisia. The sea bathing on a very fine sandy beach attracts summer visitors in large numbers, and the hot springs draw winter visitors. From Hammam Lif an excellent road, diverging to the left just where the road from Radès enters the town, leads in 16 kilometers direct to Tunis, which we reached about 6 P. M. The total distance was about 65 kilometers (40 1-2 miles).

A Peep at Bizerte, the Rival of Gib.

A whole day should be given to the excursion to Bizerte, and if the weather is favorable, and if the fields are carpeted as when we made it with the marvelous variety of spring wild flowers that abound in North Africa, the day will prove an enjoyable one.

There are two routes to Bizerte. For the direct and better one we left Tunis by the gate Bab Bou Saadoun, followed the tramway to the Bardo (3 kilometers), and there, at the fork of the road, took the one to the right. From the Bardo to the hamlet of La Sebalah (15 kilometers from Tunis) the road passes through olive plantations and then through a well cultivated but very sparsely populated region almost due northeast. At 30 kilometers the road climbs and then descends a long, low hill, notable as the site of ancient Utica, which was a flourishing Phœnician colony before Tunis and Carthage were founded, but of which the only vestiges that now remain are scarcely traceable ruins of the theater, amphitheater, and a Carthaginian palace. A large modern farm and a small Arab village occupy part of the site. Just beyond kilometer post 25, at the hamlet of Protville, the river Medjerda, the largest in Tunisia, is crossed on a stone bridge, the roadway of which is in very bad condition, threatening to tires.

As far as kilometer post 29 the road between Tunis and Bizerte is uneven—good in spots and bad for equal distances. Then it improves and is very good for the rest of the way to Bizerte. Eight kilometers beyond Utica, at kilometer post 38, the road forks. The straight road leads to Porto Farina, once the chief naval port of Tunis, now noted only for its extensive fisheries. A road thence leads up the coast to Bizerte. The left fork is the direct road to Bizerte, which by this route is 63 kilometers from Tunis.

Bizerte is, next to Toulon, the most important naval station of France in the Mediterranean. It was planned with a view to neutralizing the importance of Gibraltar, and has done so.

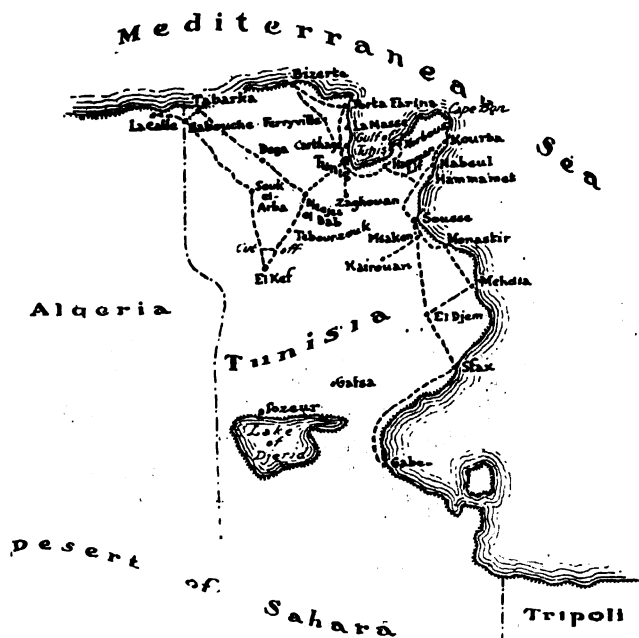
We were surprised to find at Bizerte a large and good hotel (the Grand), connected with which is a garage where gasoline may be had for 60 centimes per liter (48 cents a gallon). The new town, or foreign quarter, is well built in the modern French style, but the old Arab village is more interesting to the visitor. We passed through its narrow streets on our way to the Corniche Road, as the drive of 20 kilometers around Cape Bizerte is called. The drive borders the sea for most of the distance, and after it turns inland affords interesting rear and interior views of some of the powerful sea batteries.

The return journey to Tunis may be made via Mateur and Tebourka, but it is much longer (116 kilometers) and we could not learn that it offers anything of interest en route. We preferred to leave the Mateur route by a road that turns off to the left just beyond kilometer post number 8. This took us through Ferryville and almost completely encircled the Lake of Bizerte, enabling us to see what a spacious harbor it affords. We rejoined the direct route near kilometer post 41, and turning to the right, reached Tunis at sunset.

Bizerte is almost due north of Tunis. Zaghouan lies due south, at a distance of 52 kilometers by the most direct route via La Mohammédia. The road was in very bad condition when we made the excursion on April 20, and there is little of interest en route. La Mohammédia (14 kilometers), now a vast ruin or collection of ruins, was a country residence built by Ahmed Bey, containing accommodations for his entire court, with quarters for 15,000 soldiers, and surrounded by a fortified wall. On his death it was abandoned by his successor and the natives plundered and partly demolished it. Just beyond kilometer post 17 the road runs close beside the impressive ruins of the ancient Roman aqueduct that conveyed water from the mountains near Zaghouan to Carthage and Tunis, and crosses a stream on a stone bridge whose piers were those of the aqueduct.

Southward to Carthage's Water Source 1,900 Years Ago.

Zaghouan itself, standing on the site of a Roman town whose name is unknown and of which only a triumphal arch remains, is a dirty village of about 2,000 inhabitants, mostly Arabs, but surrounded by gardens of flowers and fruit trees. What makes it worth a visit is the great spring which gushes forth at the



MAP OF TUNIS SHOWING ROUTE TO THE GREAT DESERT.

foot of the Djebel (Mount) Zaghouan, about a mile and a half from the village. This spring supplied Carthage with water 1,900 years ago, as it now supplies modern Tunis and the towns near the site of Carthage.

The return journey to Tunis may be made via Sainte Marie-du-Zit and Cretéville, the route being somewhat longer (73 kilometers), but more picturesque, with steep ascents and descents through the mountains near Sainte Marie-du-Zit and a winding road along the valley of Mornag.

We made the excursion across Cape Bon to Nabeul one afternoon, starting about 2:30 P. M., but if we had had any correct idea of the distance we should assuredly have allowed ourselves more time. The misinformation on the strength of which we started affords a good illustration of the difficulties automobilists encounter here in the effort to obtain exact facts even about comparatively nearby places. Nothing helpful regarding distances could be found in the books, and when we asked at the hotel we were told that Nabeul was "about twice as far as Hammam Lif," through which we pass in going there. This would have made the distance to Nabeul 32 kilometers, and the total distance there and back 64 kilometers. We learned by experience that the distance to Nabeul is 79 kilometers and the round trip there and back 158 kilometers, a difference which might have cost us dear, for we started with insufficient gasoline for such a trip. Fortunately we found that the hotel at Nabeul

keeps a supply, which was not only salvation for us, but shows how great a change has recently occurred in this respect. Three years ago gasoline could be obtained in Tunisia and Algeria only in the half-dozen larger cities. Now it is found for sale even in a small town like Nabeul remote from any highway of travel, and at a price slightly less than that charged in Tunis.

The road to Nabeul is good all the way except a few kilometers where the roadmenders were getting ready for repairs. From Hammam Lif it runs directly across the base of Cape Bon, passing a few meager villages, of which Grombalia (37 kilometers from Tunis) is the most important. Just beyond kilometer post 60, after climbing a low hill, we came in sight of the sea—the Eastern Mediterranean that stretches away to the shores of Asia Minor. To the left, in the distance, nestling on the shore and gleaming white in strong sunlight, lay Hammamet, a pretty summer resort that is becoming popular with Tunisians. Turning sharply to the left at kilometer post 61, we skirted Hammamet without entering the town, and after a swift run of 11 kilometers reached Nabeul, the ancient Neapolis. Nabeul is noted for the native pottery made there and for the perfumes which are distilled from the roses, geraniums, jessamine and orange flowers that grow in the gardens by which the town is surrounded. The climate is exceptionally mild, and Nabeul is becoming known as a health resort for both summer and winter visitors.

Beyond Nabeul the road continues north and is good as far as Kourba, the ancient Colony Tulio. Farther north still are Menzel and Kelibia (ancient Clypea), and then comes Cape Bon, the northern tip of Africa. In Roman times this whole peninsula of Cape Bon was densely populated, and ruins abound everywhere. Some of these would no doubt reward excavation. Our excursion ended at Nabeul, and in spite of swift running darkness overtook us before we reached Tunis.

Remote Tunisian Roads Shame Those of America.

The excursion to Sousse, Sfax and Gabès is by far the most important and most interesting that can be made from Tunis. To do it justice requires from five to seven days, and the longer time may be spent profitably. Our party gave eight days to it in all, and made two separate attempts. The first time we went to Sousse and Kairouan and were driven back by a spell of bad weather that lasted two weeks. When the weather settled we went all the way to Gabès and back, making the trip in five days.

The road is the best leading out of Tunis; with the exception of about 15 kilometers, throughout the entire distance to Gabès (405 kilometers, 253 miles), it is excellent. In fact, one of the marvels of the trip is to find here in remote Africa, in a country for the most part sparsely populated, 250 miles of road far better than any similar length of road in the entire United States—a road upon which work is constantly going on and which is kept in better condition than the drives of Central Park.

As far as kilometer post 61, where the turn-off is made to Hammamet and Nabeul, the route is the same as the preceding. For 25 kilometers beyond the fork, and in fact nearly all the way to Sousse, the road runs close along the margin of the sea, through a country perfectly level and mostly devoted to farming. Eufidaville (96 miles from Tunis) is a flourishing European colony, interesting because it is the center of a property of 300,000 acres, a quarrel concerning which between a French company and the natives led to the French occupation of Tunisia.

Sousse (140 kilometers) is a very attractive little city, with several hotels in the European quarter, one of which (the Grand) is quite good, and a garage and repair shop where gasoline can be had at 60 centimes per liter.

Kairouan, the Sacred City on the Plain.

At the Arab village of M'Saken, 15 kilometers beyond Sousse, a road diverges to the right from the main highway and leads in 46 kilometers to Kairouan. The road is good for most of the distance, but in places extremely bad; and when we made the journey on April 13 it was at its worst, because of repairs in progress and because of a tropical storm which burst upon us



AVENUE JULES FERRY—ONE OF TUNIS' BEST STREETS.

on our way back to Sousse, converting a portion of the road into a soft, spongy swamp, well nigh impassable, and making of every depression in the roadbed a pool of muddy water.

Kairouan is one of the sacred cities of the Mohammedan world, and like Mecca is an object of pilgrimage to the faithful. As we approached it across the level plain it lifted in the air like a mirage, with minarets and domes defined against a murky sky-line, and its walls and buildings looking white and phantom-like under the cloudy heavens. It was founded in 670 by the conqueror and saint, Sidi Okba, whose tomb we had visited near Biskra, and the site selected is said to have been a dense forest infested with serpents and wild beasts, which were driven out by a miracle. It has remained until now almost exclusively a native city, with scarcely 200 foreign residents, and because of this it is peculiarly interesting. Another source of interest is that it has the finest mosques in Tunisia or Algeria, and these are the only mosques in Tunisia that can be visited by Christians or Jews.

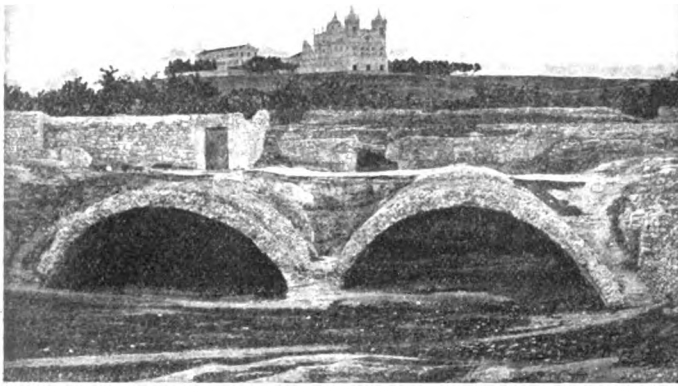
The "souks" or native shops offer little of interest after those of Tunis, but are wholly native. The Hotel Splendide, outside the walls, has a garage at which gasoline is sold at 70 centimes per liter (about 56 cents a gallon).

More First Century Ruins in Trip to Sfax and Gabès.

The road from Sousse to Sfax (130 kilometers) is excellent for automobiling and leads through one of the richest farming regions of Tunisia, where vast quantities of wheat are grown with the scant yield of about 8 bushels to the acre, and where extensive olive plantations are seen at frequent intervals. The only object of special interest en route is the Coliseum of El Djem (64 kilometers from Sousse), and that is of very great interest, for it is one of the finest Roman ruins in existence. El Djem is a squalid Arab village standing on the site of the



PERFORMANCE IN THE ANCIENT CARTHAGINIAN THEATER.



ANCIENT CISTERN AND MODERN CHURCH AT CARTHAGE.

ancient Roman city of Thysdrus, of which not a visible vestige remains save this wonderful amphitheater towering massive and solitary above the plain. The Coliseum dates from the time of the Emperor Gordian the Elder, whose reign began in 236 A. D. Its greater axis is 489 feet and its smaller 407 feet. Its circumference exceeds 1,200 feet, and it could seat 60,000 spectators. Its state of preservation is about the same as that of Rome's Coliseum, although it was used by the Arabs for centuries as a fortress and in later times as a quarry from which columns and blocks of stone were carried off for the building of bridges and houses. When the time comes for excavating the site of ancient Thysdrus it is probable that other interesting ruins will be found, but none to compare in majesty with this gigantic monument of a city that must have been both rich and populous to support such a place of amusement. Our Metropolitan Opera House could be set down inside its arena.

Sfax is another of the Phœnician cities that were established along this part of the Mediterranean coast in the eighth and ninth centuries B.C. By the Romans it was called Taparura, and this was its name until the Arab conquest in the eighth century A. D. Its modern name is said to be derived from the Arab word *fakons* (cucumber). Since the French occupation in 1881 it has grown rapidly and is now the second city of Tunisia in population and commercial importance. The old city, within the crenellated and bastioned walls, is still wholly Arab and on that account interesting. The French and European quarter has grown up outside the walls, around the new port. There are two fairly good hotels and a garage where gasoline is sold for 55 centimes per liter.

Here we were told that gasoline could not be obtained at Gabès, so we carried with us in the tonneau enough to make the round trip. We found, however, that the Grand Hotel de Gabès has it for sale at 80 centimes per liter (about 64 cents a gallon). It was explained to us that the high price is due to the fact that it must be brought by camel most of the distance from Sfax. There is no railroad between Sousse and Sfax. A ramshackle automobile omnibus makes the trip daily (fare 20 francs). From Sfax a narrow-gauge railroad has been constructed which runs alongside the Gabès road for 35 kilometers to Mahares, and then runs southwest to Gafsa. The nearest point to Gabès on this railroad is Graiba, 80 kilometers distant, and between this point and Gabès an automobile of similar type of those of the Sfax-Gabès line makes the round trip twice a week (fare each way 15 francs).

The road from Sfax to Gabès (135 kilometers) is excellent and runs most of the way close to the sea. There is nothing of interest en route, and the country traversed is singularly featureless and desolate. For about half the distance when we traveled it on April 28 there were vast fields of stunted grain; then a grazing country thinly sprinkled with innutritious-looking grass, and the last 50 kilometers were in the Desert of Sahara, which here has none of the interesting features of the portion of it traversed in going to Biskra.

If one has been to Biskra or intends going there, this trip from Sfax to Gabès and return is not worth the trouble. But if Biskra is not on the program, then this journey is worth making simply to have the experience of traversing a wide expanse of desert and emerging from it into the delicious cool green of an oasis. And the oasis of Gabès is, on the whole, the most beautiful we had seen.

The Novelty of Reposing in a Desert Oasis.

The weather had changed before we left Tunis, and the seasonal warmth which there had succeeded the persistent cold and rain became intolerable heat in the desert. The journey to Gabès one afternoon and the return next day to Sfax was made in a temperature that, in the arid, treeless, and shadeless desert, must have exceeded 120 degrees, and this was aggravated by a sirocco or hot wind from the south. The oppressive heat deterred us from going to Madenine, 80 kilometers beyond Gabès, to which point the national route extends. In ordinary weather that extension of the trip is well worth while, for the opportunity it affords of seeing the curious habitations of the Troglodytes or cave dwellers. Their caves are dug out of the sides of a cliff, and comprise as many as five different floors or stories. In some cases there is an outside staircase, but these are usually absent, and the occupants of the upper floors climb up to them by the aid of projecting stones.

As we were prevented by the heat from going to Madenine. Gabès was the southernmost point of our tour in Algeria and Tunisia. It is about 150 kilometers farther south than Biskra and nearly as far south as Tougourt. Four days after our return to Tunis, namely, on May 3, our automobile was hoisted to the deck of the Compagnie Transatlantique steamer *Ville de Naples*, and on the morning of May 5 we landed again in Marseilles. We found it more expensive to get out of Africa than to get in. The cost of transporting the automobile from Tunis to Marseilles, including embarkation and landing fees, was 264 francs (\$52.80). From the time of our landing in Algiers to our embarkation at Tunis we had motored 3,242 kilometers or 2,027 miles, of which 1,280 kilometers were in Algeria and 1,962 in Tunisia.

In fairness to those who may be induced by what has been written in these articles to undertake a similar trip a word should be said regarding the steamer service between North Africa and European ports. It is very bad. Not only are the steamers small and nearly all of them old, but a worse drawback is found in the methods of management. The rule which is practically universal on other sea routes, that if you buy two first-class tickets you are entitled to a cabin or stateroom, is not recognized on these lines. Nor is anything gained by registering in advance. For the steamer by which we came from Tunis to Marseilles we were registered three weeks before the date of sailing, and our names were first on the list, yet the ladies of our party were jammed into staterooms each with two other women occupants, and the men were treated in like fashion. Even so small attention as would be required to assign the first applicants to lower berths was not given to the matter. The whole efforts of the company's agents appeared to be concentrated upon the program of filling each separate berth in the steamer with a paying passenger, and provided that was accomplished nothing else mattered. The question of the passengers' comfort and convenience appeared to receive absolutely no consideration. There is less excuse for this because the rates of passage are high; much higher relatively than on the palatial steamers of the Havre-New York line. However attractive motoring in North Africa might be found to be, either as read of in a descriptive account or as a personal experience, it can never become really popular with automobilists until the steamer service to and fro is greatly improved.

A Summing Up of Advantages and Drawbacks.

What the writer experienced in the important matter of weather has already been set forth in these articles. Making all due allowance for an exceptional season (and we were as-

sured by everybody that it was exceptional), it is nevertheless unquestionably true that North Africa should be shunned in winter by the automobilist for the same reason that New England is shunned—because it will subject him to great discomfort and will offer few compensations. The American enthusiast for whom the usual motoring season does not suffice would better seek his winter recreation in France. He will find the roads there in pretty much the same condition as in Algeria and the hotels far more comfortable. Outside of Algiers and Tunis no hotels in North Africa possess any facilities for warming their interiors, and even in spring the rooms—including the sitting and dining rooms—are penetratingly cold. The only time to motor for pleasure in Algeria and Tunis is in March and April (from the 15th of March to the end of April), or in October and November. If spring is chosen the entry should be made at Tunis and the Tunisian excursions made before proceeding to Algeria; the tour which the writer has described should be taken in reverse. The reason for this is that the climate of level Tunisia is milder than that of mountainous Algeria. If the fall

Algeria and Tunis Safer than East-side New York.

When the writer mentioned in New York his intention of venturing upon a motor trip in Algeria, solicitous friends, with visions of Raisuli in their mind's eye, urged that the men of our party provide themselves with serviceable revolvers. We did so, and as a matter of fact we had about as much use for them as we would have in a drive down Fifth avenue. The natives were everywhere peaceable, orderly, and even friendly; actuated by a mild curiosity concerning ourselves and the car; watchful of all we did because of its strangeness to them; obliging with information when they could be made to understand what we wanted to know; and always ready to lend a helping hand when assistance was needed. A kindlier people than the Arabs it would be difficult to find anywhere, and even in the country of the historically fierce Kabyles we did not on a single occasion experience a discourtesy. The writer would rather motor with a party of ladies over any portion of the route he had described than down one of the East Side avenues in New York City on a Sunday afternoon. In this connection



[ARAB WOMAN OF BETTER CLASS.



BEDOUIN FAMILY OF FOUR.



RICH JEWISH WOMAN OF TUNIS.

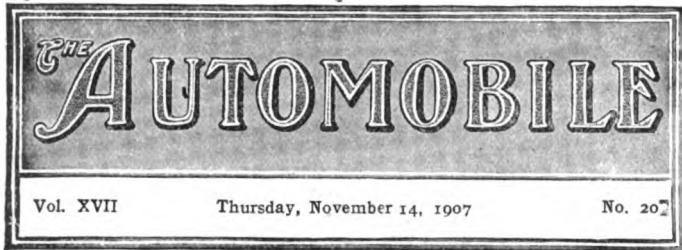
is chosen, then the tour as the writer has outlined it could hardly be improved upon from the climatic point of view.

The roads have also been described with the minuteness that automobilists are apt to desire. In summary it may be said of them that, as a whole, they are surprisingly and remarkably good—far better than could reasonably be expected in a portion of the world so remote from countries that are supposed to have a monopoly of civilization. In all accessible portions of Algeria and Tunisia the writer traveled more than 2,000 miles. In the entire United States there are not half as many miles of macadamized road that would bear comparison with these in point of engineering and up-keep. The only important section of road traversed that could fairly be described as bad was that across the Desert of Sahara, between El Kantara and Biskra, and in another two years one of the best roads in Africa will link those two places.

At present there are only four cities in Algeria and Tunisia where tires and other automobile requisites can be found. These are Algiers, Constantine, Bone, and Tunis. As recently as three years ago there were few places outside of these four cities where gasoline was kept for sale. Now it can be found in almost all towns of any size along the usual routes of travel. It is expensive, its price ranging from 50 centimes per liter in Algiers and Tunis (about 40 cents a gallon) to a franc per liter at Biskra (about 80 cents a gallon). In the interior the price will no doubt gradually fall as the demand increases, but on account of taxes it is not likely to fall below 50 or 60 centimes per liter anywhere.

one point should be emphasized. It is indispensable that on such a trip at least one member of the party shall be able to speak French fluently. A surprisingly large number of the natives, even in the remote interior, understand French, but in no other language save Arabic or Berber is it possible to communicate with them. Of English or any other European language they know not a word.

Is it worth while? is a question which has already been put to the writer many times and which it is difficult to answer categorically. For any motorist with whom comfort is a primary consideration, it is not worth while. Until one has motored over most of England, Scotland, substantially all of France, a large part of Germany, the Austrian Tyrol, Holland, Northern Italy, and such portions of Switzerland as can be visited, it would be wiser to postpone the tour of North Africa. On the other hand, if one has the sporting instinct, or the craving for alien scenes and strange peoples, then it is worth while. As the writer recalls the cost, the trouble of getting there and of getting away, the perplexities and anxieties of the trip, and the deep disappointment with the climate, he is inclined to say "no." But when in the reminiscence he recalls the strange land and scenes, the undying fascination of Oriental people, the wonder and the mystery of the desert, the gorgeous colors of the fervid East, the sense of remoteness from all the habitudes of ordinary life, he is inclined to content himself with saying that those who like what he has described will find an automobile trip through the classical and picturesque countries of Algeria and Tunisia exactly what they like and a great deal of it.



THE CLASS JOURNAL COMPAN

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT

A. B. SWETLAND, Business Manager
LOUIS R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramarcy, New York

SUBSCRIPTION RATES

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00
To subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hiffe & Sons, Limited, 20 Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.
The Automobile is a consolidation of The Automobile (monthly) and the Motor
Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903,
and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905	- - - - -	730,000
" " in 1906	- - - - -	791,000
" " this issue	- - - - -	18,000
" " since January 1	- - - - -	762,900

What Scientific Investigation Has Accomplished. Few automobilists realize the extreme crudity of the electrical apparatus which the automobile designer found was the only thing to be had but a comparatively few years ago. True, electrical ignition was far from being new, and its component essentials, such as the spark plug, the make-and-break ignitor, the timer, and the induction coil, had all been used to a greater or less extent in stationary and marine practice, but that they were about as far from being up to the requirements of automobile service as they possibly could be, and still work, will be the recollection of every autoist whose experience extends back that far. The induction coils of those days could not be adjusted to take less than two or three amperes, timers were both mechanically and electrically defective, and the same thing applied to the plugs, so that in combination they rapidly wasted two-thirds of the output of the battery, and, generally, the sins of the entire ignition system were laid at the door of the latter.

The story of the development that has taken place in the interim is a long one, and each one of the advances, simple as it may now seem in retrospect, not only required considerable study to bring about, but also much painstaking investigation to fathom, for the manner in which improvement was to be made was frequently a sealed book. There were so many unsuspected causes of failure that nothing short of the constant application and study that has been given the subject during the past few years could ever have sufficed to bring about the tremendous advance

that has been made, and for the accomplishment of which the manufacturers of ignition accessories have been almost altogether responsible. The hit-and-miss methods that had characterized the early investigations of pioneer automobile builders were given up in favor of the more exacting and resultful study of the laboratory and the outcome is a matter of common knowledge.



Is Toll-paying a Solution of the Road Problem?

Judging from the frequency with which special automobile toll-road projects spring up in various parts of the country and the tenacity with which the idea that such roads would prove a profitable investment is entertained, it would seem as if there were more in the subject than appears at first sight. On principle, the average autoist strenuously objects to being taxed for the use of the road to a greater extent than others who enjoy the same privilege, and with reason, but whether he would so object to paying a nominal sum to make use of a highway constructed and maintained especially for his benefit is another matter. Doubtless he would be only too glad to be able to take advantage of such an opportunity, and be quite willing to contribute toward the support of such a road in sufficient numbers to make it economically possible. The Long Island Motor Parkway is an illustration in point, and it will doubtless form a model for a great many others of similar nature when completed.

This brings to light the question as to whether the automobile toll-road may not eventually prove to be the stepping stone to that vastly improved state of affairs that is universally hoped for—a time when not alone all roads will be considerably more deserving of the name, but when there shall no longer be any prejudice on the part of one class of road users against another, particularly when that other is representative of progress. It goes without saying that ultimately nine-tenths of all road traffic will consist of automobiles, and tolls would then be abolished as a natural sequence. The plan of making those responsible for the improvement pay for it is somewhat anomalous, but unfortunately that is frequently the only manner in which such improvements can be brought about expeditiously.



Use of Objectionable Signaling Devices.

Rising above the multitudinous and indescribable noises of city traffic, which the urban dweller has come to endure as a matter of course, his ears are now assailed by weird groans and shrieks, or grotesque reproductions of familiar and simple airs. In Paris a curb has been put on this childish tendency to utilize the automobile as a means of scaring horses and pedestrians by making outlandish noises, and it is time that similar steps were taken in the larger cities in this country. There is no limit to the ingenuity of the inventor of these juvenile devices on a large scale, and, like a boy with a new whistle, many a driver takes fiendish delight in utilizing them to the utmost.

In the French capital the employment of such objectionable means of warning pedestrians and other traffic is placed under the ban altogether, and the weird shriek that the driver of a rapidly approaching car takes pleasure in producing in New York City would there subject him to immediate arrest. Parisian ears are no more sensitive than those of the dwellers in American cities, and the example of the French municipality in thus restraining what is nothing more or less than a childish practice is a commendable one that could well be followed here. Long-range warnings may be more or less of a necessity on country roads, but they certainly have no place in city driving, except when used for legitimate ends, as in the case of the fire department's cars. While the majority of autoists are common-sense individuals who do not indulge in the practice, there are sufficient numbers who thus make themselves offensive, to call attention to the matter, and it is to be hoped they will soon be suppressed.

A. A. A. RE-ELECTS HOTCHKISS TO THE PRESIDENCY

PERFECTLY content to leave in power an administration which, since February last, had increased the membership total from 8,000 to over 19,000, the Board of Directors of the American Automobile Association, made up of the chosen representatives of the various State bodies, on Friday last, reelected William H. Hotchkiss to the presidency; Lewis R. Speare, first vice-president; Asa Paine, second vice-president; Ira M. Cobe, third vice-president; George E. Farrington, treasurer, and F. H. Elliott, secretary.

The meeting was held at the association's headquarters, 437 Fifth avenue, and was attended by directors from Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, District of Columbia, Ohio, Indiana, Illinois, Minnesota, and Florida. The greater part of the day was taken up with the reading of the annual reports, which were both exhaustive and interesting, and told of the great progress of the organization during the past nine months. The constitution having been changed so as to make the annual election come in November instead of January, and realizing that the present administration had not an opportunity of perpetuating its policies, there was no dissent against continuing the Hotchkiss-Elliott régime.

These chairmen have been asked to continue in office: Robert P. Hooper, Good Roads; Jefferson deMont Thompson, Racing; Charles Thaddeus Terry, Legislative; and F. B. Hower, Touring. A technical board and also a publications board will be added to the list of national committees. The executive committee will be increased to seventeen, including the chairmen of the boards.

Herewith are extracts from the various reports:

From the Report of President W. H. Hotchkiss.

Legislation.—Comparatively few of the State legislatures meet this winter, but in those few efforts will be made either to revise existing laws, where the same are prejudiced or imperfect, or to pass the so-called uniform motor vehicle law where no laws now exist. Plans have already been made to this end, and the work can safely be left in the hands to which it has been committed. The legislative board will also make a determined effort to pass the Federal registration bill. Present indications point to the success of such efforts.

Good Roads.—The good roads movement is now national in its character. Whether much can be accomplished through congressional aid, I very much doubt. But our good roads board, through its State committees, has been able, and in the coming year ought to be able to accomplish much toward awakening interest in the subject and bringing motorists out in the open for it. After all, however, the success of this movement depends more upon the farmer and the grange organizations than upon us, and all our board can do is to assist in creating interest and co-operate with other bodies which are working to the same end.

Racing.—The characteristic feature of the motor racing situation of the past year was the large number of accidents incident to races on circular tracks. That the public demands the abolition, or, at least, the regulation of these races in such a way as to avoid accidents, will be conceded by everyone. The whole subject has, therefore, been turned over to a special committee on sanctions, which has already made certain suggestions looking to a union of this association with the various national bodies of manufacturers and dealers on some policy that will meet the views of the public.

There should, of course, be a Vanderbilt cup race next year, as well as a contest or contests between stock touring cars. Your executive committee already has under consideration several plans whereby both of these contests can be assured.

Co-operation.—A meeting recently held in New York seems to promise a better understanding between the association and the national bodies of manufacturers. These bodies have many interests in common. They have worked together too little in the past. If present plans are carried out, a basis for united action on all matters of common interest will be established, and much good cannot fail to inure to the association and its members.

From Report of Chairman C. T. Terry, Legislative Board.

From its organization, your committee has considered of paramount importance in its work the enactment of a Federal law regulating the registration and identification of motor vehicles, and concurrently with that the enactment in the various States of the

Union of a uniform State motor vehicle law, covering not only the subject of registration and identification for the particular State in which such a bill should be enacted, but also all the other matters of regulation of motor vehicles which could not, at this time, at least, be incorporated in a Federal statute. To this end, as you are aware, your committee forthwith, upon its creation, began working upon the construction of a Federal automobile law and upon a uniform State motor vehicle act. The proposed fields of these two proposed statutes are entirely different, but they overlap at one point, namely, in the matter of registration and identification, and, of course, the purpose of the two bills in general is identical in this, that they both seek to obviate the very distressing and, as we think, unnecessary and unfair divergence between the provisions of law to which one may be subjected in interstate automobile travel.

During the coming winter your board will bend its energies to the enactment of these two bills, and urgently requests the active co-operation of the members of your board and all the influence which they can bring to bear to effect the purpose in hand, and to that end especially seek to acquaint the members of Congress



GOVERNOR HUGHES AND WILLIAM H. HOTCHKISS.

During the recent visit to Buffalo of the Governor of the State of New York he was the guest of William H. Hotchkiss, president of the American Automobile Association, and it naturally followed that the Thomas-Flyer of Mr. Hotchkiss was well employed, with its owner at the wheel.

throughout the country with the salient features of the proposed Federal bill, and to secure the support of the bill by such congressmen.

From Report of Chairman R. P. Hooper, Good Roads Board.

Prior to the present year, the work of this board has been, of necessity, desultory. Conditions—the newness of the road problem, the difference from State to State in laws and methods, and the relatively small number of the association's State bodies—made productive work all but impossible. Early in 1907, however, the board was so organized as to properly perform its functions. This was accomplished by the appointment of State representatives, who, in turn, became the chairmen of State good roads committees, in the States where clubs have been or are about to be organized into State associations.

The good roads movement in the United States practically began with the introduction of the rubber tire, but active work on the main highways stretching through the States is coincident with the general use of the automobile. Since that time this work has progressed so rapidly that to-day it is of national importance. In its infancy it was easily handled by a few enthusiastic men, resident in the large cities, but, as the movement grew, it was quickly apparent that large things toward good roads could be accom-

plished only by a unity of associations in the various States, captained by a national association representative of all. No organization in the country is more interested in or better equipped for this work than the American Automobile Association. A movement is now on foot to centralize the activities of the different associations interested in good roads in a national organization, headed by the National Grange, and, acting under direction from the association's board of directors, the Good Roads Board is co-operating in such movement, and will recommend that the A. A. A. join such National Good Roads Association.

From Report of Chairman F. B. Hower, Touring Board.

It must be remembered that, until the present year, work of this board consisted only of the management of the annual tour, but now all is different. Our energetic and busy president laid out a line of work that has kept the office of the Touring Board bustling. General information, beneficial to tourists, has been pouring into the office from all sections of the country, and this information finally became so bulky that we found it necessary to devise some system for handling it. Large cabinets were built and are now in place. On cardboard, properly indexed, all routes, maps and information are transferred, and we are thus enabled to find immediately information asked for. It has been remarked that we should be able to furnish as reliable touring information as that supplied by the Automobile Club of Great Britain and Ireland. That criticism might hold true if this country did not cover vastly more territory than Great Britain.

The board so far this year has been of no expense to the association, and the annual tour resulted in a balance of \$2,020.10.

During the coming year special attention should be paid to hotel rates, garage rates, and data on improved roads. The automobilist seems to be a common prey to hotel proprietors and owners of garages, and the sooner this matter can be governed the better, and, with this object in view, the association should make an earnest effort to control the situation. This, we think, could be done to a great extent by correspondence. When the different hotels and

garages understand that this association numbers twenty thousand automobilists, and that they are kept posted on rates, its members will receive more courteous treatment.

In Report of Chairman J. D. Thompson, Racing Board.

Chairman Thompson recites the history of the conscientious and industrious efforts of the Racing Board to hold a 1907 race for the Vanderbilt Cup, telling why it was impossible to complete the Long Island Motor Parkway, and explaining why the efforts to hold the event in other States were either fruitless or unexpectedly interfered with. In conclusion, the chairman comments: "It is most unfortunate that the United States, which now leads the world in the manufacture of automobiles, should be the most backward in encouraging the industry, most reluctant to improve roads, and absolutely indifferent to our appeals for protecting a course on which to hold an international road race." Reference is made to the assistance given by the governments of France, Germany, Great Britain, Italy and Belgium in the holding of the annual automobile contests.

From the Report of Secretary F. H. Elliott.

The present membership of the A. A. A. includes 16 affiliated State associations, containing 120 clubs, with a total membership of 17,550; 15 unfederated clubs, with a membership of 1,035; and 621 individual members and three life members—a grand total of 19,209 on November 1. According to the association records on October 1, 1906, there were five State associations and 70 clubs, with an approximate membership of 8,857. There was practically no increase in membership between October 1 and February 1 when the new administration took office. The increase in the past nine months is 10,352 members.

NEW YORK STATE BODY TO CONSIDER LEGISLATION

THE quarterly meeting of the New York State Automobile Association of the A. A. A. was held Friday, November 8, at A. A. A. headquarters in New York City, President Oliver A. Quayle presiding, with Secretary C. D. Hakes in attendance as usual. Directors were present from the Automobile Club of America, Automobile Club of Buffalo, Rochester Automobile Club, Olean Automobile Club, Albany Automobile Club, Schenectady Automobile Club, Long Island Automobile Club, and Richmond County Automobile Club. The present membership of the State association is over 5,000 and contains 31 clubs.

It was decided to appoint a special committee to consider

the matter of legislation, the president being empowered to make appointments at an early date. This committee will report its recommendations to the Board of Directors previous to the convening of the next session of the New York State Legislature.

The State association decided to issue a Year Book and to supply a copy to each member of every club in the association, as well as to the individual members.

The good roads tour, which will be participated in by prominent members of the New York State Legislature, will take place during the present month.

PENNSYLVANIA FEDERATION VERY ACTIVE.

PHILADELPHIA, Nov. 11.—A meeting of the executive committee of the Pennsylvania Motor Federation, composed of the officers and chairmen of the several standing committees, was held at the automobile Club of Philadelphia, November 5.

The treasurer's report showed a healthy financial condition, the membership now exceeding 1,800. The Bangor Automobile Club, with a membership of 48, was admitted to membership, and a notification was received from the Motor Club of Harrisburg that its formal application would be forwarded.

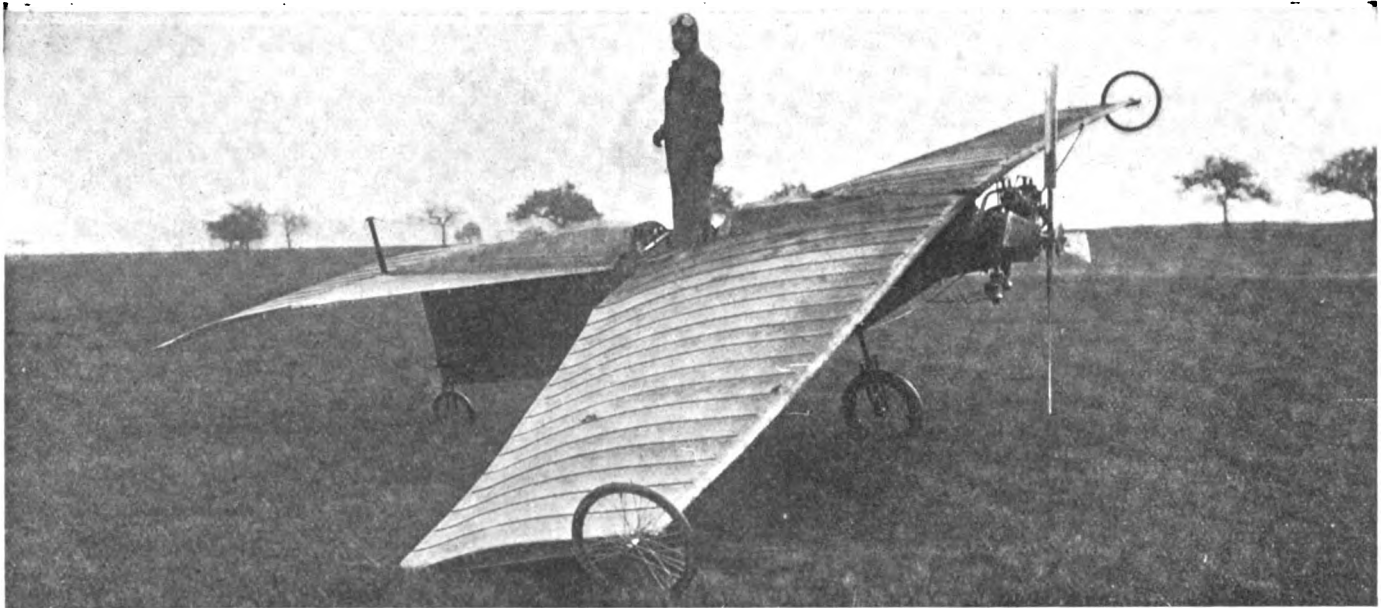
Reports received from the legislative and good roads committees showed encouraging activity on their part. Many of the clubs throughout the State have actively taken up the work of inducing, or, if persuasion fails, of compelling road supervisors to observe too much neglected provisions of the road laws of Pennsylvania, the first requiring the erection and maintenance of finger signs at all cross roads, and the other that once a month during the summer all loose stones must be removed from township roads.

As the legislature of Pennsylvania does not meet until the fall of 1908, little can be done by the Legislative Committee.

OHIO ASSOCIATION WANTS NEW LAW.

CLEVELAND, Nov. 11.—The highways committee of the Ohio State Automobile Association met in Cleveland recently and discussed a plan for introducing automobile legislation before the coming session of the Ohio legislature this winter. There is a growing desire among the majority of automobilists for a State license law requiring the issuing of all car numbers and licenses by the State, as is done in other States. It is the aim to have the fees and fines from the violations of the State automobile laws go to the State road fund, which has been entirely inadequate heretofore to accomplish much good. The automobilists of this State are not only becoming disgruntled at the lack of good roads work on the part of the State, but the system which allows villages and towns to make their own speed ordinances and levy tribute for alleged violations of unknown regulations is one of the most discouraging features of touring in this State.

The Ohio State Automobile Association has been making good gains in membership during the past few months, and it is believed that it is now strong enough to make an effective campaign during the coming session of the legislature.



ROBERT ESNAULT-PELTERIE'S ORIGINAL BIRD-LIKE FLYING MACHINE SUCCESSFUL IN SKIMMING OVER GROUND.

FARMAN DESCRIBES CIRCLE WITH AEROPLANE

PARIS, Nov. 11.—Skeptics who insinuated that aeroplane flights were nothing more than jumps are effectively silenced by the latest performance of Henry Farman and his aeroplane built by the Voisin Frères. Farman has so often flown over the military ground at Issy-les-Moulineaux in its greatest length for anyone to doubt his ability to fly in a straight line.

On Saturday afternoon Farman made the most brilliant demonstration of the season by flying a kilometer in a circle. Starting from the lower end of the ground near the river, the machine ran a few yards on its four wheels, then gradually rose into the air. It was obvious that Farman had complete control of his heavier-than-air flyer, for under the influence of the rudder it was gradually brought round with but a slight heeling towards the ground. At the top of the field the turning movement was completed, and the nose of the machine towards the starting point, a straight run was made for home. The kilometer circle had been covered for the first time in 1:14.

A wave of enthusiasm spread over the ground as Farman descended from his machine, the spectators realizing that the circular flight was a complete triumph for the heavier-than-air theory. Ernest Archdeacon, who with M. Deutsch has put up a prize of \$10,000 for the first flight of one kilometer in a closed circle, rushed forward to congratulate Farman on his success. Although the aeronaut will not immediately pocket the 50,000 francs as the result of his flight, it is unanimously admitted that he fulfilled all practical conditions and that the performance can be repeated at any time. The regulations for the Deutsche-Archdeacon prize declare that notice of an attempted flight must be given the Aero Club of France several hours in advance, that the flight must be observed by a deputation and that the distance must be officially measured. Henry Farman had given no notice of his intention to try for the prize, his afternoon's work being merely an ordinary trial spin; thus he is not entitled to the cash.

The world's most successful aeroplanist has never paid much heed to official records, his most important flights having all been done in private practice spins visible to the world. In conversation recently, he declared that the most successful feature of the machine, in his opinion, was that in every case he had been able to come to earth without any breakage. "Even now," said Farman, "leaving the ground is not an easy matter, and flying is much more difficult. In all flights up to the present I either rise too high, and my motor is not able to do the work of lifting a

machine weighing over one thousand pounds, or a wrong movement is given to the equilibrator and I am brought to the ground. A tremendous amount of thought is involved in even a short flight, for I have to look after the rudder at the rear, the equilibrator, the ignition, throttle, gasoline and water pressure, besides keeping an eye on the crowd."

Another Aeroplane of Which Much Is Expected.

Public interest has been centered on the aeroplane of M. Esnault-Pelterie, recently successful in covering a distance of more than one hundred yards on the inventor's own grounds near Versailles. The bird-shaped machine has a central body carrying the motor driving a four-blade propeller forward, and a couple of wings, each one being hinged to the body and designed to pivot independently. The rear plane, forming a tail, is also arranged to be either raised or lowered through the mechanism of two levers. The motor is also a special design by Robert Esnault-Pelterie, and comprises four cylinders staggered round a circular crankcase. It develops 22 horsepower. Total weight of the machine is 500 pounds.

SKY PILOT BRIGADE FOR BOSTONIANS.

BOSTON, MASS., Nov. 12.—New England will soon learn to fly, unless the plans of Charles J. Glidden and the handful of enthusiasts associated with him go seriously astray. At the Hotel Touraine, this week the New England Aero Club was formally ushered into existence under the care of Charles J. Glidden, George E. McQuesten and Alfred R. Shrigley, all prominent members of the Massachusetts Automobile Club. A further meeting was arranged for November 21, which is the 204th anniversary of the first balloon ascension in New England. The new club, which will occupy itself more with the sporting side than the scientific features of aeronautics, hopes to establish a permanent ascension station.

BELL FLYING MACHINE TRIALS SOON.

HALIFAX, N. S., Nov. 11.—Professor Alexander Graham Bell expects to start the preliminary tests of a new airship in a few days. Initial trials will be made by towing the machine without operator or motor, their weight being provided for by ballast. When these are successful, an operator will be allowed to take his place in the flying machine.

SUCCESSFUL TESTS WITH DENATURED ALCOHOL.

During the past week at the New York School of Automobile Engineers, 146 West Fifty-sixth street, New York City, there have been held some unusually successful tests with denatured alcohol as a fuel. Roger B. Whitman, technical director of the school, and his assistant, Julius C. Liebhardt, have been investigating the matter for some time and their experiments have proved so successful that a general invitation was issued to those interested to call at the school during the week of the Garden show. The fuel employed was commercial 94 per cent. alcohol mixed with 10 per cent. benzine and 2 per cent. wood alcohol, according to the government formula, and cost 30 cents per gallon. Apart from the fact that the carbureter was raised to the level of the inlet valves and the intake manifold made as short as possible, no special preparations were made. The carbureter was a stock Schebler of the 1907 pattern and the fuel was fed by gravity. In an old two-cylinder, 5-horsepower Daimler engine of the automatic inlet-valve type, which had been presented to the school by the makers merely as an alternative to throwing it on the scrap heap, the alcohol fuel permitted of instantaneous starting with everything cold, and although the compression was only 45 pounds, the old motor showed a brake output greater than its original rating. The consumption was naturally greater than with gasoline, but neither the facility of starting nor the power developed could be improved upon, and, according to Mr. Liebhardt, it has been found possible to reduce the consumption to as low as 1.4 pints of denatured alcohol per horsepower hour.

The second test was even more interesting and consisted of starting a four-cylinder Mercedes motor of the pattern of 1903, equipped only with a low-tension magneto for ignition, on the same fuel. Flooding the carbureter in a manner that would prevent starting on gasoline owing to the richness of the mixture, and giving the motor five or six brisk turns in order to accelerate the magneto, never failed to produce a start with everything dead cold. While running, the entire inlet manifold drops in temperature until it practically reaches the freezing point, owing to the rapid evaporation of the alcohol. It is the intention of the school in the near future to run one of its instruction cars on alcohol altogether, and the data thus obtainable should prove of interest. Joseph Tracy, whose experiments with alcohol last January will be recalled, was an interested visitor, but preferred not to commit himself to any opinion regarding the unusually successful outcome of the experiments, choosing to take the position of an observer only on this occasion.

AN INTERPRETATION OF THE INDIANA LAW.

INDIANAPOLIS, IND., Nov. 11.—The Indiana Supreme Court last week held that the recently enacted automobile law requiring automobile drivers to stop on signal from occupants of a buggy, even if the signal is not given by the driver, is valid.

For several months the case, brought from the De Kalb County Circuit Court, has been waiting a decision from the upper court, and in the meantime much controversy as to its legality has been aroused. An affidavit was originally filed against Samuel Goodwin by Josie and Rose Case, but it was quashed on the plea that the signal to stop had not been given by the driver of the horse.

"Driving in its popular sense," declared Judge Hadley in his decision, "means more than mere managing or directing a horse. It has, at least, a dual signification. When it is said that a party goes out 'driving' or 'boating' it is not usually understood that each member of the party performs the physical act of driving the horse, or of rowing the boat. . . . Even a strict construction would require us to hold that any occupant of the vehicle may give the signal."

This is the first time that the law has ever been tested in the State, authorities fearing it would not hold good in the courts. It is probable that from now on special effort will be made to enforce it.

TEMPORARY RECEIVER FOR ROYAL COMPANY.

CLEVELAND, Nov. 13.—The Superior Savings and Trust Company was yesterday afternoon appointed receiver by the United States Circuit Court for the Royal Motor Company, of this city, on proceedings brought by E. W. Cottrell, of Detroit, and W. K. Cochrane, of Chicago, stockholders and creditors. The action was brought to tide over embarrassment due to the money stringency.

The company is four years old, and recently moved into a large new plant, where it employed 400 men. Its business has increased in three years from \$90,000 to \$1,500,000. President Shurmer of the company says that the corporation is abundantly solvent and that the recent financial statement showed assets of \$650,000 in excess of liabilities. Large contracts on hand for next season necessitated heavy loans, and recent calls make it impossible for the company to meet maturing obligations. F. A. Scott, treasurer of the bank mentioned above, which has been appointed receiver, says there is no reason for alarm as to the outcome, as assets appear to be good, and the embarrassment will be only temporary.

CONDITION OF POPE AFFAIRS AT TOLEDO.

TOLEDO, O., Nov. 10.—George A. Yule, of Kenosha, Wis., has been appointed as an additional receiver to serve with A. L. Pope in the settlement of the affairs of the Pope Motor Car Company. The appointment was made on the petition of certain creditors, and Mr. Yule is now in this city for the purpose of making an inventory of the assets of the local plant.

In this connection announcement has just been made of a probable sale of the Toledo plant to a number of New York men, and A. E. Schaaf, general manager of the plant, is now in that city in the interests of the sale. Speaking of the sale, Mr. Yule said that had it not been for the financial flurry of a few days ago the sale would in all probability have been consummated prior to this, but that a final sale is anticipated shortly.

While Mr. Yule will not confirm the story, it is said on good authority that the prospective purchasers plan to spend several hundred thousand dollars in enlarging the plant and in making it one of the finest and most complete automobile factories in the United States.

A. E. Schaaf Has Been Requested to Resign.

TOLEDO, O., Nov. 11.—A despatch to the New York *Times* contains the following information: It was learned to-day that Albert E. Schaaf, who has been manager of the Toledo factory of the Pope Motor Car Company for a number of years, has been requested to resign by Albert L. Pope, one of the receivers of all the Pope factories. Harold Pope is now in charge.

Schaaf's management of the plant, so far as known, has been entirely satisfactory, yet the receiver has informed him that he is no longer wanted in a managerial capacity by the Popes. As George Yule, of Kenosha, who was recently appointed a co-receiver of the Pope factories by the United States courts in a number of districts, was not consulted as to the resignation of Schaaf, and therefore was not accorded an opportunity of either confirming or refusing to concur in it, there are likely to be difficulties before the matter is settled. Schaaf will vigorously contest the discharge.

EDWARDS TO HEAD LONG ISLAND A. C.

BROOKLYN, N. Y., Nov. 11.—Charles Jerome Edwards, the well-known automobilist and aeronaut, has been nominated for the office of president for the coming year, by the nominating committee of the Long Island Automobile Club. Mr. Edwards is an autoist of considerable experience and well liked, so that the nomination met with general approval on the part of the members. Owing to the progressive policy of the club, its membership is rapidly increasing, the interesting investigations and reports of the technical and other committees being largely responsible.

SOME FACTS CONCERNING FORTHCOMING CHICAGO SHOW

CHICAGO, Nov. 11.—In keeping with its reputation for doing things on a big scale, Chicago is to have the biggest automobile show of the year, and the only national show, as the Windy City is the only place in which the makers of the opposing camps come together to exhibit their cars under the same roof. As compared with the combined total of 110 exhibitors of complete cars at the two recent New York shows, the Chicago list already shows a total of 117, and nothing but a lack of space prevents the addition of some twenty odd, as there are more than that number on the waiting list, and at least half a dozen of these are said to be of considerable importance. The total floor space to be occupied will be something like 110,000 square feet. Owing to the inability of the management to comply with all the demands for space, for the first time in the history of automobile shows, the ban on subletting space has been removed, and it is thought that the 180 accessory exhibits catalogued on the official list will be augmented by some 50 or more whose names will not appear upon the latter.

Where the decorations are concerned, Manager Miles has always made the Chicago show distinctive by giving it an automobile atmosphere, so to speak, and this will be the case with the present show, which opens on November 30. The chief features of the ornamentation will consist of 112 oil paintings by Hardsy Maratta, all of them representing automobile scenes, the latter being distinguished by the fact that the car depicted by each painting will be of the make shown in the exhibit beneath it. The entire gallery front will also be covered with paintings of

automobile scenes made from photographs taken in a dozen different countries. In all there will be nearly 9,000 square feet of oil paintings, 20,000 feet of papier maché representations of automobile events, 150 of the Mercury automobile plaques which have become the distinctive shield of the Chicago show, 150 new figures adorning the pillars in front of the spaces, more than a mile of signs, more than 100,000 square feet of ornamental work in the ceilings of the buildings, 20,000 feet of paneled wall covering, 110,000 square feet of carpeting and three or four tons of miscellaneous staff ornaments.

The commercial vehicle section of the show, which will be housed in the Seventh Regiment Armory, formerly known as Tattersall's, has assumed quite unexpected proportions, some of the most recent additions being the E. R. Thomas Company's motor cabs, the wagons of the Pittsburg Motor Vehicle Company, and the Alden Sampson gas-electric road train, consisting of a 10,000-pound tractor and two 7,000-pound trailers. There is now a total of twenty-seven automobile exhibits in this section. Owing to the purely commercial aspect of this part of the show, admission will be largely by invitation, season tickets being presented to traction experts, buyers and other officers of companies interested in transportation problems. Invitations have been issued in liberal quantities to all the exhibitors to be given out in their own names to prospective customers, so that in addition to being the first representative showing of vehicles of this class, it is confidently anticipated that it will bring together the first large gathering of men interested in autos.

SAN FRANCISCO'S SHOW TO BE NOTABLE EVENT

SAN FRANCISCO, Nov. 1.—As a result of the success of last year's automobile show the Dealers' Association of California have determined upon a second exhibition. The Coliseum, which is one of the largest buildings in the United States, has again been chosen to house the display. The date has been fixed at the second week in December, and at a recent meeting of the Dealers' Association a committee composed of George Middleton, of the Middleton Motor Car Company; Herbert Choynski, of the General Motor Car Company, and J. A. Marsh, of the Mobile Carriage Company, were selected to handle the show. N. R. Cooper, who had charge of the show last year, has again been engaged to manage the affair this season. The Coliseum covers almost an entire block, and is situated directly opposite to the main entrance to Golden Gate Park. Directly to the south of the Coliseum, and only two or three blocks distant, is one of the steepest hills in San Francisco, which is also a city park. With this incline for demonstration of hill-climbing ability and the smooth roads of the park accessible for purposes of exhibiting the

other faculties of an automobile, it is not necessary for the San Francisco dealer to take long runs into the country to show every phase or every talking part of his car.

In addition to this the Coliseum is almost entirely on the ground floor, and has actually more ground floor space than has Madison Square Garden in New York. As snow is an unknown thing in San Francisco, the park will be green the year round, and the roads in Golden Gate Park are always in perfect condition. Last year San Francisco's show housed eighty-four different and distinct exhibits, and showed over one hundred and fifty different makes and models of automobiles. This year the exhibits will be even greater in number.

Decorations, out of courtesy to the Automobile Club of California, will be green and yellow, the official colors of this club, and will consist largely of green shrubs and palms, which will be secured from Golden Gate Park. As in last year's show, uniformity of exhibits, decorations and signs will be preserved throughout the entire pavilion, and simplicity will also be sought.

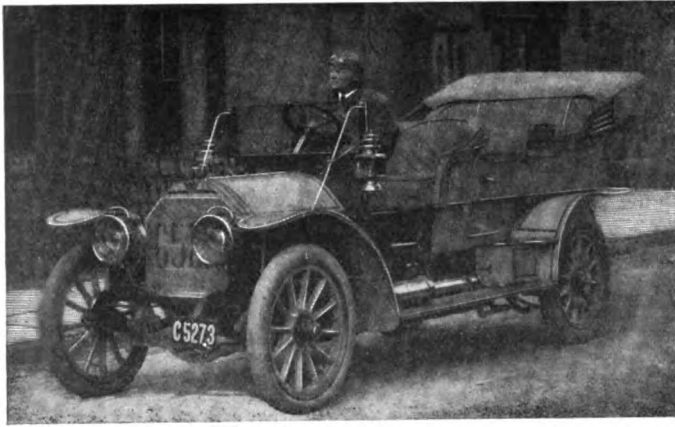
THE PROPOSED WESTCHESTER CHASSIS RACE.

The project of holding a stock chassis race next April in Westchester County has been receiving attention of late. An inspection of the proposed course of some forty-two miles in extent, and located about twenty-five miles from New York City, was made on Monday last by interested parties, including officials of Westchester County. The route, besides passing through two villages where controls would have to be established, runs through six townships, and the consents of all of the town boards would have to be obtained. According to the *New York Herald*: "Robert Lee Morrell, who is chairman of the general committee, is engaged in waking up the various committees in charge of the details of the race." T. F. Moore, the secretary of the committee, is optimistic concerning the Briarcliff Manor event.

ANNUAL SHOW DINNER OF WHITE COMPANY.

At the Waldorf-Astoria on Wednesday night of last week, the White Company gave its usual dinner to the White agents in attendance at the show, and also invited newspaper men from New York and other cities. Windsor T. White was the toastmaster of the evening, one of the incidents of which was the presentation of a gold watch and chain to Hal Sheridan, driver of the White runabout which won the Hower trophy in the A. A. A. tour.

The function was well arranged and neatly carried out. Walter White, who sailed on Saturday to look after White interests abroad, outlined the successful policy of the company from its beginning. George W. Bennet, manager of the New York City branch, issued the invitations in behalf of the company. The Hower trophy was prominently in evidence.



A SIMPLEX WITH BRIDGEPORT VEHICLE BODY AND WINDSHIELD.

BRIDGEPORT CO. TO MAKE RENAULT BODIES.

BRIDGEPORT, CONN., Nov. 11.—Interest attaches to the announcement that a contract has just been closed by President Harry D. Miller, of the Bridgeport Vehicle Company, of this city, with the Renault Frères Selling Agency, which handles Renault cars in the United States, whereby the Bridgeport Vehicle Company will henceforth make the bodies for the Renault chassis imported here. These bodies will be of the standard touring, limousine and landaulet types and will be fitted to all Renault cars which are sold complete by the makers.

Some samples of the Bridgeport Company's production were to be seen on the Simplex cars which were exhibited in the basement of the Garden show during the past week in New York City, one of the cars being shown by the accompanying photograph. Everything on this car above the frame is the work of the makers in question, and particular attention is called to the windshield. This is of plate glass in a mahogany frame and is supported by adjustable arms which slide on the permanent stays, being readily adjusted at any position by means of set screws.

SUCCESSFUL END OF ATWATER-KENT TEST.

Considerable interest attached to the breaking of the seal of the Atwater-Kent apparatus which has been run in conjunction with a Jones speedometer-odometer during the course of the two recent shows in order to demonstrate the high mileage obtainable from dry cells by its use. An Atwater-Kent timer taking current from six dry cells and connected to four spark plugs was sealed in a glass case together with the speedometer on October 25. The connection with the latter was equivalent to being placed on a car having 34-inch wheels and a gear ratio of 3 to 1, the average speed maintained being about twenty-five miles an hour. The case was officially sealed by Albert W. Jacobi, superintendent of the machine shop of the Automobile Club of America. The sparking gap was made 7-64 inch in order to give the equivalent of sparking under compression. At the conclusion of the test, the odometer reading was 4,249.3 miles, while the cells were still good for further service, as they showed an average of 6.5 amperes. No adjustments of any kind were found necessary on the timer.

HOW THE AUTO MET THE EMERGENCY.

LOS ANGELES, CAL., Nov. 9.—Bumping over mountain trails at an average speed of twenty miles an hour, and plowing through 100 miles of desert sand, Burt H. Paul, with three companions, reached Long Beach last night from Avawatz, a mining camp 270 miles away. The trip was made in thirteen hours, a record-breaking performance. The big 35-horsepower Mitchell behaved well and needed scarcely any attention during the entire journey.

Important business called the officers of the Avawatz Development Company to the mines in a hurry. Paul undertook to drive

them. It meant a dreary stage ride if they tried to reach the mines other than in an auto. The trio accepted. Frederick Heath, Joseph Pitts and Edward Martin made the journey with Paul. All would have been well had they not lost their way while chugging across the desert.

The party came to a place where two roads met, chose the wrong path, and soon found themselves in a trackless waste. Miles of sagebrush were passed, and they crashed through cactus, until they finally had to admit they were lost. Hours were spent running aimlessly over the desert sands. Toward night a lone rider pointed out the right path and Daggett was reached in time for supper. This costly experience made the autoists wary during the remainder of the journey, and they were satisfied to stay on the main road, eschewing all short cuts.

OLDS HAS NO MISGIVINGS FOR THE INDUSTRY.

"I have not the least misgiving as to what bearing the present financial disturbance shall have upon our business for 1908," says R. E. Olds, president of the Reo Motor Car Company.

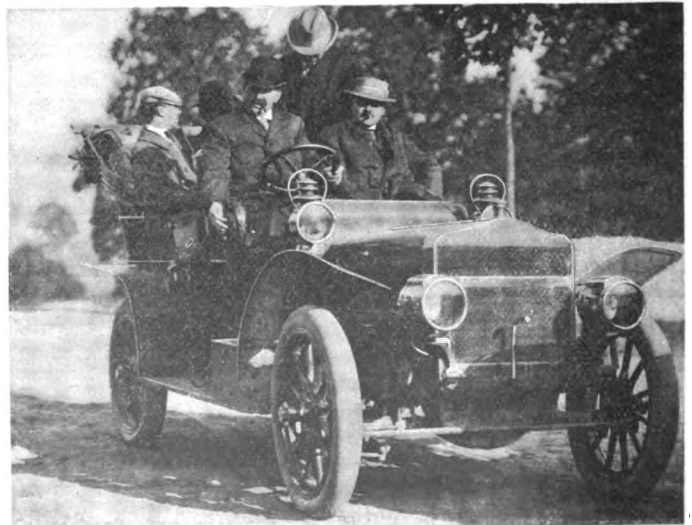
"The good sense of the American people and their matchless confidence in the nation, as a whole, have always won out in great crises, and I believe that they will readily solve the present difficulty which seems to be but temporary. The prosperous condition of every legitimate business throughout our land indicates another high water mark of prosperity during 1908."

KANSAS MAKING PLANS FOR AUTO TOLL ROADS.

TOPEKA, KAN., Nov. 11.—J. R. Drilling, a resident of Garden City, Kan., is now busy with the organization of a company for the construction of special automobile roads in the western half of this State. The plans call for roads from Garden City east to Hutchinson, Great Bend, Wichita, or other important points, and west to the State line. The roads are to be exclusively for automobiles and toll will be charged according to distance run.

MAXWELL ON THE AUTO TRADE OUTLOOK.

"If the pessimists who predicted a falling off in the automobile business on account of the recent slump in the money market had visited our booth at the automobile show in the Grand Central Palace," said J. D. Maxwell, vice-president of the Maxwell-Briscoe Motor Company, "they would have found that their ideas on the subject are entirely wrong. This is proved by the fact that during show week our receipts at the Grand Central Palace, in the shape of deposits, averaged \$20,000 per day. Furthermore, the fact that we have increased our orders for raw material by fifty per cent. ought to have a tendency toward changing the opinions of pessimists regarding the automobile business."



J. D. MAXWELL AND BEN. BRISCOE IN THE LATEST MAXWELL CAR.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANEA

The Royal Motor Car Company, capitalized at \$100,000, with \$51,000 paid in, has been organized at Detroit, to manufacture motor driven vehicles. Paul Arthur as trustee, and Robert Webster are the principal stockholders.

The Seitz Automobile and Transmission Company, composed of capitalists from Monroe, Mich., who own patents covering a transmission for autos and other machinery, has decided to locate in Detroit. The company is capitalized at \$50,000, of which \$20,000 is paid in.

The spark coil and plug department of the Fischer Special Manufacturing Company, Cincinnati, O., having assumed such large proportions, it has been deemed advisable by this firm to separate it entirely from its other specialty business, and for this purpose the Fischer Ignition Company has been formed.

The Hartford Suspension Company has been elected to active membership in the New York Automobile Trade Association the company having been an associate member for some time. The Mitchell Motor Car Company and the Carl H. Page & Company are also new members of the association, Mr. Page being added to the directorate.

R. M. Owen & Company have just been advised by James L. Farmer, secretary of the jury of awards of the Jamestown Exposition, that a gold medal was awarded Reo No. 33 for the 500-mile non-stop dash which it made from New York to Jamestown immediately after finishing the 1907 Glidden tour with a perfect score. Mr. Farmer further states that a replica in bronze of the medal will accompany the award diploma.

A petition in bankruptcy has just been filed against the Da-An-Nite Auto Supply Company of New York City by the following creditors: The B. F. Goodrich Company, \$2,898; Harburg Tire Company, \$1,703, and the Diamond Rubber Company, \$1,244, the petition being based on the fact that the company admitted its insolvency in writing on November 4 last, as well as its willingness to be adjudicated a bankrupt. Frank J. Wallace is president of the company, which was incorporated on December 3, 1906, with a capital of \$20,000.

The Chase Motor Truck Company, Syracuse, N. Y., has acquired a plant for the enlarging of its business. The plant was formerly occupied by the Sweet Steel Company, is located at 310-34 South West street, in that city, and covers 58,000 square feet. Besides the office building on West street, there is a four-story machine shop, a one-story erecting shop, and a one-story pleasure car department. The manufacture of the Chase two-cycle air-cooled commercial cars will be pushed with the enlarged facilities. The pleasure car department will continue the sale of the Ford line.

The White Company, Cleveland, O., makers of White steam cars, has issued a new route book, the fifth in the series issued by the company. The new book gives detailed road directions for over 1,500 miles of the main highways, suitable for tourists in New York State, and in the province of Quebec. The routes given include those in both directions between New York and Albany and in both directions between Al-

bany and Buffalo. In addition, directions are given for the route northward from Albany to Saratoga, and thence by way of Elizabethtown, Plattsburgh and Rouses Point to Montreal. From the latter city the route is given along the north bank of the St. Lawrence to Quebec. Still another route is that by way of Tuxedo and Central Valley to Newburgh. The new route book, like the four numbers which have preceded it, is profusely illustrated.

Individual instruction for owners and chauffeurs in operating automobiles on the crowded streets of New York is the latest improvement adopted by one of the schools for training chauffeurs and owners to operate and care for their cars. To carry on this work of giving every student a full training in operating a car in which he is alone with the instructor, this school, operated by the West Side Y. M. C. A. of New York, has been compelled to add the fifteenth car to its experimental and practical equipment. Under the plan at the Y. M. C. A. school, the student, with no one but his teacher, takes the car out, runs it through the streets and brings it back. Various types of cars are used at the different road lessons, and the practice is so planned that every student has had ample personal experience in handling wheel and throttle under all sorts of difficult driving conditions. The individual plan also gives the instructor full opportunity to test the pupil chauffeur on the rules and laws of the road. It is the rule of the school to "queer" cars in every possible way, and then to make the student diagnose the trouble and remedy it. Students also take cars to pieces and then rebuild them, and in this way put into actual practice in the work shops the information given at the theoretical lectures.

RECENT TRADE CHANGES.

I. C. Kirkham, Brooklyn and Long Island distributor for the Maxwell, is preparing to remove from his present cramped quarters at Bedford avenue and Fulton street, to his new and commodious garage and salesrooms, on Bedford avenue, corner Clifton place.

NEW AGENCIES ESTABLISHED.

Charles E. Miller, the well known New York auto supply dealer, has opened a Brooklyn branch at 1932 Bedford avenue, corner of St. Mark's place.

The Times Square Automobile Company, of New York City, has opened a branch at 309-311 Michigan avenue, Chicago, which will be operated on the same principle as the New York house. Only first-class second-hand automobiles will be carried.

Joseph D. Rourk, for the past two years identified with the Cadillac sub-agency in Brooklyn, N. Y., has secured sole Long Island rights for the sale of Cadillacs, and will continue his headquarters at 1001-3 Bedford avenue. In the past the Brooklyn agency has been a branch of the New York distributors, but will be entirely independent in the future.

PERSONAL TRADE MENTION.

Louis Caswell, well known in the automobile trade, has been appointed sales manager of the Moon Motor Car Company, of St. Louis.

W. H. Dougherty, representative of the Fisk Rubber Company in the Central West, will in the future represent that company in his old territory, New York State.

F. B. Cole, for the past three years foreman of the repair shop of the H. H. Franklin Mfg. Co., Syracuse, N. Y., has accepted a position with the Boyer Motor Car Company, San Francisco.

W. V. H. MacEvoy, formerly sales manager of the C. G. V. Import Company, has joined the sales forces of Archer & Company, sole American concessionaire for the Hotchkiss car, and agent for New York City and surrounding territory, for the Pennsylvania.

Charles C. Craig, formerly sales manager of the Harrison Motor Company, Grand Rapids, Mich., has been appointed sales manager for the Model Automobile Company, Peru, Ind. Mr. Craig is well and favorably known in the trade, and his many friends will be pleased to learn of his new connection.

THE BANKRUPTCY LIST.

KANSAS CITY, Mo., Nov. 9.—The Kansas City Motor Car Company, makers of the Phoenix truck, filed to-day a petition in involuntary bankruptcy. It is signed by F. E. Wear, president, and principal creditor: the William C. Johnson & Sons Machinery Company, of St. Louis, and G. S. Blakeslee, of Kansas City. Liabilities are estimated at \$300,000 and assets at \$150,000. The cause of the petition is given as the present financial stringency, and a statement is made that the company will try to resume business.

BOSTON, Nov. 12.—Howard E. Whiting, automobile dealer of Cambridge, to-day filed a bankruptcy petition. Liabilities, \$11,563; assets, \$7,926.

NEW TRADE PUBLICATIONS.

Morris metallic packing is the subject of a small booklet from H. W. Johnson-Manville Company, William street, New York. In addition to the ordinary grades, the packing is made for such special conditions as steam turbines, air, hydraulic, gas and ammonia service.

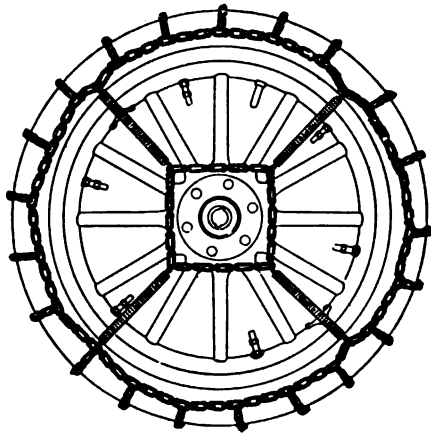
To present the Tincher 1908 model to the motoring world its manufacturers, the Tincher Motor Car Company, of South Bend, Ind., have issued an elegant illustrated catalogue. The new model is dealt with very briefly, but is shown to the best advantage by numerous and excellent half-tone illustrations.

Some information on the principles on which the Warner auto-meter works is contained in a booklet from the Warner Instrument Company, of Beloit, Wis. The Warner combined auto-meter and clock is also described and illustrated, and the intermediate gear by means of which two instruments can be fitted.

Having produced a superior type of buggy-about, which they have designated the autorunabout, the Schacht Manufacturing Company, of Cincinnati, O., has issued an elegant catalogue descriptive of their output. Those interested will be fully able to appreciate the qualities of the autorunabout by a perusal of the text and an examination of the many illustrations.

INFORMATION FOR AUTO USERS

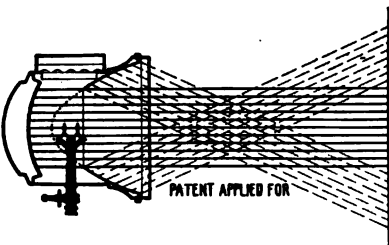
Weed Tire Chain Adjusters.—In order to do away with the clanking commonly heard from cars equipped with Weed chain grips, the makers, the Weed Chain Tire Grip Company, 28 Moore street, New York, have recently brought out an improvement in the shape of an automatic adjuster. This consists of four springs attached at equidistant points round the wheel to the chain



WEED ADJUSTER IN POSITION.

grips, and at the other end to four points on a piece of chain which thus assumes a square outline round the hub of the wheel, as shown by the accompanying illustration. This not only does away with the objectionable noise, but also serves as an automatic "take-up," without at the same time preventing the chain grip from creeping round the tire. Thus the adjuster keeps the chain grips sufficiently taut to prevent rattling or striking the mudguards, and also to take up for wear, but allows sufficient freedom for this progressive action, which is essential to the life of the tire.

Neverout Double Focus Searchlight.—Ever since acetylene headlights have been employed on automobiles, drivers have felt the necessity of having a light which would not only reveal obstructions sufficiently distant to make it possible to pull up in time when going at speed, but also to show the nature of the surface of the road immediately in front of the car. To meet this demand, the Rose Manufacturing Company, 925 Arch Street, Philadelphia, Pa., have brought out their new Neverout double-

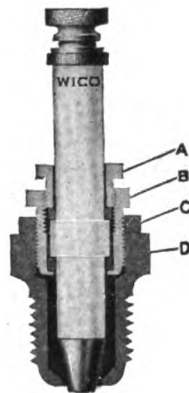


PRINCIPLE OF DOUBLE FOCUS LIGHT.

focus searchlight, the principle of which is illustrated by the accompanying cut. In addition to throwing a strong ray ahead and lighting the road-surface and side, these searchlights are made extremely powerful. They are used in connection with the patent Invertible Safety Gas Producer made by the same concern, and which embodies numerous features of merit exclusive in this device, on which, as its name indicates, the

manufacturers hold patents. It is made in either single or double cylinder types, the latter being recommended for use with the new double-focus headlight.

Wico Spark Plugs.—Under the title of "Wico," the Witherbee Igniter Company, 541 West Forty-third street, New York City, has just brought out a new type of spark plug for which much is claimed. This new plug is illustrated by the accompanying cut. B is the main carrier for the porcelain, A the packing gland, D the main shell into which the porcelain screws, and C the lock nut for the porcelain carrier B. One of its chief features of distinction is the fact that it is equipped with a micrometer adjustment, so that the gap can be set to .001 inch, to conform to the requirements of any compression, or to a magneto or battery system of ignition. This adjustment is accomplished by loosening the nut C and raising or lowering the



CROSS SECTION WICO SPARK PLUG.

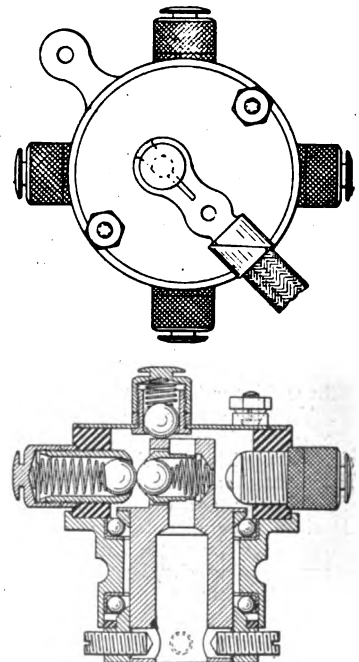
porcelain carrier B. By observing the location of the latter before starting, turning 1-6 of a revolution either way, gives a difference of .001 inch in the width of the sparking gap. When correctly adjusted, the nut C is again locked. By loosening C the porcelain may also be withdrawn for cleaning, making the operation a very simple one. The makers guarantee the porcelain not to break or crack under the most intense heat, while the ends of the electrodes are so formed that they act as a siphon cleaner, at the same time providing a large and efficient sparking surface.

Archer Gasoline Tanks.—After a long series of tests showing conclusively that its use prevents all loss by evaporation, as well as any trouble from water or dirt in the gasoline, the Archer Tank Company, 76 West street, Rutland, Vt., are placing their new system of gasoline storage on the market. The apparatus is of the simplest description, consisting only of valves and piping understood by every mechanic and plumber, all pumps and other complications being avoided. To draw off gasoline it is only necessary to open a valve and close it when through. The system acts on the well-known principle of water displacement, the gasoline being drawn from the top of the tank, while all water and sediment remain at the bottom and cannot possibly escape through the gasoline valve. The tank is carefully made of heavy boiler steel, riveted and caulked, and is buried in the ground for safety and con-

venience. The makers have tested their tanks thousands of times to convince skeptical customers, but the chamois has never shown a trace of water.

Travers Blowout Patches.—Legion hardly suffices to describe the number of devices evolved to enable the autoist to make good the unexpected rim cut or blow-out, all of which, however, seem to lack in some particular essential or other. According to the makers, the Travers Patent Blowout Patch Company, Broadway and Thirty-second street, New York City, this is not the case with their invention. It is built up of rubber and fabric, the same as a shoe, and has a brass flange on the side which locks to the rim and effectively prevents creeping. The patch fits inside the shoe and between the latter and the inner tube and keeps its position as long as the shoe lasts, no cement, straps, lacing or bolts being necessary to put it in place. While protecting the inner tube, it is also protected by the shoe.

Bemus Double Ball Contact Timer.—The T. Alton Bemus Company, 358 Atlantic avenue, Boston, Mass., have perfected their new ball-bearing timer to a point where they are willing to guarantee it to be good for 60,000 miles running, provided it is kept well lubricated and the points of contact, which are 3-8-inch steel balls that may be renewed anywhere at a nominal expense, replaced every 5,000 miles. The ball-bearing is of the simplest construction and is readily adjustable. The ball-races are made larger than usual and each contains 21 3-16-inch balls, thus insuring long life and a continued rigid bearing, an arrangement that makes it possible to guarantee accurate timing for a tremendous mileage. Felt and fiber washers are employed to ren-



SECTION VIEWS NEW BEMUS TIMER.

der the timer oil-tight, as well as dust-proof. The construction of the sockets carrying both the central and outside contacts has been altered, the center contact being brought nearer the axis and the outside contacts extended further in through the insulation, so that any specified number of degrees of contact may be obtained.

THE AUTOMOBILE

VOL. XVII

NEW YORK—THURSDAY, NOVEMBER 21, 1907—CHICAGO

No. 21

Twice Round the Clock on the Open Road

BY W. F. BRADLEY

SEVEN silver cups are needed in New Jersey. Those entitled to them are: J. B. Ryall (Matheson), R. G. Kelsey (Haynes), Ralph Owen (Oldsmobile), R. A. Green (Locomobile), A. T. Purcell (Ford), S. D. Atkinson (Franklin), and Montague Roberts (Thomas Flyer), all of whom finished the twenty-four hour endurance run organized by the New Jersey Automobile and Motor Club without a single lost point. Seven others completed the day-



COURSE WAS VARIED, INCLUDING LONG CLIMBS, AS WELL AS LEVEL STRETCHES.

and-night run, but failed to meet all the requirements of the competition, and the same number were obliged to abandon the contest at different stages through accident or weakness.

Promptly at 2 o'clock, Friday, November 15, Mayor Hurling, of Newark, fired the starting pistol, and J. B. Ryall, with a 1908 Matheson, so recently out of the factory that its paint work had not been completed, responded by going over the line with a full load of passengers. R. G. Kelsey followed one minute later on a four-seater Haynes runabout, racy-looking with its short exhaust pipes projecting through the bonnet, and its monster gasoline tank in the rear. Ralph Owen piloted No. 3 Oldsmobile, and J. P. Hopson took charge of No. 4 Olds "Mudlark" of Florida fame. Three Maxwells, piloted respectively by Dan McCormick, D. Nichols, and Charles Fleming, went away as the word was given, and were followed by Mrs. M. H. Rickey, the only lady driver in the contest, on an air-cooled Marmon car. L. H. Roberts, who succeeded, had the same make of machine with water-cooled engine. R. A. Greene piloted his own Locomobile, a 20-horsepower 1908 model, with yet very few miles to its credit, judging from the spotless condition of its paint and brass work. P. H. Johnston took the Grout touring car No. 11, and Mazzaro, Chilver, and Smith each steered a Mitchell.

The only "six" in the competition was a long-bonneted Ford runabout piloted by A. T. Purcell. F. P. Gillette was responsible for the safety of the 1908 Pullman, just shipped from the

York factory. In strong contrast with its competitors was Dr. J. Finley Bell's little Hewitt runabout, which was certainly not a 1908 model. Franklin supplied the second air-cooled car, with S. D. Atkinson at the wheel; Cadillac was represented by a single and a four-cylinder model, the latter a 1908 production with runabout body, handled by I. M. Uppercue. C. E. Fisher responded with a new Autocar, and Montague Roberts, equipped with a football helmet which

many a competitor would have gladly borrowed during the night, closed the procession on a 1908 Thomas Flyer touring car.

There was a generous and hearty response to the committee's request for cars to aid in the work of organization, the Calvert-Zusi Auto Company lending a 1908 Six-Teen-Six Winton touring car, with which C. S. Calvert carried pressmen around the course at a rapid clip until morning hours. Chester Henry's Pope-Hartford, after being used to lay out the course, was placed at the disposition of the quill-driving group. Official cars were L. T. Wiss' Packard, H. A. Bonnell's Jackson, C. C. Clawson's Buick, and F. A. Crosselmire's Oldsmobile. B. M. Shanley, who had assumed the duties of referee, had his own powerful Mercedes runabout to carry him to any point of the course.

What Was Required of the Twenty-two Competitors.

Conditions of the competition were that each machine should cover five rounds of a 94-mile circuit during the twenty-four hours, without adjustments of any kind and without stopping the engine except when authorized to do so in control. There were no classes, the little single cylinder cars being asked to do all that was demanded of the powerful "sixes." Observers had been placed round the course, but no time was taken; even at the clubhouse control, where hour of arrival was noted, the contestants were not called upon to adhere to any running schedule, the only speed condition being that they should finish the run with not



SPECTATORS WERE NEVER LACKING AROUND THE NEW JERSEY CLUB HOUSE ON BROAD STREET DURING THE CONTEST.



"MONTY" ROBERTS AND HIS THOMAS NEVER FALTERED.

more than three minutes leeway on their starting time. An observer on each car, in most cases supplied from the Stevens Institute, saw to it that the conditions of the competition were adhered to on the road.

Excepting a broad stretch of road near Mount Freedom, where the width was so slight that passing was difficult, and the mud made speed impossible, the course was an excellent one. There were trolley and steam railroad crossings that needed to be approached carefully, three or four dangerous turns, notably the one near Dover, and several towns that needed to be traversed cautiously. Adequate provision had been made to insure safety, however, red flags noting the danger spots and arrows marking all the confusing turns. When the "darky" revellers around Succasunna hatched a plot to transpose all the road signs, the cars had all been round once, the drivers knew the road, and no one was deceived.

Favored with perfect autumnal weather and fair road conditions, the initial round through Bloomfield, Montclair, Verona, Parsippany, Dover, Kenvil, Mount Freedom, Morristown, Bedminster, Somerville, Scotch Plains, Springfield, Hilton, and Irvington to the clubhouse at Newark, was accomplished with few incidents. Nichols' Maxwell, owing to inattention to lubrication, burned out its connecting rod bearings and had to retire, together with its companion driven by McCormick, suffering from carbureter troubles. On one of the first stiff grades J. P. Hopson's Oldsmobile "Mudlark" was in difficulties owing to a slipping clutch, and only reached the top of the hill after vigorous efforts on the part of her passengers. The defect was remedied later and no further difficulty experienced, though it was impossible to obliterate the black points for adjustment.

One Accident Marred an Otherwise Perfect Day.

P. J. Gillette experienced some trouble with the gear shifter of his Pullman during the first round, but put matters right while the engine was running. On reaching Newark he stopped outside the clubhouse to check in and fill the gasoline tank. The operation was almost completed when suddenly the car burst into flames; in less time than it takes to realize it the gasoline tank had exploded and Peter La Greca, the mechanic, and Charles Parsons, the official observer, were enveloped in flames. There was a wild stampede for safety, and a rush to get Robert Ward's big Dietrich and the Pure Oil Company's 2,000-gallon gasoline tank wagon out of the danger zone. La Greca was carried to the clubrooms and treated by a doctor, the report being given out that although rather seriously injured he was in no danger. Reports as to the origin of the fire are as numerous as they are diversified; it is certain, however, that the control at the corner of Broad street and Clinton avenue was not sufficiently guarded with such a large quantity of inflammable liquid at hand. A couple of fire engines which arrived on the spot with due promptitude had nothing more to do than extinguish the smouldering embers of the bodywork of



RALPH OWEN, A CLEAN SCORER WITH HIS OLDSMOBILE.



RYALL AND MATHESON, FIRST TO START, FIRST TO FINISH.

the Pullman, the loss of which was estimated at \$2,000. After the accident precautionary measures were much more stringently observed, the gasoline supply wagon being isolated some yards down the road and each car roped off and all lights extinguished before filling of tanks was commenced.

Fast going had been the rule during the first round, some of the cars covering the ninety-four miles in a little less than three hours, and more than half of them coming round to the clubhouse in less than four hours. On the second round the little warmth of the afternoon sun had been withdrawn, with the result that passengers and drivers began to experience some of the disadvantages of fast traveling through a frost-bound country. The night was perfectly clear with a deep blue sky and bright moon, but the cold northeast wind destroyed all appreciation of nature's charms, the only thought of drivers and passengers being to keep out the freezing blast. Observers and passengers had smaller reason for complaint, for they could change at each round, and seek warmth and rest in the straw mattresses provided for them in the upper rooms of the club premises. The drivers, however, stuck to their task, the only change in their attitude as the night wore on being that exposed portions of their face grew smaller and smaller until at last only an ungainly mass of rugs and two eyes could be seen at the steering wheel.

A Few Rustics Greeted the Cars with Logs and Stones.

Compared with two years ago, the attitude of the rural populations towards the automobilists was pleasing, even enthusiastic in the towns. There were a few exceptions around Mount Freedom, where a stone hurled at the Matheson car smashed George Robertson's goggles and a passenger on another automobile was hit in the chest. Near Denville, too, logs were placed across the road at intervals of about two hundred feet. Hopson, on the Oldsmobile, discovered the obstruction soon enough to avoid an accident, and sent a telephone message to headquarters, on receipt of which the Winton press car was sent out to arouse the police authorities to their duty.

Dr. J. Finley Bell's small Hewitt runabout did not survive the second round, owing to losing time through exhaustion of its gasoline supply when far removed from the only station. E. A. Chilver's Mitchell broke the pump on the third round, overheating ensued and abandonment was decided upon. About 2:30 in the morning I. M. Uppercue, driving the four-cylinder Cadillac, ran into the bank near Somerville and smashed the front right wheel. Up to this time the car had been traveling very fast and was far ahead of the average of 19-miles an hour necessary to finish on schedule time. Ryall, who was the first to pass on his Matheson, brought the Cadillac driver into Newark and dropped him off at the local agency, the observer meanwhile staying near the car on the hillside. A new wheel was shipped out on another car, fitted to the disabled Cadillac and the journey resumed after a loss of about four hours. So fast had been the going, however, that all



PURCELL'S "SIX" FORD, WHICH WON ONE OF THE SEVEN CUPS.



KELSEY, ALWAYS A SPEEDER ON HIS HAYNES RUNABOUT.



FRANKLIN, THE ONLY AIR-COOLED CLEAN SCORER.



CLEAN SCORE LOCOMOBILE, DRIVEN CONTINUOUSLY BY R. A. GREENE, WAS A FAVORITE WITH THE LADIES.



MRS. RICKEY, WHO CONTINUED PLUCKILY TO THE END.

lost time was regained, and the Cadillac finally checked in on time, but with a heavy penalization score against it for replacements.

The second Marmon, the water-cooled variety, fell by the wayside during the night while trying to get round a hay wagon in charge of a sleepy driver. Roberts, who was steering the Marmon, followed the slow horse team along the narrow single-track road near Mount Freedom for a long distance, vainly endeavoring to clear a passage by repeated hoots of his horn. At last, thinking the road was sufficiently wide to allow of a passage, he speeded up his car for a rush, only to drop into a deep ditch and stick there hard and fast.

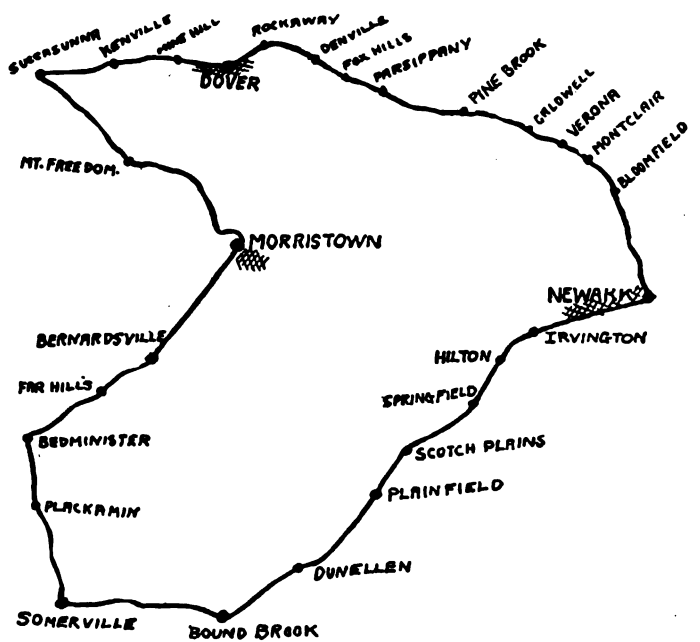
The Fleety Ones Had to Kill Time on Last Round.

By 9 A.M. fifteen cars had started out for the fifth and last round, seven of them having perfect scores and eight more or less penalization points. As the first competitor was not due to check in before 2 o'clock, no one had less than five hours for the ninety-four miles. Ryall, who had led all the way on his Matheson, quit the clubhouse at 8:30, having thus five and one-half hours to cover a circuit that he had once traveled in a little over three hours. According to regulations the cars must not stop for any reason during the last round, and should not travel in a circle, consequently the last round was as slow as some of the others had been fast. Charles Fleming's Maxwell, after leaving the clubhouse, went out of the competition, owing to difficulties with a leaky radiator, its abandonment leaving fourteen cars to finish.

Promptly at 2 o'clock No. 1 Matheson broke its way through the crowd of spectators gathered around the decorated clubhouse on Broad street and crossed the finishing line as a shout of welcome went up. Ryall limped down from his seat with the remark that he was not very tired and that he did not know where the tools were on his car. No work had been done on the engine during the twenty-four hours and the only care the Diamond tires had received was a little extra air on the commencement of the last round. Very little tire trouble was experienced on the

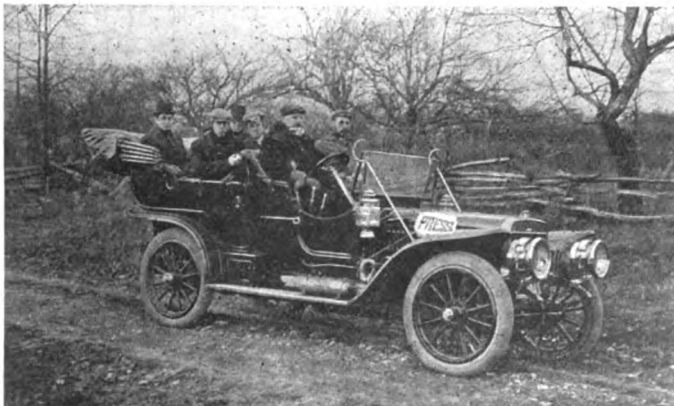
run, though to judge by the stocks carried on some of the cars, immunity from trouble was not expected. Probably, however, it mattered little to the drivers what impression was created in the mind of the layman by the sight of four or five spares.

R. G. Kelsey's racy-looking Haynes snorted over the line a minute after the Matheson, also with a perfect score. Ralph Owen's Oldsmobile, comfortably equipped with top and windshield, was another perfect scorer, followed by the Oldsmobile "Mud-lark," with 12 points penalization for adjustments to the clutch. R. A. Greene's Locomobile, with three lady passengers on the rear seat, arrived perfect, looking none the worse for its 470-mile trip; Mrs. Rickey's Marmon came scurrying round the bend at a rapid rate, several minutes behind its regulation time, and, as events proved, with 341 points against it. S. H. Rossman had taken the wheel during the night to relieve the lady driver, who continued, however, to travel round on the car, and was on the spot smiling when the test ended. Most of the penalization was caused through a leaky petcock causing loss of gasoline.



NINETY-FOUR-MILE COURSE ON WHICH CONTEST WAS HELD.

Although P. H. Johnston's Grout and Wm. Mazzocco's Mitchell both arrived on time, they were each penalized for stopping the engine and making adjustments on the road. The big Ford six-cylinder runabout went over the line with a perfect score, its rumble seat passenger and its observer being so enveloped in woolens as to be totally unrecognizable. S. D. Atkinson brought the air-cooled Franklin to the end of its journey with a perfect record. The single-cylinder Cadillac, the only one-lunger to complete the journey, was not favored by fortune. During the night, the engine was accidentally stalled as the result of running into a tree, and a penalization of 23 points incurred. For some time the committee considered the advisability of remitting the penalization in view of the exceptional circumstances, but finally decided to apply the rules rigorously, with the result that the Cadillac was removed from the perfect score list, although finishing on time and without adjustments. I. M. Uppercue's Cadillac, a four-cylinder runabout, went down with a marred record officially, but with an excellent performance to its credit. C. E. Fisher's four-seated Autocar runabout was another prompt arrival with a marred score due to adjustments on the road. Finally Montague Roberts pulled up on the spot he had started from, held out his watch for the inspection of the official, and furnished the seventh perfect scorer in the New Jersey twenty-four-hour endurance test. All seven drivers had remained at the wheel of their cars the entire twenty-four hours, and of the others only one or two allowed



WINTON SIX-TEEN-SIX, WHICH DELIGHTED THE PRESSMEN.



NEWARK'S MAYOR AND THE CLUB'S ENERGETIC COMMITTEE.

themselves to be relieved. The cars were put to a fairly severe touring test, but the physical strain was certainly greater than the mechanical one. It speaks much for the pluckiness of the drivers that they should have remained at their task so unflinchingly, though suffering severely from the cold during the night, and having none of the stimulants which are supplied by a track.

Half an hour after the last arrival the race committee had worked out the whole of the scores and communicated them to the press. Although under physical disability, Secretary Bonnell remained on duty throughout the whole twenty-four hours, and was well supported by a staff of officials who succeeded in making the event the most successful ever held in the State.

The score of the run:

Car.	H.P.	Entrant.	Driver.	Score.
Matheson ..	20	J. B. Ryall	J. B. Ryall	Perfect
Haynes ...	50	R. G. Kelsey	R. G. Kelsey	Perfect
Oldsmobile .	30	R. A. Greene.....	Ralph Owen	Perfect
Locomobile ..	20	R. A. Greene.....	R. A. Greene.....	Perfect
Ford	40	A. T. Purcell....	A. T. Purcell....	Perfect
Franklin ...	28	F. C. Hinni.....	S. D. Atkinson..	Perfect
Thomas ...	50	F. J. Titus.....	Mont. Roberts...	Perfect
Oldsmobile .	30	R. A. Greene.....	J. P. Hopson....	12
Cadillac ...	10	W. V. Snyder, Jr.	I. M. Plank.....	23
Autocar ...	30	C. E. Fisher.....	C. E. Fisher.....	76
Grout	30	P. H. Johnston...	P. J. Johnston...	107
Mitchell ...	20	J. F. Carey.....	Wm. Mazzocco...	115
Marmon ...	35	Mrs. M. H. Rickey	Mrs. M. H. Rickey	341
Cadillac ...	25	I. M. Uppercue...	I. M. Uppercue...	1098
Maxwell ...	14	J. W. Mason.....	Dan McCormick .	Abandoned
Maxwell ...	14	J. W. Mason.....	D. Nichols	Abandoned
Marmon ...	35	Mrs. M. H. Rickey	L. H. Roberts ...	Abandoned
Mitchell ...	20	E. A. Chliver....	E. A. Chliver....	Abandoned
Mitchell ...	20	C. W. Smith....	C. W. Smith....	Abandoned
Pullman ...	20	P. F. Gillette....	F. P. Gillette ...	Burned
Hewitt	10	Dr. J. F. Bell....	Dr. J. F. Bell ...	Abandoned



MAKING GOOD TIME ON THE OLD NATIONAL PIKE.

One of the familiar covered bridges on the National Road near Harmony, Pa., a district in which they are a common sight. For quite a few miles the old national highway has an excellent surface in the part of Pennsylvania in question, and the stretch constitute a good link in a route for a fall tour.

RECORDS IN RHODE ISLAND CLIMB.

PROVIDENCE, R. I., Nov. 16.—The fourth annual contest for the C. Prescott Knight Cup, under the auspices of the Rhode Island Automobile Club, which was also the sixth annual hill-climb of the latter organization, proved of considerable interest, as it afforded an excellent opportunity to compare the hill-climbing powers of the cars of to-day with those of three years ago, for it was in 1904 that the previous event was held on the grade at Riverpoint. The climb is a half-mile stretch, having an average grade of 14 per cent. and being as stiff as 23 per cent. in parts, while it is also made worse by hard turns. Cedrino in J. K. Crafford's "Fiat Cyclone" brought the 1904 record of :47 4-5 seconds down to :30 flat, and every other participant in the climb did far better than the old record. The next best time was that of L. F. N. Baldwin in a Stanley steamer, the latter bursting a steam pipe on the way up.

Interest naturally centered in the final free-for-all event for the Knight Cup. Dower in the Corbin led off, but the car skidded bodily into a stone wall at the foot of the hill; skillful handling that drew a cheer from the crowd kept the car going, however, and despite the accident the excellent time of :38 flat being made. Blackinton, in a 20-horsepower Stanley, was next, but could not do better than :34. Baldwin followed in the 30-horsepower Stanley, the steam connecting pipe of which burst about 100 feet from the finish, the car starting to roll down the hill backward. Baldwin applied to the judges to enter another car, but the request was refused.

In the other events Herbert A. Capron's 30-horsepower Pope-Hartford, driven by Grady, proved a most consistent performer. It took first in two classes, making the climb in :37 3-5 twice, and with a stripped Pope-Hartford the same driver clipped 3-5 off this in the free-for-all.

Other winners were D. W. Flint in his 15-horsepower Ford, time 49 seconds; J. H. Davis, driving J. A. Foster's 35-horsepower Oldsmobile, time 49 1-5 seconds; and John L. Snow in a 45-horsepower Peerless, which made the climb in :38 flat. In addition to the Knight Cup, which was offered for the fastest time regardless of class, a handsome silver trophy was awarded in each of the events. The climb was excellently managed, the running of the entire program being executed without the slightest hitch.

The officials in charge of the event were: Dr. Julian A. Chase, referee; William Penn Mather, R. Lincoln Lippitt, Darwin Almy and C. Prescott Knight, judges; John R. Dennis, Charles F. Almy and F. H. Smith, timers; Everett F. Boyden, starter, and Eugene M. Sawin, clerk of the course. The summary:

GASOLINE CARS COSTING \$1,000 AND UNDER.	
1. Ford, 15-h.p.; driver, D. W. Flint.....	:49
2. Ford, 15-h.p.; driver, A. B. Rust.....	:56 1-5
STEAM TOURING CARS WITH TONNEAU.	
1. Stanley, 20-h.p.; driver, L. F. N. Baldwin.....	:36 1-5
2. Stanley, 20-h.p.; driver, B. F. Blackinton.....	:40
GASOLINE CARS COSTING \$3,000 AND UNDER.	
1. Pope-Hartford, 20-30-h.p.; driver, H. A. Capron.....	:37 3-5
2. Ford; driver, James Myers.....	:44 4-5
3. Pennsylvania; driver, Sweeney.....	:55
GASOLINE CARS COSTING \$2,000 AND UNDER.	
1. Oldsmobile, 32-h.p.; driver, J. H. Davis.....	:49 1-5
2. Corbin, 24-h.p.; driver, John Pugh.....	:51 2-5
STEAM RUNABOUTS.	
1. Stanley, 20-h.p.; driver, L. F. N. Baldwin.....	:31 3-5
2. Stanley, 20-h.p.; driver, B. F. Blackinton.....	:33
GASOLINE CARS COSTING \$5,000 AND UNDER.	
1. Pope-Hartford, 25-30-h.p.; driver, Grady.....	:37 3-5
2. Peerless, 30-h.p.; driver, J. L. Snow.....	:42
3. Stevens-Duryea, 35-h.p.; driver, C. D. Snow.....	:47
4. Pennsylvania Roadster; driver, Sweeney.....	:50 3-5
GASOLINE CARS COSTING \$5,000; TOURING CARS ONLY.	
1. Peerless, 45-h.p.; driver, J. L. Snow.....	:39
2. Fiat, 60-h.p.; driver, Crafford.....	:45 1-5
3. Stevens-Duryea, 50-h.p.; driver, Conger.....	:51
FREE-FOR-ALL; NO RESTRICTIONS.	
1. Fiat, 60-h.p.; driver, Cedrino.....	:30
2. Stanley, 20-h.p.; driver, B. F. Blackinton.....	:34
3. Pope-Hartford, 25-30-h.p.; driver, Grady.....	:37
4. Corbin, 30-h.p.; driver, J. Dower.....	:38
5. Stanley, 20-h.p.; driver, L. F. N. Baldwin.....	Did not finish



SCENE AT THE START OF THE EVREUX SPEED TEST ON A PERFECT STRETCH OF ROAD GUARDED BY 300 ARTILLERYMEN.

EVREUX HILL-CLIMB HAD STARTERS IN PAIRS

PARIS, Nov. 11.—Racing events for 1908 have finally closed down with a meet at Evreux, sixty miles from Paris, participated in by over one hundred cars. Rigal, on the four-cylinder Darracq racer built for the Grand Prix, took first honors by covering the flying kilometer in 27 3-5, equal to 80 miles an hour, and marking up 1.13-5 for the mile standing start. These two records secured for him the Coupe d'Evreux, the most important trophy offered for competition. Though the road surface was perfect and the track securely guarded by troops, Rigal could not get full speed out of his racer for the kilometer run for fear of not being able to slow down sufficiently before striking a patch of greasy cobblestones.

The day's program had been arranged by the editor of *Les Sports* so that all competitors took the flying kilometer in the morning, and that the two first in each series should run together in the afternoon over the mile course, with a standing start. In every respect the innovation was a success, in several cases the cars being so evenly matched that they ran neck and

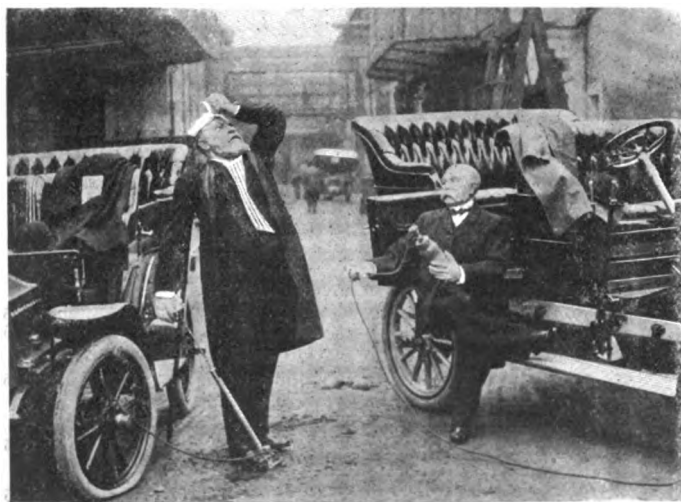
neck until within a few yards of the finishing post. Naturally such a method of racing was only possible on an exceptionally wide road with a perfect surface for the full width and well guarded by troops.

Hemery, on the Benz racer which he handled in the German Emperor's race, won in his own class, defeating a Minerva after a very keen struggle. In the Targa Florio class competition was equally intense between Metargy's Darracq and a Bayard-Clement, won by the former by a couple of lengths.

Although fast time was always made in the tourist class, public interest in the fourteen divisions might have been considerably lessened but for the system of sending the competitors away in pairs. Fastest time of any four-cylinder touring car was made by a Minerva, fully equipped for touring and driven by its owner. A Benz was second in the general classification and a Brasier third. Brasier took the first prize in the flexibility test with a six-cylinder car by covering the kilometer in 0.33 and 3.50. There were four other competitors. Paul Meyan's big Dietrich limousine with inclosed driver's seat—one of the largest closed bodies ever built—excited interest by covering the kilometer at the rate of 55 miles an hour.

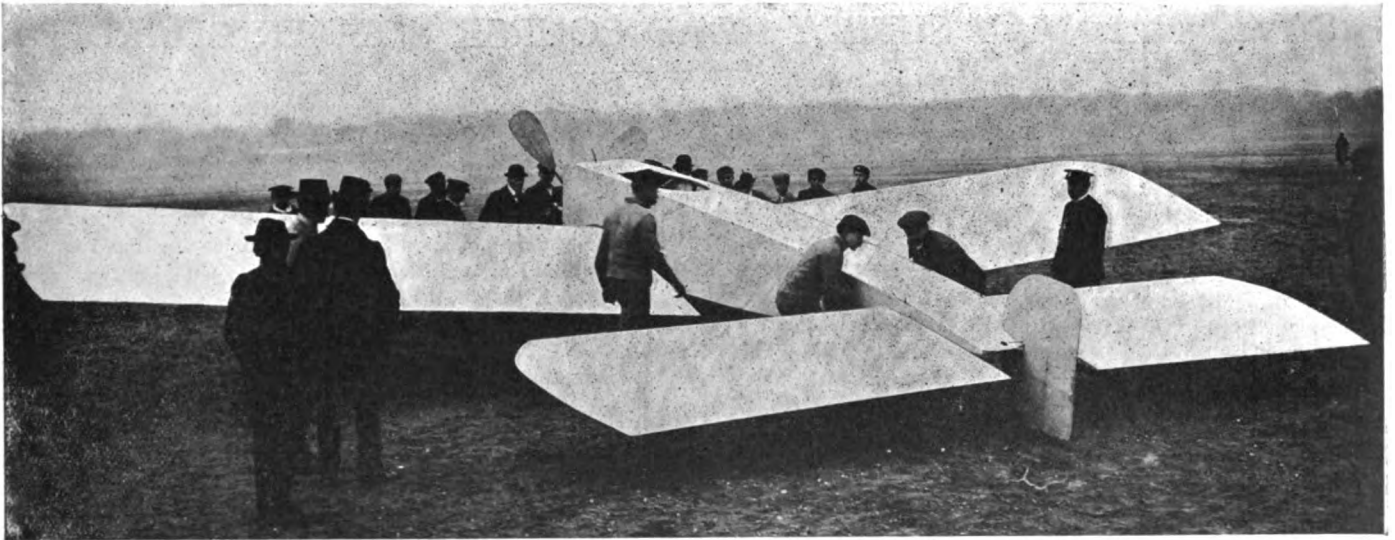
GERMANY'S PRINCIPAL 1908 EVENT.

BERLIN, Nov. 12.—The meeting of delegates of the clubs connected with the cartell of German automobile associates was held here with the Duke of Ratibor in the chair. The main features of the proceedings, which were attended by twenty clubs, was the question of the Prince Henry Tour, which is to be Germany's principal event next season and will take place in June, 1908. The basis for the regulations will be taken from those of the Herkomer tour, but official sanction must first be given before this matter can be entered into, as the clubs are rightly nervous of spending too much labor on what may be eventually vetoed. Letters were read from the Home office and Office of Public Works, stating that permission would in future only be granted to such tours as were absolutely indispensable for the welfare of the industry, and the South German and Rhenian clubs mentioned their intention of dropping the big tours and trials planned for next season. Uniform danger boards are to be put up throughout the empire, and an effort will be made to induce the Prussian Government to send a representative to the meeting of Government delegates to regulate motor traffic on the Continent.



FRENCH STATESMEN HAVING EXPERIENCE WITH TIRE INFLATION.

Premier Clemenceau and Deputy Jaurès, the socialist firebrand of the French Government, have been caught by the enterprising photographer in the act of inflating their automobile tires, the former with the aid of a compressed air tank, the latter by the more vigorous method of the hand pump. Unfortunately for the romance of the story veracity compels the admission that the political leaders were not present in the flesh, but in wax.



LOUIS BLÉRIOT'S AEROPLANE, WITH ANTOINETTE MOTOR, MAKING ITS FIRST APPEARANCE AT ISSY-LES-MOULINEAUX, NEAR PARIS.

EIGHT FLYING MACHINES BUSY ROUND PARIS

PARIS, Nov. 12.—With the *Ville de Paris* and the *Patrie* in the air and the heavier-than-air flying machines of Farman, Comte de la Vaulx, Delagrangé, Blériot, Santos-Dumont, and Pelterie skimming over or on the ground every day, there is no lack of interest in aeronautics around Paris.

Louis Blériot, since discarding last year's moderately successful cellular aeroplane, has been busy on a new model, which was tried out for the first time this week on the Issy-les-Moulineaux drill ground in foggy weather. The new machine is of the monoplane type, eleven yards in width from tip to tip, and thirty square yards bearing surface. To the rear of the two main wings is the elevating rudder divided into two independent sections, and surmounted by a vertical rudder. The engine, a 50-horsepower Antoinette, of the same type as that used by Farman, is carried forward, where it is coupled direct to a four-bladed propeller. A peculiarity of the construction is that the framework of the machine is covered with a special varnished paper, giving considerable strength with minimum weight. The aeroplane is mounted on three rubber-tired wheels, two forward and one in the rear, the latter one being fixed to the vertical rudder and turning with it.

On the trial trip the steering gear was somewhat stiff, the pilot only being able to get the steering wheel out of a straight line after considerable exertion, and then in an abrupt manner. After a few runs under these conditions, the motor pulling well and the machine acting in a fairly satisfactory manner, the rear wheel was bent under the strain and the tests abandoned.

Later in the day Comte de la Vaulx made the first public appearance with his new heavier-than-air machine on the Saint-Cyr military ground. The machine, which is also of the monoplane type, and is driven by an eight-cylinder 50-horsepower Antoinette engine, has a couple of propellers to the rear of the bearing surface, and turning in opposite directions. For the first trip Comte de la Vaulx satisfied himself with runs across the ground to familiarize himself with the working of the machine. Despite the heavy, clay surface, the speed was satisfactory, it being necessary to cut out the ignition to prevent flight.

Henry Farman, who has admittedly got a long lead on all his aeronautical rivals, has been quietly training at Issy every day during the past week and has made several flights varying from 300 yards to almost 800 yards in a straight line. On two occasions he has come back to his starting point and descended to earth without injury to the aeroplane. On the last occasion, however, in the presence of a crowd of 2,000 persons, who

somewhat hindered the movements of the flyer, Farman came down too abruptly and broke one of the wheels. Instead of repairing, he has decided to commence the construction of another aeroplane of smaller area, to be driven by a Panhard-Levassor motor of 100 horsepower. His abstention leaves the \$20,000 Deutsch-Archdeacon prize in abeyance for a time, for although Santos-Dumont has brought out *No. 19* and has invoked the Contest Committee to witness a performance, he is not yet sufficiently in training to accomplish a circular flight.

Lieutenant Lahm, winner of the first international aeronautical cup race, has made an ascension with Hon. C. S. Rolls, from Short's balloon works at Chelsea, London, to Chelmsford. The feature of the trip was that it was intended to descend as near as possible to the house of Claud Crompton, an enthusiastic Chelmsford aeronaut. Wind being favorable, this was done with ease.

Balloon Trips to Order in New England.

BOSTON, Nov. 18.—Arrangements have been made by the Pittsfield Aero Club to make ballooning one of the most popular sports in 1908. According to Charles J. Glidden, a balloon garage will be built and arrangements will be made with the gas company for six ascensions daily. To make a trip all that will be necessary will be to telephone or telegraph the club and in two hours a balloon will be inflated and ready for a journey.



BLÉRIOT SEATED ON HIS BIRD-LIKE FLYER.

SAVANNAH MAY SUPPLY ROAD COURSE, SOLDIER GUARDED

SAVANNAH, GA., Nov. 18.—The Savannah Automobile Club is powerfully interested in a proposed stock chassis race, to be held in January next. For some time past members of the club have been quietly making progress in this direction, and a number of the most influential citizens, including Mayor George W. Tiedeman, have given the proposition their hearty sanction. There is a ten-mile stretch of the finest road possible in the outskirts of the city, and it is possible to add as many miles more should it become necessary. The course is easily reached from the city, and application has been made to the County Commissioners for the use of the road for the proposed race, and it is understood that such permission will be readily granted. The road and all interesting highways would be closed to traffic, and application will be made to the proper authorities for the use of the Georgia State militia, stationed in Savannah, to help police the course. It is expected that there would not be any difficulty in obtaining the assistance of the local State militia.

The plans for the race were thoroughly discussed at a meeting in the Hotel de Sota last week, and one of those in attendance was C. Wood Tatham, of New York City, who is more or

less responsible in bringing the proposition to the attention of the local automobile club.

No difficulty will be experienced in financing the scheme, and sufficient money will be subscribed by those interested in the contest to put the roads in the best possible condition, supplying telephonic communication at different points on the route and supplying visiting autoists and contestants with sufficient garage accommodations. Two or three New York autoists have looked over the proposed course and state that it will afford every facility demanded of a stock car race.

Another meeting will be held within the next few days, and invitations will then be extended to the leading manufacturers and other prominent motorists to visit the course, if possible, and offer any suggestions. The Savannah authorities will also ask the American Automobile Association to sanction the event when the details are thoroughly worked out. The long-distance stock car race, however, will not be the only automobile event to be held, as it is proposed to conduct a series of interesting events during the winter, the entries, of course, determining the exact nature of the other races.

AN AUTOWAY TO THE TOMB OF WASHINGTON

WASHINGTON, D. C., Nov. 18.—Every automobilist in Washington has constituted himself a committee of one to help along the work of the Mount Vernon Association in constructing a boulevard from Alexandria to the home of George Washington at Mount Vernon, Va. Preliminary steps have already been taken. The circuit courts of the counties of Alexandria and Fairfax, Va., will soon be requested to appoint commissioners to ascertain what property it would be necessary to condemn for such a highway, and to estimate the resulting damages and benefits. As soon as the cost can be accurately estimated it is proposed to begin an active campaign for the construction of the boulevard.

This project is one that deserves the cordial support of the public. The existing road leading to Mount Vernon should

be superseded by a modern, broad driveway, in order to render as accessible as possible the spot regarded as sacred by all Americans. At the present time it is impracticable to reach Mount Vernon by automobile on account of the exceedingly bad road. The highway connecting Mount Vernon with Washington is a rare antique—one of the relics of the old heart-breaking days when life was largely spent in struggle with adverse nature. That this road should remain to this day is an anomaly.

With a broad, properly prepared roadway, the journey to the home of Washington would become a pleasantly memorable experience to hundreds of Washington automobilists, to say nothing of the hundreds of automobilists who come to the National Capital every year in their cars.

GERMANY'S DENATURED ALCOHOL EFFORTS

CONSUL T. J. Albert, of Brunswick, Germany, writes that at a recent agricultural congress the question was considered as to what measures seemed appropriate for the general extension of the use of spirits for technical purposes, as follows:

It was stated that the first and most important point for the possibility of an extended technical application of spirits was the establishment of the price. This is influenced by two factors, first, the cost of production, and second, by legislative revenue measures which operate to make spirits dearer or cheaper.

As the cost of production of spirits cannot be lowered under certain limits without destroying the value and importance of its production to agriculture, and as the lowering of the price is an essential condition for its introduction into use for technical purposes, attention must be directed to the point that spirits after leaving the distillery or place of manufacture experience no increase in price which can be possibly avoided. In order to accomplish this, spirits destined to be used for technical purposes should be free from any fiscal tax or, as is the case in Germany, a premium in the shape of a rebate should be paid at the expense of spirits used for drinking purposes.

The cost of denaturing spirits should also be reduced as low as possible by the choice of suitable materials for denaturing, and this cost not increased by fees levied for denaturation. The process used in Germany, which allows spirits which are to be used for motive power to be denatured by the far cheaper material, ben-

zol, in place of one-half of the materials ordinarily necessary for the purpose, was commended. In any case the choice of the cheapest possible material for denaturing should not lead to the employment of materials which would have an unfavorable influence on the spirits in its various ways of application, or materials which by simple manipulation can be removed or remain concealed in the spirits.

In order to prevent the arbitrary advance in the price of spirits by the retail trade, to which it is not seldom subjected, it was suggested that the central distributing stations which supply the retail trade with their goods should make known by continuous advertising throughout the territory concerned the proper retail prices of spirits, and, further, that the co-operation of the retail trade in cheapening prices should be compelled by official restraints, such as granting of licenses of sale upon conditions or by official control.

In Germany the tax on domestic spirits per liter (1.0567 quarts) of pure alcohol is 22 1-2 cents, of which 17 cents is for consumption excise, 4 cents for mash-tub tax, and 1 1-2 cents for distilling tax. Upon application to the proper authority this tax is refunded on spirits used for drinking purposes when exported, and also on alcohol used in perfumeries, head, tooth, and mouth washes, and fluid alcoholic medicines, and for certain ethers.

The present distillery price of refined spirits for 100 liters pure alcohol taxed is \$30, while the price for denatured spirits 90 per cent. alcohol is \$5.95 per 100 liters.

CONCERNING THE PROGRESS OF IGNITION

By CHARLES B. HAYWARD.

WHEN the problem of successfully maintaining a current of one or two amperes at six to eight volts on an automobile was presented to electrical experts by the sorely puzzled manufacturers of several years ago, they looked upon it as something in the light of child's play, and, as such, immensely beneath their dignity to be concerned with. To men who were studying the problems of generating thousands of horsepower at increasingly high voltages, and of transmitting it efficiently over long distances, the idea of not being able to successfully achieve such a ridiculously trivial thing as this appeared absurd. As a result, the ignition problem, which was long one of the most pressing that the automobile builder had to contend with, was left entirely to him and his confrères in the accessory manufacturing line to solve. Few, if any, of the high-priced experts employed by the large companies regarded the matter with anything but complacent and indulgent skepticism of the "I-could-show-you-how-to-do-it-in-short-order" type, and those same companies which were turning out millions of dollars' worth of electrical apparatus apparently never looked upon the automobile ignition field as anything to which their unequalled facilities could be profitably devoted. It is worthy of note in this connection that one company, which literally turns out millions of magnetos and induction coils for telephone purposes, has just taken up the manufacture of ignition spark coils, while another and one of the largest manufacturers of electrical apparatus in the world is now turning its attention to the production of a magneto.

So it came about that the development of the ignition system of the automobile was left largely to the resources of the automobile designer, who knew the conditions but had little conception of the electrical requirements, and the accessory maker, who at that time had no knowledge of the former and was far from being well posted where the latter was concerned. Electric ignition was nothing new, but the fact that a battery, an induction coil, a timer and a plug did not necessarily constitute an efficient ignition system was no better realized six years ago than the fact that a gasoline engine and a running gear did not make an automobile.

Early Coils Were Extremely Crude.

As practice in this country has tended more to the adoption of the high-tension type of ignition, most of the progress in this field centers about the latter where the American maker is concerned. And when the crudity of the apparatus that the pioneer makers had to contend with is borne in mind it is small wonder that the ignition system was long the *bête noir* of the autoist. As a matter of fact, in spite of its extended use in the telephone, the induc-

tion coil had progressed but little from the days of Rhumkorff—its efficiency was about on a par with the wooden axle of our forefathers as compared with the modern ball-bearing. With the exception of such large coils as were specially made for laboratory use, the manufacture of induction coils was entirely according to rule of thumb, and it is to the simultaneous development of wireless telegraphy and the automobile, but more to the latter, that the scientific investigation devoted to the subject in the interim is due.

A great amount of study and experiment had been carried on with a view to raising the efficiency of large transformers for commercial use, but, as already mentioned, the sparking coil was then considered too petty an affair to merit serious attention, except on the part of those directly engaged in its manufacture for automobile use. It is stated on good authority that the efficiency of the majority of the earlier coils seldom exceeded 15 per cent., a fact that readily accounts for the disheartening rapidity with which a set of dry cells became exhausted. But there was no data on which to base standards—cores were made either much too large or too small, usually the former, making a mass of iron that could not be quickly magnetized and demagnetized; the wire of the secondary winding was frequently too fine and there was too much of it, making the resistance of the secondary coil too high; condensers were poorly balanced and vibrator speeds were very low owing to the crude design of this essential—in short, it had always been considered that coarse wire wound about an iron core and a fine winding over that made an induction coil. Some of those old-time coils had a seven or eight-inch core with number 40, or even finer wire in the secondary, and as a consequence of the latter their resistance was as high as 7,000 to 8,000 ohms.

In contrast with this, the resistance of the modern coil ranges from 2,500 to 5,000 ohms, it has a core measuring on the average 1-2 by 5 inches, and the secondary winding is of number 36 wire, while the vibrator speeds are now as high as 80,000 per minute, as compared with 15,000 to 20,000 of the old coils. These appear to be simple changes in design, but it required endless study and experiment to bring them about. It was known that special grades of iron were required for the cores, but further than this no study of the qualifications necessary in this essential had been undertaken up to within a comparatively short time ago.

In the past five years the efficiency of the induction coil designed for automobile use has been practically trebled, for which scientific study of the requirements has been almost wholly responsible. It was realized that the hysteresis qualities of the core were an extremely important factor in limiting vi-

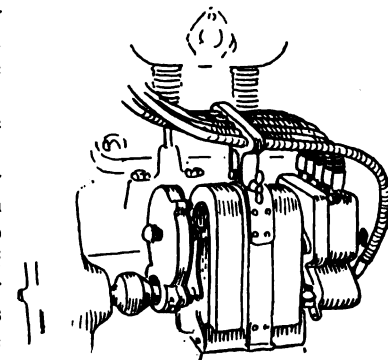


FIG. 3.—Location and drive of the Eisemann magneto on the Packard, the strap fastening being held by a single thumb screw.

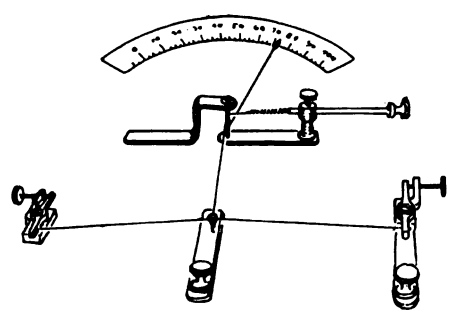


FIG. 1.—Heinze hot-wire pyrometer for testing temperatures of secondary sparks.

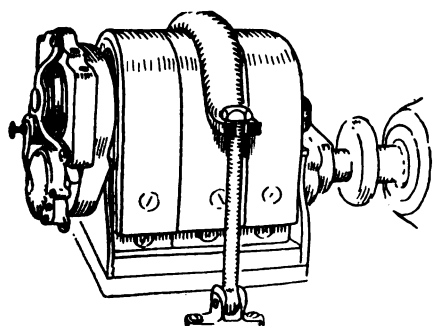


FIG. 2.—Method of fastening and drive of the Bosch high-tension magneto on the Lozier.

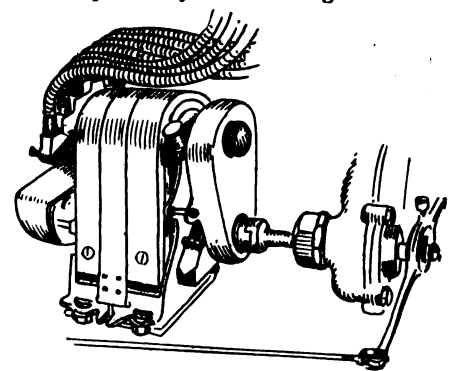


FIG. 4.—Method of advancing and retarding the timing of the spark on Eisemann magneto as mounted on the Peerless.

brator speeds, as had been the excessive amount of iron first used, as the rate of vibrator working naturally depends upon the rapidity with which the core is capable of becoming magnetized and demagnetized. As a means of determining this, John Heinze, of the Heinze Electric Company, Lowell, Mass., has devised

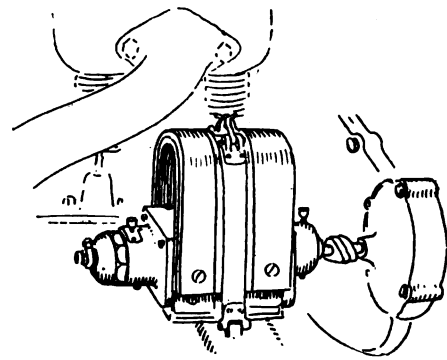


FIG. 5.—Drive of special low-tension magneto taken from short independent shaft forward on the Locomobile.

an instrument for testing this quality of iron. It consists of a special form of generator with a bi-polar field, between the pole pieces of which the sample to be tested is revolved. The winding of the field is independently energized by one milliamper of current, this factor thus being a constant, the resistance of this field and that of the second armature carrying the indicating pointer being the same. According to the character of the path for the magnetic flux presented by the revolving sample of iron, the pointer is deflected more or less, and it is said to be nothing unusual to find that samples of iron differ 20 to 30 degrees, the scale of the instrument being calibrated according to a standard evolved by the inventor.

Mr. Heinze has also devised an extremely ingenious instrument to measure the relative temperatures of the secondary sparks produced by different coils, this being patterned after the principle of the hot-wire pyrometer, and forming an extremely sensitive indicator of varying degrees of temperature as is essential with the slight amount of heat produced by the spark. Both these and a standard form of milliamperemeter for the measurement of secondary currents have played an important part in the development of the Heinze coils, while similar painstaking investigations have been carried on by the makers of other well known spark coils in their laboratories, of which the makers of the Splitdorf, Connecticut, and Pittsfield coils may be cited as instances.

Improvement of Sources of Current Supply.

In view of the capacity of the old-time coil for wasting current, which was also a characteristic of many timers, it is scarcely to be marveled at that the dry cells of those days did not acquit themselves over creditably. There was much to be learned about the making of dry cells for automobile use and this was even more true of the storage cell, as the latter had never been employed under similar conditions previously. Just what changes the makers of dry cells have made in their product to bring about the result is usually a trade secret in each case, but the fact remains that the average output of the modern dry cell, such as

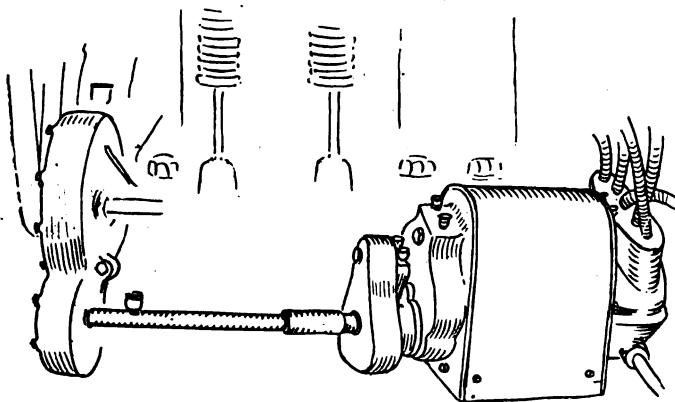


FIG. 6.—Placing of the Remy high-tension magneto on the Apperson; the independent driving is actually much longer proportionately than it appears in the foregoing sketch.

the Columbia or Ever-Ready brands, is now well in excess of 20 amperes when new, where formerly it seldom exceeded 15. While the efficiency of the storage cell designed for automobile use has been correspondingly increased, it has been largely a matter of adaptation to new conditions, and this has been carried out so thoroughly in some of the better known makes such as the Witherbee, National, Geiszler, Royal, Vivax, Rex, Porox and others that there is little left to be desired, though, as will be obvious from the foregoing, the sins of the coil and other parts of the ignition system are easy to attribute to the battery.

Improved forms of grids, special methods of pasting, new forms of insulators, improved gas vents, and special compositions for the active material, as well as a study of the requirements of the strenuous service required for an automobile ignition battery, have all contributed to bring the small accumulator to a state of perfection where troubles from shortcircuiting

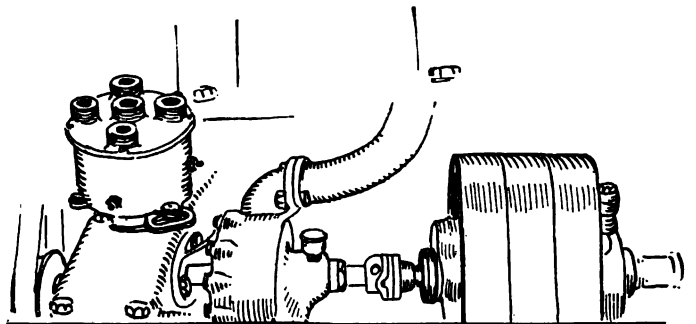


FIG. 7.—Gianoli high-tension magneto with independently operated distributor forming service ignition system of the Columbia gasoline-electric.

through disintegrated plates, buckling and sulphating are comparatively unknown, for which, of course, the increased knowledge on the part of the autoist in handling the battery is in a measure also responsible.

It goes without saying that the most important step in advance, where the source of current supply is considered, has been the development of the magneto, and it appears only logical that with the immense amount of surplus power of the average automobile motor that a small fraction of it should be utilized for generating the ignition current—in other words, that the source of ignition current should be mechanical and thus better within the control of the driver, rather than chemical. Foreign

practice in this regard has always favored the magneto, while in earlier years the tendency was more toward the small direct-current generator. The latter has undergone great improvement, and though more or less generally used, as represented by the Apple apparatus, has not found favor to

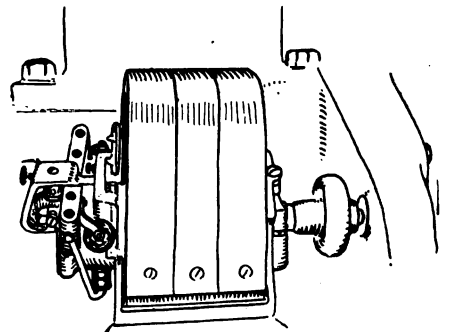


FIG. 8.—Simple enclosed drive of the Bosch high-tension magneto on the new Selden 45-horse-power car.

the same extent as the magneto. Two systems of the latter have been developed for high-tension service, the Bosch of the true high-tension type and the Eisemann of the high-tension-with-coil type, of which the Remy, Pittsfield, Heinze, Dow and Holley are also examples, though the last-named embodies several special features, while the Splitdorf and the U & H belong to the former class, and the makers of the Remy are just introducing a machine of this kind of special design. The K-W magneto is an American machine using a coil, but is of the constant generating type and is characterized by numerous distinctive points of design, which place it in a class by itself.

Improvement in the mechanical generator has taken the form of refined construction rather than the adoption of new prin-

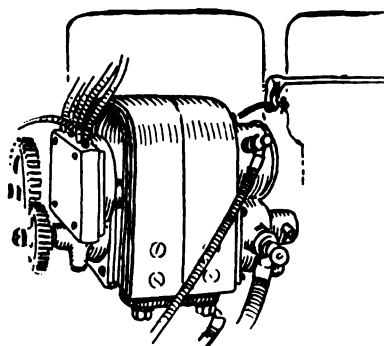


FIG. 9.—Special Holley high-tension magneto designed for small high-speed, four-cylinder motors such as the Ford.

the make-and-break system of ignition has not met with much favor at the hands of American makers, such cars as the Locomobile, Studebaker, Columbia and one or two others such as the Premier employing it. The first-named uses a special magneto made in the home factory, while the Bosch low-tension machine is usually favored on the others.

Though practice is rapidly approaching a standard in this respect, considerable diversity in the mounting and drive of this essential of the power plant is shown by various cars, as will be evident from the accompanying sketches. Some representative examples of this were to be seen in the Garden. Among the different makes noted are the Remy on the Apperson, the Bosch on the Lozier, Selden, Franklin six-cylinder, Stearns, Thomas, Pierce, Matheson and others, while the Eismann is to be found on the Packard, Peerless, Winton, Walter and Pope-Toledo, though an option of either of these makes is given

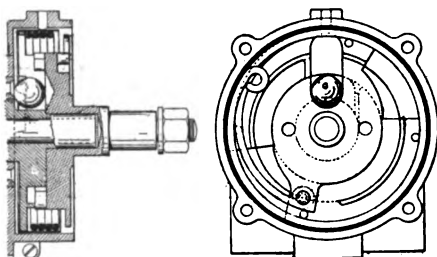


FIG. 10.—Details of the positive self-starting device employed on the U & H magneto.

on the latter car; on the Columbia gasoline-electric the Gianoli high-tension magneto is employed. In every one of the foregoing instances a dual system of ignition is fitted, and practice in this regard may be catalogued as an improvement, as, despite the advances made in ignition systems as a whole, their fallibility has thus come to be recognized in a-practical manner and suitably provided for. In numerous cases this takes the form of a completely independent duplicate system of the standard unit-coil and accumulator type, using a separate set of plugs, while in others the duplication is not carried this far, the distributor of the magneto and the same plugs being utilized in both cases. Taken all in all, the magneto has been perfected to a point where Continental practice in fitting it alone as a means of ignition should soon be followed here on cars the list price of which does not permit of installing two systems. Starting on the magneto

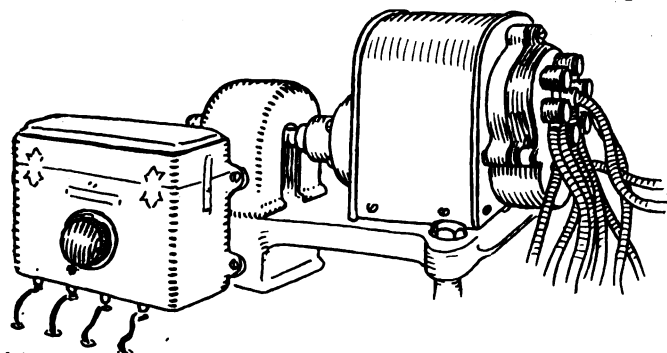


FIG. 11.—Pittsfield high-tension with coil type of magneto, mounted for demonstrating purposes, the coil ordinarily being placed on the dash.

ciples, though better distributor design and primary circuit - breaker have also largely contributed toward the unusually high degree of simplicity and reliability that is now a feature of the magneto. As the low-tension magneto has always represented an electrical generator in its simplest form, nothing further in this direction was to be looked for, but despite this

has been made practically as easy as with a battery, though in this connection the special starting device incorporated in the U. & H. German magneto is of interest. It consists of an arrangement which permits of spinning the armature.

Early trials proved the single coil and distributor system to be productive of endless trouble on the secondary side, which caused its virtual abandonment at that time, but its manifest simplicity has brought about a renewal of interest in it, while improvements in high-tension distributors made in the meantime now permit of its use on the same plane of efficiency as the unit-coil type. The Mosler apparatus is an instance of this, while the Leavitt ball-bearing timer and distributor is an example of the improved form of device now employed for handling the high-tension current. Then there are special systems, such as the Atwater-Kent "spark generator," which is a self-contained unit adapted to be mounted on the dash of the car and driven from the camshaft of the motor. This is designed to be used in connection with batteries and consists of a single non-vibrating coil with appropriate mechanism for both the low and high-tension currents.

On the other hand, there is a decided tendency to retain the four unit coils and to make their working synchronous by eliminating the vibrators and controlling their action by the use of a fifth vibrator coil. As this "master vibrator" works the same for each cylinder, it insures regular firing, as well as much greater ease of adjustment and consequent economy in current. Instances of this are to be found in the Splitdorf system, a feature of which is the use of an individual switch on each non-vibrating coil to facilitate testing, and in the K-W system in which the K-W magneto is employed as the source of current. A system of this kind that marks a considerable departure is that brought out by the Western Electric Company, in which the four unit coils are assembled in an insulating case placed right on the motor. This case is permanently fixed in place and contains all the primary and secondary connections, so that the coils simply have to be slipped in. On the dash a twin vibrating coil is used, one of the units being provided as an emergency. For shifting from one to the other, a pole-changing switch is employed, thus preserving the contact points of the vibrator against the pitting action which ensues from continuously sending the current through it in one direction.

The weak points of every ignition system of earlier days were to be found in these essentials, and, next to the coils, they ranked high as sources of trouble. If the truth were to be told, the plug was suspected far too often and the timer far too little, and this is probably the case even at present. The timers that had been in use prior to the advent of the automobile gave satisfactory service at speeds of 300 r.p.m. or less,

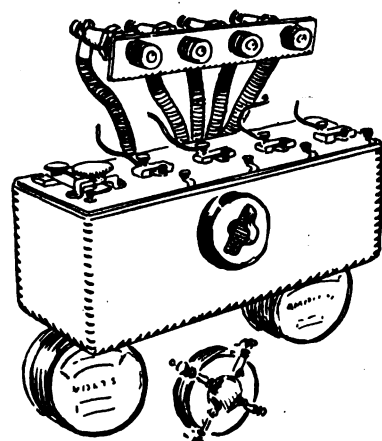


FIG. 12.—Splitdorf synchronous, "master vibrator" system as mounted for demonstration to show its unusual efficiency.

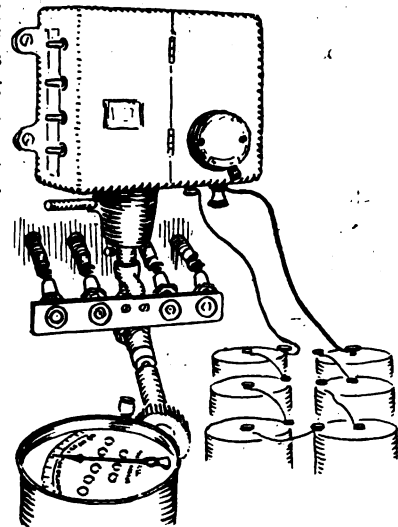


FIG. 13.—How the Atwater-Kent "spark generator" was run more than the equivalent of 4,000 miles on six dry-cells.

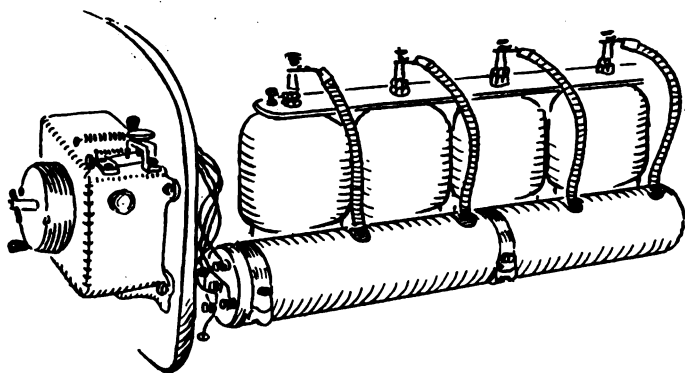


FIG. 14.—Illustrating the unusual location of the coils in the Western Electric "master-vibrator" system which is distinguished by the use of an emergency coil and a pole-changing switch.

for which they were designed, but rapidly went to pieces at higher speeds under the severe duty imposed on a car. The designer was confronted by the task of striking a medium between two essential but divergent qualities—the wipe contact type was superior electrically, while the ball contact type was by far the better form of construction. The former has been gradually eliminated, its place being taken almost altogether by ball or roller contact timers, the Bemus being a good example of the first named. Flimsy construction and poor materials were really at the foundation of all the early timer troubles and these have been practically done away with by the use of steel, bronze and better insulating materials, the employment of ball bearings and the possibility of filling the timer with a lubricant.

In a measure the same thing applies to the spark plug; porcelains were of poor quality and ill adapted to the service required and as a matter of fact, in common with many other things about the motor, these requirements were not any too well understood. Study of the principles involved and improvement in the materials employed, as well as in the workmanship, has been responsible for the vast advances made. The truth of this will be apparent on a little reflection, for while the ignition apparatus of the present day is about as far removed from that of a few years ago as it is possible to imagine, the principle remains the same. There have been no radical changes in this respect where any of the various essentials are concerned, nor, for that matter, in the manner of combining them that has prevailed from the first.

It has been almost entirely a matter of improving upon standards which were found in existence when the automobile came into being, and that this was not always brought about directly will be seen when it is recalled that the single-coil system of ignition was almost universally abandoned after but a comparatively short trial. Now it is being taken up again, both in its original and in a modified form, but it must be admitted that it was really the

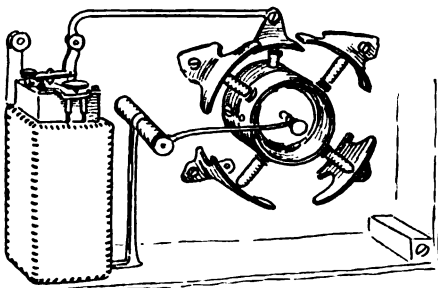


FIG. 15.—The Mosler synchronized system designed to be placed in a glass case on dash.

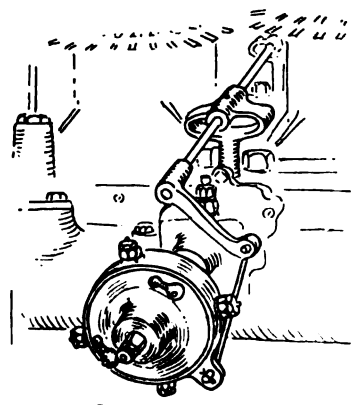


FIG. 16.—Odd location and drive of the primary timer on the Corbin. This is brought out at right angles between the central cylinders.

shortcomings of the timer and the coil trembler that caused its early abandonment, and not any inherent defect in the system itself. It was found impossible to confine the secondary current within bounds with the facilities then offered by timers and distributors and the vibrating mechanism of the single coil employed was frequently faulty to a degree undreamed of by the present-day autoist, whose experience does not date back to a time that, somehow or other, no one ever thinks of as the "good old days." A hundred-mile trip in a day was then unusual, but a twenty-mile trip that did not give rise to more or less frequent necessity for vibrator adjustment or similar tampering with some other part of the ignition system, was far more so.

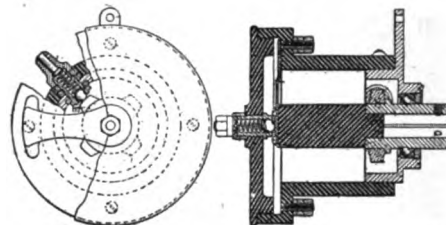


FIG. 17.—Part sectional plan and longitudinal section of the Leavitt distributor showing its simplicity.

Even the wiring of that day was only a makeshift, but it was the best that could be done, for there was no insulated wire on the market specially designed to carry high-tension currents under such adverse conditions as those which prevailed under the bonnet or, as often as not, under the body of one of those old-timers which represented a maximum degree of inaccessibility.

But to get back to the fact that, with all the improvement that has been accomplished, original principles have been adhered to throughout, it is safe to say that nothing furnishes a better illustration of this than the spark plug. Just who was responsible for the original of this essential does not appear at the moment, but ever since the time when Renault brought out the fact prominently that electric ignition on the automobile was a practical success by winning a long-distance road race with a car thus equipped, the spark plug has adhered closely to original principles, and in very many cases to original lines of construction. It will be recalled that in the early days European builders were extremely skeptical of the electric method of ignition, and the hot tube was very general, at least one continuing it even after having adopted electricity, though the American makers used the latter from the first.

Every spark plug consists essentially of an insulated terminal or electrode adapted to be screwed into the cylinder head, the body of the plug thus forming the ground or return connection, and much of the experimenting has been with a view to improving the qualities of the insulating material. Mica, lava, artificial stone and many special compounds have all been pressed into service, despite which porcelain has still continued to hold its own. Glass is the latest of these substances to be employed, as embodied in the Anderson plug. Other improvements have taken the shape of modified forms of terminals, such as the Reliance, in which the insulated electrode is ground off flush with the insulating porcelain; the placing of this terminal in recesses or chambered ends, as in the well-known Spitfire plug, the "Vim" plug, here shown, and a number of others, while accessibility has also been taken into consideration, as is evident from the development of the Breech-block plug, the Brown "Separable lock" plug and others.

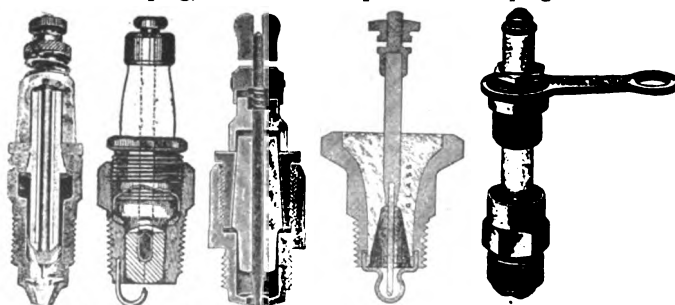


FIG. 18.—Illustrating some recent developments in spark plugs. From left to right these are the K-W. "Vim" plug, the "Reliance," the "Edco," the Anderson glass-insulator plug, and the "Breech-block" plug.

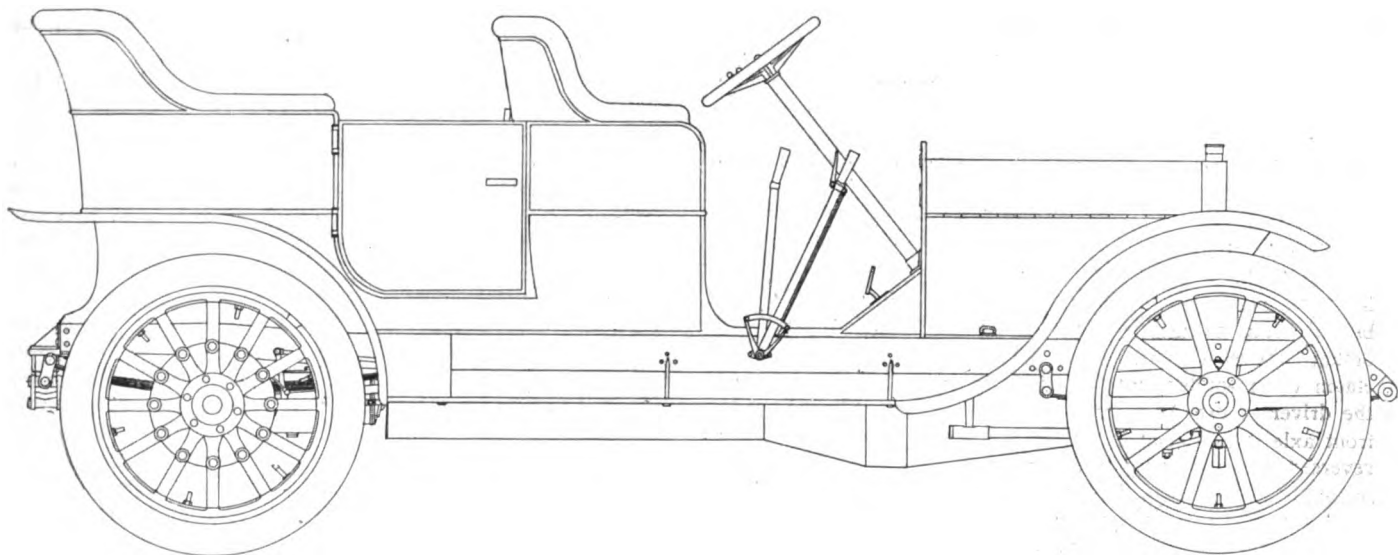
THE PERFECT AUTOMOBILE: A LAYMAN'S IDEA

By G. H. GODLEY.

EVERY automobilist has his own idea of the perfect car, or at least of some parts of it. Many of these ideas are doubtless impracticable, but still there should be a large number of useful ones in the number. This "perfect car" does not lay claim to any deep research or experiment; it is merely a collection of such ideas reduced to paper. There is nothing startlingly original in it, either; the units of engine, gears, and frame are commonplace enough, but have never before, to my knowledge, been combined in just this way.

First to be considered are the general dimensions of the car. The present tendency seems to be toward wheel-bases of ten to eleven feet, thirty-six inch wheels, and motors of forty to sixty horsepower. I am convinced, however, that such cars are out of place on our roads. On rough going they are invariably out-paced by lighter and handier cars, and even under the best conditions, short of a race-track, they are not capable of any speed which a thirty-horsepower machine cannot equal. On hills the large car may have a shade the better of it; but most of our

In the details of the motor it is hard to come to definite conclusions, for the reason that motors as far apart in design as the two poles do their work with apparently the same efficiency and reliability. In this case the aim should be toward simplicity, as it is safe to say that the motor with the fewest parts will cost the least, both originally and for maintenance and will have the longest life. Of course, the simplest of all motors is the two-cycle, but this, in my estimation, has defects which put it entirely out of the question—chiefly its reliance on the incoming gases to clean out the exhaust, and its use of the crank-case for a pumping cylinder. Granted, then, a four-cylinder, four-cycle engine, I would first offset the cylinders from the crankshaft, securing a more direct downward thrust on the power stroke. Valves should be all on one side, thus dispensing with one camshaft and giving a more compact combustion chamber; and that one side should be the right, because with the centers of the cylinders to the left of the crankshaft this will make the motor more symmetrical, and the cams will be lubricated by



OUTLINE DESIGN OF THE PERFECT CAR, AS EMBODIED IN MR GODLEY'S APPENDED DESCRIPTION.

hill roads are so crooked and broken with thank-you-ma'ams that it is unsafe to drive at more than a very moderate speed. For average service, then, fifty horsepower has no advantage over thirty. Also it is vastly more expensive in gasoline and tires, as well as in first cost, so that the buyer, for perhaps double the outlay, gets no more than his neighbor with a smaller car, except sheer bulk of steel and aluminum. Therefore my "perfect car" is of thirty horsepower, with a wheelbase of 112 inches and weight (though this of course is uncertain) of not more than 2,300 pounds.

A number of makers are loudly proclaiming that this, too, is to be a six-cylinder year; and doubtless there will be more six-cylinder cars built this year than ever before. But it should be remembered that there will be more four-cylinder cars built, too. I do not deny that the six-cylinder motor has numerous advantages, and I confess I seriously thought of putting one in the "perfect car"—until I began the design. Then I found that a six-cylinder motor 4x4 1-2 inches would take 38 3-4 inches under the hood, while a four cylinder 4 1-2x5 inches only took 30 3-4 inches. To install the six-cylinder motor my 112-inch wheelbase would have to be increased to 120 inches, with a consequent increase of weight and awkwardness. So the "perfect car" retains its four-cylinder motor, with a bore of 4 1-2 inches and stroke 5 inches—dimensions which, by the A. L. A. M. formula at least, should give thirty full horsepower.

the direct splash of the cranks. Cylinders are cast in pairs, as with the modern methods this is no more difficult than casting them separately, and will shorten the motor and simplify both the inlet and exhaust manifolds as well as the water piping.

The carbureter is, of course, automatic, and should have the float concentric with the spraying nozzle; and although I have never had the opportunity to try one, I favor the type with the Venturi tube air passage. Any device which does away with the extra air valve must be at least praiseworthy. The throttle-valve should be of the balanced piston type, and arranged so that when moved beyond the closed position it admits pure air into the cylinders. This is useful when coasting with the engine as brake, as it does not waste gasoline, and prevents the muffler explosions which usually follow when the spark is switched on again.

Ignition is by a magneto generating a low-tension current, with separate timer, spark-coil, and distributor; these are also used for the current from the storage battery, when starting on the spark. I know it is the ordinary practice to furnish two complete ignition outfits, even to the spark-plugs, but this seems unnecessary. It is also likely to make the operator careless, with the result that in a short time neither system is in working order.

A vertical-tube radiator with belt-driven fan, and centrifugal pump takes care of the cooling. The radiator, a modified "Mercedes" in outline, rests on the front cross-member of the

frame. The pump and fan-belt pulley are placed on the same shaft as the magneto, on the left side of the engine, and are driven from the crank-shaft through an idler. For lubrication the familiar one-pump system is used. This is about the simplest method ever devised except the old-fashioned plain splash, and always gives good results. Also it has no adjustments to be tampered with.

The clutch is the old reliable leather-faced cone, brought up-to-date by the addition of cork inserts. The cone proper is of aluminum, made as light as possible to reduce the inertia; and the cork inserts, together with correct proportioning, give a smooth, progressive engagement. This type is much lighter than the multiple-disk, has about five parts to the multiple-disk's fifty, and gives just as good results. From the clutch the power is transmitted from the change-gear on the rear axle by a shaft with two universal joints. As the motor is hung low on the frame, the joints work at a very small angle, and the friction loss in them is almost negligible. I have chosen the shaft drive in preference to the double-chain because it is quieter, more easily protected from dust and mud, and more efficient.

The change-gear is the standard three-speed and reverse selective type. It is placed on the rear axle for the sake of simplicity—one unit in the place of two. The modern change-gear is so light and compact that it hardly seems worth while to put in a sub-frame to carry it separately. The case is cast steel, integral with the central part of the axle housing; the stiffening ribs are on the inside, giving a smooth outer surface which will not collect mud. The change-gear shafts and gears are removable from the front end of the casing, the differential and bevel gears from the rear end. The live shaft is floating, with clutches to drive the hubs.

Both sets of brakes are on the hubs, but use separate drums, one inside the other, those for the contracting emergency brakes being 14 inches in diameter, and those for the expanding foot brakes being 12 inches. This arrangement helps to keep the brakes cool on long hills. The emergency brakes throw out the clutch when applied, but the foot brakes do not, thus enabling the driver to use the motor as a brake at the same time. The front axle is the usual I-section, drop-forged in one piece, with reversed Elliot steering knuckles. The steering gear is of the screw-and-nut type, with a 16-inch hand wheel on which the spark and throttle levers are mounted. Road wheels are 34 inches in diameter, shod with 3 1-2-inch quick-detachable tires in front and 4-inch in rear. Some drivers object to the use of different sized tires on front and rear wheels on the ground that this makes it impossible to exchange the front and rear tires after they are a little worn, in order to obtain more mileage. It does not seem to occur to them that this admission that their rear tires wear out faster than the front ones is the strongest reason why the rear tires should be made larger. As for the necessity of carrying two spare shoes instead of one when touring, personally I carry none at all. They are clumsy and always in the way, and nowadays, with a garage in every county seat, they are never absolutely necessary.

The frame, of course, is channel-section pressed steel, narrowed in front and raised slightly over the rear axle. Springs should be very wide, with a large number of thin leaves. There seems to be a general feeling that two ordinary semi-elliptic springs are not enough for the rear end of the car. Some makers have tried increasing their length, even to as much as 56 inches; others use three-quarter or full elliptics, but I think the best type is the platform. Some good make of shock absorber should be furnished as part of the regular equipment.

In all parts of the chassis vanadium steel should be used wherever desirable. I do not pretend to any very great learning on the subject of alloy steels, but everybody knows that continued vibration will break ordinary steel, no matter how strong in section. Hess-Bright or some equally good type of radial ball-bearing should be used everywhere except in the motor. Several makers put these on crank shafts as well, and they undoubtedly stand up there, but owing to the large sizes necessary they are

too expensive to be considered for a medium-priced car.

The length of the chassis allows 78 3-4 inches from the dash to the center of the rear axle, which is ample for a side entrance body. The car seats five and the tonneau seat is well forward over the axle, which with the platform springs should make it very comfortable. Few cars have any room for baggage, even of the most necessary sort. On a certain medium-priced machine the "baggage compartment" is a hole under the rear seat about two and a half feet long by one foot wide, but as the opening into it is two inches smaller each way it is impossible even to make the best of what little space there is. On the "perfect car" there is room for a trunk 33 inches long, 21 inches wide and 12 inches deep, partly under the rear seat and projecting back flush with the rear cross member. The floor boards both front and rear are of cast aluminum with pyramid surface covered with gray golf-ball paint, replacing dirty carpets and rubber mats. Mud-guards are very full and are joined to the frame or body; aluminum aprons extend between the frame and running boards, so that it is almost impossible for mud to splash upon the passengers. The pan underneath stretches unbroken from the front cross member of the frame to within twenty inches of the rear axle; this not only keeps the machinery clean, but should have a good effect on the amount of dust raised by the car. There are no unsightly boxes on the running boards; the storage battery has a compartment under the footboard, and the tools under the front seat.

For coloring I prefer gray; it wears well, does not show the dirt, and, though this may seem a little far-fetched, I do not believe it frightens horses like brighter colors do. Upholstering may be in dark red or dark green and should be smooth, except for the roll around the back of the seat. Tufted upholstery is hard to keep clean and has not the business-like look of the other. A cape cart top is indispensable on a car for every-day use, and should be included in the regular price with the lamps and horn.

Throughout this description I have tried to keep in mind that the "perfect car" is to be sold at a moderate price. Of course, the only way to tell the price definitely would be to make the car, but if made in sufficient quantities it would seem that these specifications could be carried out for \$2,750. The market for high-priced cars is uncertain at the best, and varies with every fluctuation of the stock market; and it will grow smaller and smaller as buyers come to see the disadvantages of great weight and over-long wheelbases. On the other hand, there is even now a steady demand for a car such as I have described, and I believe it will grow stronger every year.

WHAT BECOMES OF THE POLISHED CHASSIS.

With dozens of highly polished chassis under their eyes, the question is often asked by show patrons as to what becomes of them after the shows. To produce a smooth, mirror-like surface on side frames, cylinders, gear box, and other parts of the mechanical organs of an automobile is a lengthy and costly task, the work in the main being of such a nature that machinery can only be used in a very limited degree. The utility of the mirror polish ceases with the exhibition, special show chassis—unless they are needed for other exhibitions or salesrooms—being sent back to the works to have their polish removed. The chassis is entirely taken to pieces, and each part submitted to sand blast treatment, after which it is painted and finished in regulation style. The smooth, glossy surface of the show machine makes it almost impossible to apply paint satisfactorily; consequently the car must be robbed of all its glister before it can be given the protective coats of paint with which it will enter into active service.

The buying public demands the opportunity of examining every mechanical part of a car in detail, a fact which is clearly recognized by manufacturers, who do their utmost to educate the unlearned. But as mirror polishing is only labor wasted, it is a pity that fashion should still demand it.

LETTERS INTERESTING AND INSTRUCTIVE

MORE CORRECTIONS ON BATTERY CONNECTIONS.

Editor THE AUTOMOBILE:

[976.]—In your answer to letter No. 921, you say that the No. 2 method of connecting up cells, as shown in cut, has the disadvantage of reducing the voltage at the expense of the current, and thereby greatly shortening the life of the battery. The life of the battery is dependent on the amount of current and the rapidity within certain limits with which it is taken from the battery. The amount of current is dependent on the voltage and the resistance of the circuit. The resistance of the coil part of the circuit is so great as compared to the whole that the circuit resistance is practically the same whether there is one set of four cells in the circuit or two sets (in parallel), and the voltage in the two cases would be the same, hence the amount of current would be the same in each case.

The life of the cells then would really be increased somewhat instead of diminished, because the current would be divided between the two sets, so that it would draw only half as fast from each set while the cells were at work. In my own practice I use twenty cells hooked up with two fives on a side.

W. G. BLISH.

Niles, Mich.

While being entirely in accord with everything you have said in the foregoing letter, we are of the opinion that the statement which caught your attention is substantially correct. If not wholly so, at least in the sense in which it was intended and, we believe, generally understood. Induction coils as generally employed on automobiles are wound to operate on a fraction of an ampere, more or less, at six volts. It was not our intention to have it understood that connecting two sets of four cells in multiple was detrimental, for, as you state, it is a matter of common knowledge that increasing the current by placing two or more sets in parallel connection increases the life of the battery. But no matter how many sets of four are placed in multiple, the voltage will remain the same and the *voltage of four dry cells* is not sufficient to satisfactorily operate a six-volt coil, except when the cells are brand new, and not always then. Six cells are preferable and the sense intended to be conveyed was that it was not practical to run on four even though two sets were placed in multiple. We must admit the language was ambiguous.

QUERIES CONCERNING STEAM TURBINES.

Editor THE AUTOMOBILE:

[968.]—Please answer the following questions through the "Letters Interesting and Instructive" department.

1. Can a 23-inch boiler operate a small turbine with a steam pressure of 400 pounds?

2. Would a small turbine operate a motor boat successfully?

3. Can you give me the address of any concern manufacturing steam turbines?

4. Does any concern manufacture flash boilers and sell them to the trade?

W. & S.

Athol, Mass.

1. If the steam consumption of the turbine be proportioned to that of the generator, there appears to be no reason why it should not operate successfully, though we have never heard of such a high pressure being employed and are under the impression that its use would be practically impossible. Pressures favored by current practice in turbine design range from 70 to 80 pounds, and with such a drop as this, the generator you mention would hardly be capable of supplying sufficient steam.

2. Turbines were first proven successful on small vessels such as torpedo boats, so there seems to be no reason why this should not be the case with a motor boat. It would probably be necessary to use gearing to keep the speed down, as such a small unit as you would employ would have an excessive r.p.m. rate, 4,000 or more. A special propeller would also be necessary.

3. Westinghouse Machine Company, Pittsburgh, Pa.; De Laval Company, Trenton, N. J.

4. You will find the announcements of such makers in our advertising pages.

WANTED, A GOOD GUN-METAL FINISH FOR LAMPS.

Editor THE AUTOMOBILE:

[969.]—Believing that it would be of great interest to many of your readers, I would like to ask if you can offer, through your columns, a formula for gun-metal finish for lamps, and the like. This finish gives a pleasing appearance, and saves a lot of drudgery in the way of polishing.

W. P. ANTHONY.

Eddystone, Pa.

A steel-blue color may be produced on brass by dipping it into a dilute solution of chloride of arsenic, which should be boiling at the time. Or 10 parts of chloride of antimony dissolved in 200 parts of water, in which 30 parts of pure hydrochloric acid have been dissolved. The articles should be dipped until well blued and then washed in clean water and dried in warm sawdust. Black may be produced by coating with a solution of platinum or auric chloride mixed with nitrate of tin. Neither of these is a gun-metal finish, but could probably be made equally attractive and would serve the end in view. The brass should be thoroughly cleaned before undertaking any of these operations, and to do this it would be necessary to dip the articles in a pickling solution composed of one part sulphuric acid to 10 parts water, and washing well before proceeding further. Most of these special finishes are, however, electrolytic, requiring the facilities and skill of an electro-plater to put them on permanently, and we doubt very much if amateur efforts would be entirely a thing of beauty or a joy for any great length of time.

WHICH COMES OUT AHEAD—DOG OR MAN?

Editor THE AUTOMOBILE:

[970.]—I have a few questions for "Letters Interesting and Instructive," as follows:

1. What do you recommend for a non-freezing solution? Would alcohol and water do, without glycerine? If so, what test should the mixture show? Would not such a mixture be less objectionable than one with the glycerine in a car that never runs very hot in the warmest weather?

2. What do you recommend as a brass cleaner and polisher; something that can be easily obtained when none of the prepared solutions are at hand?

3. Would a gill of dry powdered graphite thrown into a planetary gear transmission and sufficient oil added to make a thin paste of it be harmful? I notice that some who recommend the use of graphite seem to advise its use sparingly. Would there be danger of its solidifying or otherwise doing damage in a gear as above?

4. Would some one kindly describe what is most liable to happen when a large dog is run over by a small runabout? While few of us would care to know about this from actual experience, the time is liable to come to any of us any day when driving, when we are called upon to decide immediately between dog and ditch, and as we can tell something about what to expect of the ditch, judging from the size of it, together with our speed, I should like to know something about the dog, from some one else's experience, though perhaps sad it may be to relate.

FRED. D. CLARK.

Prattsburgh, N. Y.

1. For a car which never runs overwarm and on which there is no risk of undue loss from either evaporation or steaming, probably a wood alcohol solution is the best. A 10 per cent. solution with water will not freeze down to 15 degrees F.; 15 per cent., 5 degrees F.; 20 per cent., 2 degrees F.; 25 per cent., 0 F. With glycerine and water, solutions of the same percentages give freezing limits of 20, 15, 8 and 5 degrees F., while with calcium chloride these are lowered to 15, 5, 0 and - 0 F., so that the last-named is probably the most efficient for very low temperatures. Both wood alcohol and glycerine affect rubber so that the flexible joints in the circulating system should be watched for disintegration from time to time, but this is not as great a drawback as the risk of forming deposits in the radiator and waterjackets due to the use of calcium chloride, though this is only apt to occur where the water comes to a boil.

2. A saturated solution of table salt in vinegar is a most effective cleanser for brass. Only the liquid should be rubbed

on, as grains of salt carried on the cleaning rag will scratch the metal. This should be thoroughly washed off in warm water and followed by the application of some cleansing paste, or lacking this a coating of vaseline or lubricating oil will serve to keep the lamp bright, though it will also catch a great deal of dust.

3. It would not be advisable to use graphite or any other paste in a small planetary change-speed gear. Any heavy grease or "dope" would lower the efficiency of the gear considerably by creating a great deal of unnecessary resistance to the turning of the pinions in the confined space. Only thin oil such as is ordinarily used for cylinder lubrication should be employed. Makers of such cars usually specify this particularly in their instructions.

4. Though lacking in the requisite personal experience to give a definite answer to your last query, we should certainly have a decided preference for immediate assassination of the dog, no matter how large, rather than try conclusions with any ditch, no matter how small. The effect of taking the ditch is quite well known, as you infer, and it is particularly on that account that we should prefer damaging the dog, as the result, though uncertain, would doubtless be far less harmful. In the Vanderbilt Cup race of two years ago, Lytle in the Pope-Toledo smeared a good-sized Newfoundland over a mile or more of the Jericho Turnpike. But his speed was probably something like eighty miles an hour and the impact did not disturb the driver in the slightest, to judge from appearances. If there is the slightest time for consideration, we should exert every effort to have one front wheel do the business of killing the animal, as was most neatly accomplished by a French driver in a road race a few years ago. He saw the dog in time and probably might have avoided him, but chose to put him under the left front wheel of his car, which was done much as a skilled marksman would hit a bullseye. Neither the driver nor the dog was disturbed in the slightest, for the latter ended his existence so quickly and peacefully as not to know what had happened to him. Both these occurrences were at high speeds, but we should never hesitate to hit the dog rather than take the ditch. The chief danger to be feared is derangement of the steering gear through the collision, and running over the dog neatly by getting him under the wheel is the easiest way to avoid this. Unless the dog was big enough to upset the runabout, or the driver lost control, no unpleasant results should follow, except to the dog.

CAUSE OF A MOST MYSTERIOUS TROUBLE.

Editor THE AUTOMOBILE:

[971.]—The car that I have charge of carries a four-cylinder engine, and some four weeks ago we were overtaken with a knock in the engine. The car was taken to a garage and the rollers on the uplifts were found worn and replaced with new ones, and our knock is gone; but since then we have been troubled with our engine heating. I will tell you just what we have done to locate the cause, all to no avail. We tore down the engine and removed all carbon from the pistons and cylinders, and then drove the car ten or twelve miles, and it was just the same; that is, when we shut off the electricity the engine made several revolutions and then would run backwards two or three revolutions before it would stop. We then looked at the water pump, and the circulation is O. K.; there is no short-circuit anywhere, cylinders are properly lubricated, and the timing is perfect, and we are running on the same mixture that we used before it began to heat, and still it is heating.

Will you kindly let me know what your experienced opinion is in regard to this matter, and as I am just getting into the auto business, it would be a very much appreciated help to me to be able to locate this trouble for my employer.

A. S. BURKE.

Westfield, Mass.

It strikes us as somewhat queer that the trouble having developed immediately after new rollers were put in place, its connection with the latter was never thought of. The fitting of these new parts without in any manner altering the remaining parts with which they work has naturally served to throw the valve timing all out of adjustment. This is evident from the fact that the motor will run backward for several revolutions, as the average automobile motor is not designed to run in more than one direction, usually clockwise. The cams are not ordinarily

designed to permit it to run in the reverse direction, and we doubt if you will find your motor is capable of doing this when in proper adjustment. Assuming the mixture and other adjustments to be correct, it looks as if the exhaust valve were closing too early, thus imprisoning some of the burnt charge and causing the motor to overheat.

ALCOHOL AND KEROSENE AS EMERGENCY FUELS.

Editor THE AUTOMOBILE:

[972.]—Kindly let me know, through "Letters Interesting and Instructive," if a motor car can be run on alcohol or kerosene oil if you run out of gasoline.

H. McKAY.

Philadelphia, Pa.

Either of these fuels may be used in an automobile motor in an emergency, and by creating as far as possible favorable conditions for their employment, the results will be practically as satisfactory as with gasoline, barring the item of consumption, which will be much greater, particularly in the case of alcohol. If the motor be still warm when the lack of further gasoline is discovered, there should be no great difficulty in getting it under way on either kerosene or alcohol, but if allowed to get cold it will not start as easily and it will probably be necessary to warm the carbureter by wrapping it in cloths dipped in hot water, or by filling the cooling system with hot water. The latter should also be so arranged as to have the motor run much hotter than ordinarily, otherwise the amount of power developed on either of these fuels is not apt to be satisfactory, as owing to their heavier nature, more heat is required to vaporize them. The fan might be stopped or other means taken to raise the temperature, as the cooling water should be allowed to almost reach the boiling point in order to obtain the best results.

WANTED—AN AUTOMATIC LEAK STOPPER.

Editor THE AUTOMOBILE:

[973.]—Do you know of anything on the market that will stop a radiator that leaks? Anything that can be put in with the water. If you do, kindly let me know, and oblige.

Constantine, Mich.

WALTER H. CORNELIUS.

Considering the first part of your question alone, we should say "Solder," but noting the remainder of it, hardly think this answers your query satisfactorily, as lead and water will not mix very well. In case of emergency, a handful of bran will reduce the leak to such proportions that the car may be run without danger, or where very small, will stop it altogether, but aside from this we do not know of any special preparation on the market for this purpose, and should hardly recommend its use, if there were one, as such a repair is merely a makeshift of a very crude type. The only thing to do with a leaky radiator is to have it properly repaired as soon as possible after the leak is discovered in order to prevent further damage, and as it takes a skilled workman to repair a radiator it is advisable not to entrust it to the first tinker as a bungler with the soldering copper can do untold damage to a valuable radiator.

WHAT IS THE TROUBLE WITH THIS COIL?

Editor THE AUTOMOBILE:

[974.]—Can you help me out on the following trouble, with an answer through your valuable paper? I have a two-cylinder spark coil which is missing sparks a great deal. I have bought new sparking points, both tremblers and screws. But it still misses. It is a La Coste coil. No matter how I adjust it, it still misses. Could there be anything the matter with the inside of the coil?

New York City.

F. JACKSON.

There may be considerable the matter with the "insides" of the coil. From the symptoms you give, it would appear that the connections between the ends of the coil, most probably the primary, and the binding posts on the outside of the case, are broken, but not entirely severed, being kept in contact more or less by the insulation, but the jarring of the car knocks them apart at times, which would explain the missing. They resunie

action when the wires jar back again into contact, and the number of times that this will occur as well as the length of time that wires will remain in this condition, is amazing, as we have had occasion to learn from personal experience. Such a break in the secondary winding would not be productive of similar symptoms as the current would jump the break and the effect would be merely that of an extra spark gap. It is also possible that the secondary has been burned out and the current only manages to get through occasionally. The thing to do is to consult the coil maker.

HOW ARE TWO-CYCLE MAIN BEARINGS OILED?

Editor THE AUTOMOBILE:

[975.]—I am a constant reader of "The Automobile," and I take the liberty to ask a question through your "Letters Interesting and Instructive." What is the method in general use concerning the lubrication of the crankpin and piston pin of a two-cycle engine of the automobile type? What would be a conservative estimate of the B. H. P. of a 4 x 4 two-cycle three-cylinder automobile engine, ordinary compression at 700 r. p. m.?

G. P. VANCE.

Elwin, Ill.

Mechanical force-feed lubricators with feeds led directly to the bearings and sight-glasses on the dashboard are generally employed for this purpose on two-cycle cars, the same as on others. There is always a small amount of oil in the bottom of the crankcase as in the four-cycle, although the quantity is closely limited owing to the restricted dimensions of this essential. This splashes the crankpin and the sides of the piston that travels below the lower edge of the cylinder; the piston works the oil up and down between itself and the cylinder walls and sufficient of the oil finds its way into the piston pin bearings. A conservative estimate would be 12 to 15 horsepower.

LENGTHENING THE WHEELBASE OF A CAR.

Editor THE AUTOMOBILE:

[976.]—I would like your opinion about lengthening the wheelbase of my Maxwell runabout. I am thinking of putting two full elliptic springs in front and clamping them to the frame back of the radiator. Would the car ride enough easier to pay for the change? I would like to hear from anybody who has made this change.

MAXWELL.

Crestline, O.

The advisability of making such a change depends largely upon the manner in which it is done, as it naturally follows that increasing the wheelbase of such a short car will make it ride much more comfortably. Doubtless there are some readers of THE AUTOMOBILE who can throw more definite light on the matter by giving their personal experience.

WHO INVENTED THE GASOLINE ENGINE?

Editor THE AUTOMOBILE:

[977.]—Wish to ask you who invented gasoline engines.

Parsons, Kansas.

A. M. PAINTER, M.D.

Beau de Rochas is credited with being the first to propose what is known as the compression type of internal combustion motor, making the use of gasoline possible, and Otto was the first to develop it practically, though all engines at that time were run on gas. It is generally conceded that Gottlieb Daimler was the first to successfully employ a liquid fuel in a motor of this kind.

WHO CAN FURNISH THESE MATERIALS?

Editor THE AUTOMOBILE:

[978.]—I have been referred to you regarding parties who furnish blue prints or castings for gasoline engines of the automobile type. I want to buy either a blue print for an engine of 90-100 horsepower or the castings for same in the rough. Also, of whom can I get chassis, bodies, etc.?

UNIVERSITY OF ILLINOIS.

Pontiac, Ill.

We do not know to whom to refer you for the materials you desire, but doubtless our advertising columns, or some of our readers to whose notice your letter comes, may be able to help you out by furnishing the required information.

FORMULAE FOR SOLDERING ALUMINUM.

Editor THE AUTOMOBILE:

[979.]—Kindly give me a formula for soldering aluminum.

Chicago.

GEORGE MALLEN.

Tin 30 parts, zinc 7 parts, aluminum 3-4 part, manganese 1-10 part; or, using chromium with manganese, tin 30 parts, zinc 8 parts, aluminum 1 part, manganese q. s., chromium 1-16 part, the solder being prepared by fusing together the above-named materials. This is a formula on which a patent has been granted in this country but a short time ago. There are a great many others of differing natures extant, but as there is a firm now manufacturing a specially prepared aluminum solder under their own trade name and by a special process, it would doubtless be far better for anyone requiring a small quantity to purchase it, as the materials required would be expensive and difficult to procure. You will find the announcement of the concern in question in our advertising pages.

POWER REQUIRED TO TURN A MOTOR OVER.

Editor THE AUTOMOBILE:

[980.]—I wish to call your attention to an error in the answer to H. C. Arnold (951) which appeared in "The Automobile," issue of November 7.

One horsepower is that power which will raise 550 pounds one foot per second, 33,000 pounds one foot per minute, or 33 pounds one foot in 1-1000 of a minute.

If 2.5 horsepower is consumed in turning an engine under full load it requires the continuous application of 2.5 horsepower to keep the engine moving regardless of the length of time.

The power consumed per revolution should be expressed in foot pounds. One horsepower equals 33 foot pounds per 1-1000 of a minute, or the time required for a revolution, consequently 33 x 2.5 or 82.5 foot pounds are required to make one revolution of the motor.

In experimenting with the Adams-Farwell revolving motor (which is controlled by means of variable compression) the writer has discovered that when using the engine for a brake, an increase in the compression decreases the braking effect of the motor.

This disproves the popular theory that the braking effect of a motor is due chiefly to compression. The fact is, that the gas is heated by compression and expands on the down stroke of the piston giving back a trifle more power than was consumed in compressing it, as long as the engine retains its heat.

When a motor is turned over by hand time is allowed for some leakage past valves and pistons and some power is consumed in friction so that no accurate idea can be gained of the power given back to the piston by the compressed gas.

The braking effect is due to suction, as can easily be demonstrated with any motor controlled by throttle. Closing the throttle increases the braking effect of the motor; whereas, the opposite would be true if increased compression meant increased braking effect.

This suction and braking effect is also present in all throttling engines when running under their own power with a partially closed throttle.

THE ALCOHOL COMPANY,

Dubuque, Ia.

GLENN MUFFLY.

THINKS GOOD CHAUFFEURS NOT IN DEMAND.

Editor THE AUTOMOBILE:

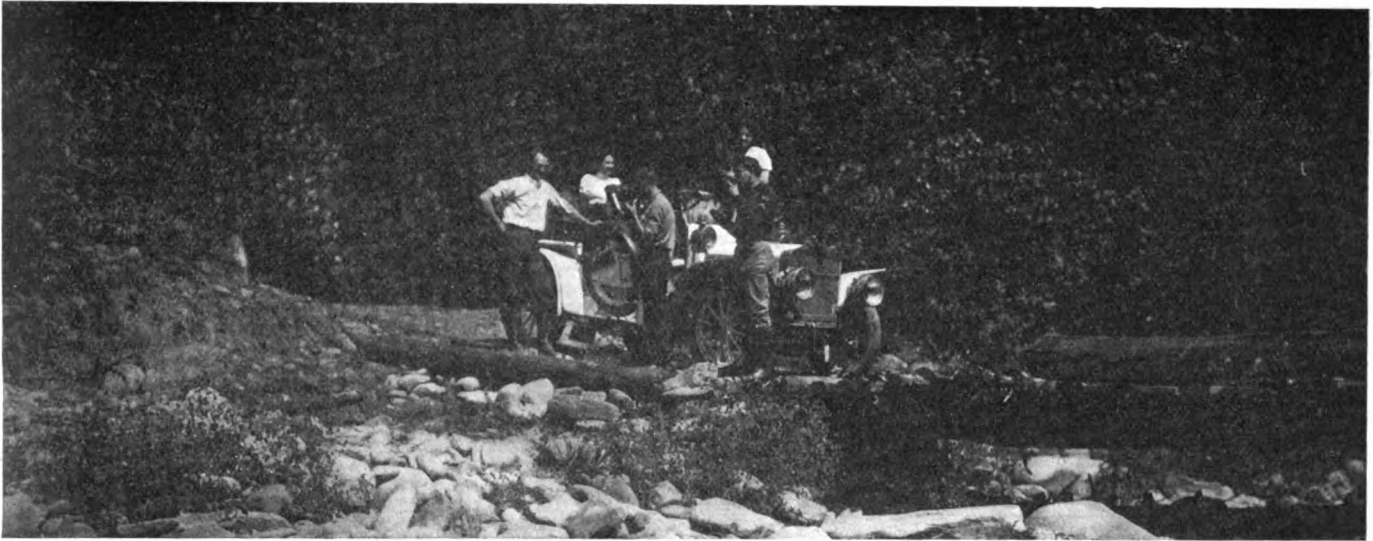
[981.]—I notice that "Experienced," in letter No. 916, page 428, issue of September 26, says that, taken as a whole, he has quite some faults to find with the automobile game. He is certainly far from wrong in many respects, and while not employed in the same capacities as "Experienced," yet, from a chauffeur's viewpoint, let me cite instances as I have found them.

It has been said the automobile field offers splendid opportunities for young men, and that good chauffeurs are in demand, but this statement is evidently misleading; it certainly has been with me. I find that every place I have made application that they need no drivers. I grew tired of chasing and advertised, answered "ad" after "ad," but to no advantage, and yet I held references as good, if not better, than most fellows hold. But while I do not know how true, however, I have been told on good authority that the recommend of a friend is better than all written references, and I am about ready to believe it.

Now I don't pretend that I know everything about the automobile field, but I do claim that my experience on the road has taught me more practical pointers than could ever be gained in a shop or school. It is not for the mere pleasure of driving that I chose automobile work, but as a means of earning a livelihood, and yet to me it seems that I have chosen the wrong calling.

G. F. JACKSON.

Roselle Park, N. J.

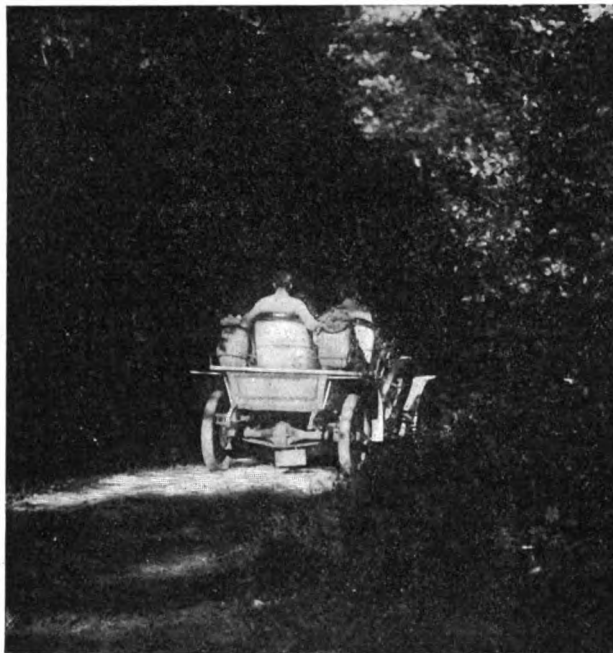


TYPICAL BRIDGE IN HEART OF THE CATSKILLS, WHICH PRESENT PICTURESQUE SCENERY WORTH STRUGGLING TO REACH.

AUTOMOBILE'S UTILITY.

In the early days of automobil- ing it was a source of satisfaction to have the motor-driven vehicle proceed at a reasonable pace over the best of highways. Nowadays traveling of the most extra- ordinary sort is asked and invariably the most difficult conditions are successfully coped with, even though it be over mere apologies for roads and often no roads at all.

Recently H. A. Grant made a hunting trip which took him and his companions into the heart of the Catskill Mountains. A 36-horsepower Maxwell was converted into a runabout, and the car supplied ample power for all necessities encountered during the trying trip, a good part of the 600 miles consisting of mighty poor traveling surface, and at times the going was sufficient to tax even the proverbial Western



STARTING UP CROSS MOUNTAIN FOR HARD CLIMB.

broncho that can ascend a mountainside.

Included was a climb of Cross Mountain, which to the best knowledge of Mr. Grant had never been successfully attempted before by an automobile.

Finally the exploring craft made its way into the woods just as far as its pilot could drive it. It would have been necessary to blaze a path with the swinging of axes before any further progress could be accomplished.

When one goes out of the beaten path he must needs keep in mind a source of replenishment for his gasoline tank, for the product of the Standard trust is still a requisite for most satisfactory progress. However, with the automobile appearing nowadays in most unexpected quarters, the backwoods storekeeper generally has gasoline for sale.



IN THE HEART OF THE WOODS, WHERE FURTHER PROGRESS WAS MADE IMPOSSIBLE BY DENSE FOREST AND ABSENCE OF ROAD.

AN UNBIASED COMPARISON OF THE FOUR AND SIX

By GLENN MUFFLY, THE ADAMS COMPANY.

BEING interested in the manufacture of the only five-cylinder motors on the market, we are in position to give an unbiased opinion on the relative merits of four and six-cylinder motors. The recent articles by F. B. Stearns and the Winton Motor Carriage Company have interested us to the extent that we hereby volunteer a few remarks which may be new to some readers. Let it be said before starting that any number of cylinders up to nine or ten could be used on our revolving motor without addition to the electrical or valve-operating devices. We chose five as the least number of cylinders on which the power strokes overlap.

The principal weak points of the ordinary four-cylinder motor are that the power strokes do not overlap, and at the very time that no power is being generated, the flywheel must be robbed of enough inertia to stop and start all of the pistons. Also the maximum compression comes at a point where the force of the preceding explosion is entirely spent. The six overcomes these difficulties, but loses a point at the same time. In the four-cylinder the pistons are accelerated by the crankshaft at the time of highest explosive pressure, and return part of this inertia to the crankshaft during the latter half of the stroke, as the explosive pressure diminishes. This means that the power transmitted to the crankshaft of the four-cylinder is more uniformly distributed over the effective part of the explosion stroke than in the six. However, the fact still remains that during a brief period of time (about 1-10 of a revolution, or 1-50 of a second at 300 r.p.m.) no power is being generated by the four-cylinder motor. This is not serious, except when taken in conjunction with the above fact that during this interval between power strokes an extra load is imposed upon the flywheel in the form of inertia and compression.

That the weakness of the four-cylinder motor is due to the power consumed in overcoming inertia, and not to the interval between effective power strokes, is proven by the fact that the old Adams-Farwell three-cylinder motor, not having any reciprocating parts, will pull a load at a slower motor speed than is possible with the usual four-cylinder type, in spite of the longer interval between explosions. More power is wasted in overcoming inertia in the six-cylinder type, but only two pistons stop at the same time, and that, while an explosion is taking place, so that the six runs smoother than the four. The difference is not noticeable except at slow speeds, but as slow motor speed is greatly to be desired the six is superior to the four.

Again, it can be shown that considerable power is consumed in overcoming inertia, as the five-cylinder Adams-Farwell will pull a load at a slower motor speed than is possible with the ordinary six-cylinder. The advantage gained by eliminating reciprocating parts overbalances the difference in the frequency of impulses. The revolving motor is also aided by a much heavier flywheel, as practically the entire motor revolves about a stationary shaft. A cylinder of a given size will develop the same amount of power whether working alone or in a set of six, other conditions being equal. In fact, the more frequent

impulses being conducive to steady running should increase the efficiency of the multiple-cylinder motor. Theory and practice do not always agree, chiefly because the theory is not complete.

Here are a few points to be considered by the advocate of many cylinders: The power from the cylinder next to the load is transmitted through two bends in the crankshaft and one bearing; the power from the next cylinder is transmitted through six bends and two bearings; the third through ten bends and three bearings; the sixth cylinder must transmit its power through twenty-two bends and six bearings. It is not hard to conceive of a motor so long that the power from the cylinder farthest from the load, would be entirely consumed in transmission. In four-cylinder stationary power-plants it is customary to apply the load to the middle of the crankshaft. A six-cylinder crankshaft with the driving pulley on one end would call forth severe criticism from designers of stationary engines, who must consider efficiency more carefully than do makers of automobile motors.

It is claimed that the constant suction of the six-cylinder motor aids carburetion. This may be so, but constant suction means that a partial vacuum is constantly maintained in the intake manifold, thus reducing the charge admitted to the cylinders and retarding the piston on the suction stroke. In the four-cylinder motor, the gas in the inlet pipe attains considerable velocity before the end of the suction stroke, and as the piston speed decreases, this velocity aids in ramming the cylinder full of gas. On the other hand, as the end of the suction stroke is approached in the six, another cylinder starts drawing in a charge, thus reducing the pressure within the manifold in spite of designs calculated to prevent it. Some six-cylinder motors have been found to give better results when equipped with two carbureters to overcome this difficulty.

A defender of the six-cylinder type says: "Radiating surface increases as the square, whereas cylinder volume—horsepower—increases as the cube." This calls attention to the fact that more heat units are lost through the cylinder walls of the six than through the walls of a four-cylinder of equal horsepower. As timing gears are set by some one cylinder, we do not see what difference it would make to the mechanic how many cylinders the motor had. As for grinding valves, cleaning spark plugs and looking for knocks or short-circuits, there is no reason why a four-cylinder man could not do the work on a six, but, of course, 50 per cent. more time would be required. We heartily agree with F. B. Stearns in his statement that passengers and motor should be carried between the axles, but think his comparison of a four-cylinder gasoline motor to a four-cylinder steam engine a little overdrawn. We believe, however, that a four-cylinder motor with a liberal flywheel is preferable to the six, unless it is for a high-powered machine with small seating capacity. Personal prejudice may influence the writer in favor of the revolving five-cylinder, but probably there is some reason for being prejudiced in favor of a motor that rivals the six in constant torque and the single-cylinder in simplicity.

THE FOUR CYLINDER MOTOR, THE ENDURING TYPE

By C. F. REDDEN, STUDEBAKER BROS. COMPANY.

THERE has been recently a lively discussion by the advocates of four and six-cylinder engines. It is interesting to trace the development of the modern internal-cumbustion motor from the original single-cylinder to the multiple-cylinder of the present day. When the automobile was in its infancy, the single-cylinder motor was popular; first, because of its simplicity, and, second, because it was easy to manufacture and most economical to run.

This type, while highly satisfactory from the standpoint of reliability, was objectionable on account of excessive vibration. With the advent of the two-cylinder motor a large amount of this vibration was eliminated, but not all. Both the three-cylinder and four-cylinder motors were built, the three-cylinder surviving but a very short time, not so much on account of imperfect balance as on account of difficulty of manufacture. The four-

cylinder motor has become standard because it produces a smooth-running engine with a minimum of complications. The six-cylinder advocate points out that if the two-cylinder is better than the one and the four better than the two, that it is only logical the six should be better than the four, but this does not necessarily follow. Reasoning this way, it might be pointed out that the eight or twelve cylinder is better than the six, but in the manufacturing of every article a certain standard is attained which practice and experience have shown to be most satisfactory, and beyond which no great advantage is obtainable.

It seems to me that the logical way to look at the matter is that the power required necessarily governs the number of cylinders. It has been proven by experience, and designers are generally

agreed, that a 5x5 or a 5 1-2x6-inch cylinder is about the maximum that it is advisable to make. Therefore, for cars up to 40 or even 50 horsepower the four-cylinder motor fulfills every requirement, while for an engine rated at, say 70 horsepower, it is perhaps advisable, though not necessary, to increase the number of cylinders in order that each separate unit may not be too large. I am fully convinced that the standard touring car of the present time, as well as the future, will be fitted with a four-cylinder motor of approximately 40 horsepower. This type of motor car will appeal to a large conservative class of buyers with the wish to use their cars as distinct utilities and who are not affected by fad or fancy, and who are also quite averse to paying for the needless carrying of weight or burning of fuel.

EVOLUTION FROM A MOTORETTE TO A SIX-CYLINDER

BY DAVID FERGUSON, CHIEF ENGINEER OF THE GEORGE N. PIERCE COMPANY

AN honest tale speaks best being plainly told. Briefly, the history of Pierce construction is as follows: In 1900 the Pan-American Fair year, we showed for the first time at the Buffalo Fair, and in the first Madison Square Garden Show, what we then termed a motorette. It was fitted with a 2 3/4-horsepower DeDion motor, of the single-cylinder vertical type, carried in the rear. The change-speed transmission was of the planetary type, and then spur geared driven to the axle.

Our next type was called the stanhope model, and these we then made 3 1/2, 5, 6, and 8 horsepower. They were all of the single-cylinder motor style, with the motor in the rear, the making of which we have since abandoned.

Five years ago we produced a 15-horsepower car, with a vertical motor in front, following the then French practice which had just come into vogue. This car had clash gears, and was bevel driven. The bevel gear drive, which is new to some makers, has been used by us ever since that time.

Four years ago we produced our first four-cylinder "Great Arrow" car, and still continue to produce that type. In 1906 the first six-cylinder "Great Arrows" were produced. Every type car we have ever made has had, for convenience sake, the change-speed lever on the steering column, the only side lever to be found on Pierce cars is that used for the emergency brake.

I strongly advocate, as the result of experience, the use of the six-cylinder car because it is the ideal car for the man who wants the best, and who is willing to pay for it. Of course, for the man who wants to save money in the purchase of his car the four-cylinder will fill the bill. There is no question in my mind but what the six-cylinder car, as I have said before, is perfectly ideal. It is quiet, easy on the transmission, easy on the tires,

and, because it can be nearly always run on the top gear, we fit it with only three speeds. Three speeds is enough because the direct drive is on the high. There is very little use or need for the low speed anywhere, except in mountain climbing.

Two and four-cycle motors have always produced satisfactory results. The six-cycle motor did not produce very good results in stationary practice in England, according to my observations. A cylinder-fired hydro-carbon motor is really a heat motor, and the conservation of heat is the conservation of energy. A six-cycle motor, with its air cooling charge, might cool a motor too much and lower the temperature of the cooling water below 100 degrees, which is impracticable.

I should regard the gas turbine as the final and last word in gas engine practice, because all the cycle phases are reached in that practice. In the present state of the art, the six-cylinder motor is better than any other multiple type, excepting some other multiple having six as its factor, such as twelve, eighteen, twenty-four, thirty, and, finally, thirty-six, the full degrees of the circle. Anything above six-cylinder is too long for an automobile chassis.

Thirty-six-inch wheels and tires seem now to be the ultimate thing, being the happy medium between the twenty-eight-inch bicycle wheel and the forty-four-inch carriage wheel, for tests have shown that any further increase in the size of wheels show a gain only measured by a decimal point.

The forward position of the motor on the chassis in line with the front axle has the merit of distributing the weight between the two axles and also makes for easy steering, and, hence, I do not see any chance for a further shifting about of the power plant from its present well-established position.

PREDICTS SIX CYLINDERS FOR ALL BIG CARS

THE six-cylinder automobile is destined to become a predominant type for high-power machines, according to H. H. Franklin, who gives his opinion as follows:

"In two years practically all automobiles over 40 horsepower will be of the six-cylinder type. Below that horsepower they will be of the four-cylinder type, except in the cheap grade automobiles, which will employ one and two-cylinder motors.

"This does not mean, as it might first appear, that the six-cylinder automobile is going to predominate. The predominating automobile will be of small and of light weight and its horsepower will be under 40.

"The six-cylinder automobile, properly built and designed, is power for power, lighter and cheaper to build than the four-cylinder. It is easier on tires, easier on the transmission and all the mechanism. Because of the smaller diameter of the flywheel there is more ground clearance. The advantage of this, however, is probably offset by the necessary increase in the wheelbase. The six-cylinder automobile, power for power, is more econom-

ical than the four-cylinder. The six-cylinder automobile as it is now being made is too big and too heavy. Manufacturers have added to the already excessive power and weight. This is a great mistake.

"What is wanted is high power with light weight, not high power with excessive weight and bulkiness. The six-cylinder construction offers just what is wanted in that high power can be obtained with less weight and less expense than with four cylinders, but the manufacturers have not done this.

"I predict that within two years the weight of six-cylinder automobiles will have been greatly reduced and a 40 six-cylinder water-cooled automobile will weigh about three thousand pounds, and in due time even less than that. The Franklin air-cooled automobile of 42 horsepower weighs only 2,500 pounds.

"The six-cylinder automobile is very satisfactory to operate. It has that pleasant, smooth-feeling pull, with an entire absence of jar or jerk. It is a better machine to run slowly, due to the six impulses or steady torque, and it requires vastly less work on the part of the driver, owing to the infrequent necessity for gear-changing."

WHAT SOME OF THE AUTO CLUBS ARE DOING

OHIO'S ENTERPRISING CLUB AT CHILLICOTHE.

CHILLICOTHE, O., Nov. 18.—One of the liveliest and most progressive automobile clubs in the Middle West is that organized at Chillicothe a short time ago. It has already a very large membership and is rapidly growing. The intention is to give a series of runs during the coming season. The first of these proved most successful, fifteen cars being entered. Silver cups were awarded for the first and second prize, the first prize being captured by Walter Barret with a Reo, and the second by Joseph Atwell with a Pope-Toledo. The run was followed by an informal luncheon at the club's headquarters.

As Chillicothe is the home of the Logan Construction Company, there were naturally a number of Logans in the tour, as will be seen in the accompanying photograph.

The idea of the club in giving these tours is not to attain neck-break speed, or to impose conditions which would make the tours irksome to the contestants. It is intended to make the conditions such that the tours will be pleasant excursions and are designed more to bring the autoists of Southern Ohio into close and

ANNUAL ELECTION OF THE CHICAGO A. C.

CHICAGO, Nov. 18.—There was no opposition ticket in the field in the recent election of the Chicago Automobile Club, and therefore these were the unanimous selections of the members: President, Ira M. Cobe; first vice-president, F. H. Pietsch; second vice-president, T. J. Hyman; secretary, N. H. Van Sicklen; treasurer, C. E. Gregory; directors, John Farson, Claude Seymour, T. J. Koehler, F. D. Countess, A. J. Banta, and Walden W. Shaw.

During the past year 105 active members have been added to the membership list, giving a total of 582 members, 478 of which are active, 96 non-resident, 5 life, and 3 honorary. The membership dues were increased from \$50 to \$60 a year, the initiation fee being left at \$100. There is agitation for an auxiliary membership, but the impression prevails that there would be considerable difficulty in working out a successful scheme of this sort.

It is possible that the annual banquet of the Chicago Automobile Trades Association, scheduled to take place the evening before the opening of the Chicago show, may be held in the clubhouse of the Chicago Automobile Club. It is a question,



HOW THE CARS LINED UP FOR THE FIRST TOUR OF THE CHILLICOTHE AUTOMOBILE CLUB.

friendly association than to impose straining conditions on the cars entered. It is required, of course, that all cars be driven by the tourers, and no professional chauffeurs are permitted in any of the contests, the idea being to enable the car owner to demonstrate his proficiency at the wheel.

A. C. OF WASHINGTON WANTS BIG MEMBERSHIP.

WASHINGTON, D. C., Nov. 18.—The social season of the Automobile Club of Washington was auspiciously opened Saturday evening with a smoker at the clubhouse on the Brightwood road. Several hundred members and their friends enjoyed a good vaudeville program arranged by the house committee. The committee has a number of good things in hand for the members during the next few weeks.

A meeting of the club was held Wednesday evening, November 13, and steps were taken to reduce the initiation fee to \$10, and the yearly dues to the same figure. By this means it is hoped to take a hundred or more new members. The club is in good condition and is wielding considerable influence in local automobile affairs. The social season promises to be unusually active this winter. The opening of Congress a few weeks hence brings to Washington an increasing number of autoists among the statesmen, a large proportion of whom own cars.

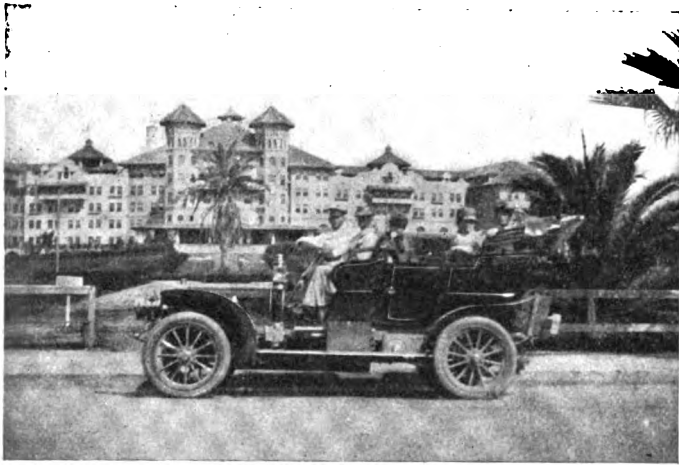
however, as to whether the large attendance could be accommodated in the grill room of the club. The board of directors has tendered the use of the club house to the trade association, and the matter of holding the banquet there will be settled in a few days.

YORK (PA.) ENTERTAINS TOURING PARTIES.

YORK, PA., Nov. 18.—Since the announcement has been made that the Motor Club of Harrisburg will hold another endurance run next spring, local autoists are wideawake and have proposed a joint run with the Capital City enthusiasts. The run will be held early in the spring, and from present indications promises to be a bigger success than last May.

Although the weather is just a trifle cool, it has no effect upon the autoists in this locality. Touring parties from all parts of the East continue to stop in this city on their runs to and from the battlefield at Gettysburg, and nearly every night sees a half dozen or so big touring cars stored in the local garages.

During the past week scores of York autoists attended the annual show at Philadelphia. The Quaker City display was voted a grand success by the local contingent, and naturally more than ordinary interest was centered in the exhibition of the York Motor Car Company, makers of the Pullman cars. The Pull-



SANTA BARBARA, CAL., A WINTER AUTOING PARADISE.

W. A. Wishart and party of Oakland, Cal., in an Acme Car, in front of the Hotel Potter, at Santa Barbara.

man display and demonstration cars were returned over the road to York yesterday and will probably be sent to the Baltimore show.

DELAWARE A. A. IS INCREASING IN MEMBERSHIP.

WILMINGTON, DEL., Nov. 18.—The Delaware Automobile Association has complained to the authorities about glass in the streets of Wilmington, caused by milkmen allowing bottles to fall and break. The association contemplates requesting the Wilmington & Kennett Turnpike Co. to sprinkle its roadway in summer. The association is making arrangements to get out a road book, which will show all of the roads in this section and will contain much other information, including the names of the members.

Arrangements are being made to place signposts at road intersections in the vicinity of Wilmington, which are now lacking at many points. The association now has a membership which includes about one-third of the automobile owners in the State, and it is growing.

BAY STATE A. A. ESTABLISHES A BILLIARD ROOM.

BOSTON, Nov. 18.—At the monthly meeting of the board of directors of the Bay State Automobile Association held last week, much business pertaining to the organization was considered and transacted. The board took action on several measures which will prove of material value to the organization in the very near future, one of the most important of which was the determination to establish a billiard and pool room. The parlor on the second floor, once known as the ladies' reception room, is now to be turned into headquarters for those who delight in chasing the ivories over the green.

"TUESDAY NIGHT" AT THE A. C. OF AMERICA.

NEW YORK, Nov. 19.—The regular Tuesday night at the Automobile Club of America consisted of an interesting illustrated lecture, "The Federation of the World," by Hamilton Holt, managing editor of the *Independent*. Mr. Holt attended the Peace Conference at The Hague and is thoroughly familiar with the subject. Many members attended, not a few of whom participated in the club dinner which preceded the entertainment.

DECEMBER 6 ANNUAL DINNER OF L. I. A. C.

BROOKLYN, N. Y., Nov. 18.—The annual dinner and vaudeville show of the Long Island Automobile Club is set for Friday evening, December 6, and all members are requested by Edwin Melvin, chairman of the dinner committee, to keep the date in mind and arrange affairs so as to be able to attend. Detailed information will be made public later. Several notable speakers are expected to attend.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 9-14.....—Detroit, Riverview Park Auditorium, Detroit Automobile Dealers' Association. LeRoy Pelletier, manager.
- Dec. 14-21.....—St. Louis, Mo., Jai Alai Building, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association. D. M. Strauss, manager.
- Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, manager.
- Jan. 14-18.....—Hartford, Conn., Foot Guard Hall, Hartford Automobile Dealers' Association.
- Feb. 1-8.....—Providence, State Armory, Automobile Show. Frank M. Prescott, manager.
- Feb. 10-15.....—Detroit, Light Guard Armory, Tri-State Automobile and Sporting Goods Association, Seventh Annual Show.
- Feb. 17-22.....—Cleveland, Central Armory, Annual Show, Cleveland Automobile Dealers' Association. George Collister, manager.
- Mar. 7-14.....—Boston, Mechanics' Building and Horticultural Hall, Boston Automobile Dealers' Association. Chester I. Campbell, manager, 5 Park Square.
- Mar. 9-14.....—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dai H. Lewis, manager.
- Mar. 21-28.....—Toronto, Canada, St. Lawrence Arena, Automobile Show. R. M. Jaffray, manager.
- Apr. 5-12.....—Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Motor Boat Shows.

- Dec. 7-14.....—New York City, Grand Central Palace, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 1-8.....—Chicago, Coliseum, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 25-Feb. 1.—Boston, Mechanics' Building, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Feb. 3-8.....—Buffalo, Convention Hall, First Annual Power Boat and Sportsman's Show, auspices of Buffalo Launch Club. Dai H. Lewis, manager.
- Feb. 20-Mar. 7.—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsman's Show.

Races, Hill-Climbs, Etc.

- Nov. 26-28.....—Chicago, Three-day 600-mile Reliability Race, Chicago Motor Club.

FOREIGN.

Shows.

- Nov. 12-Dec. 1.—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
- Nov. 23-30.....—London, Agricultural Hall, Stanley Show.
- Dec. 5-22.....—Berlin, Germany, Automobile Show.
- Dec. 21-Jan. 2.—Brussels, Show, Palace of the Cinquantenaire.
- Jan. 18-Feb. 2, '08—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.
- Mar. 21-28.....—London, Agricultural Hall, Cordingley's Show.

Races, Hill-Climbs, Etc.

- Dec. 8.....—Paris, Straightaway Aeroplane Speed Test, auspices of "L'Auto."
- Dec. 8.....—Paris, Break-down Competition, auspices of "L'Auto."
- May, 1908.....—Paris, Competition for Agricultural Automobiles, auspices of "L'Auto." (Exact date to be announced.)
- May 12, 1908....—Sicily, Targa Florio, Automobile Club of Italy.
- June 20-July 5.—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
- August, 1908....—France, Coupe de la Presse, Automobile Club of France. (Exact date to be announced.)

MAINE'S GROWING WORTH AS AN AUTO STATE

PORTLAND, ME., Nov. 11.—No better proof of the growth of the automobile industry in Maine can be obtained than that furnished by the Secretary of State at Augusta. Registration of automobiles is still going on, though it is about over for the season. The registration law went into effect in this State in 1905, and since that time 2,221 numbers have been issued to owners of cars in Maine. The totals for the three years in which the law has been in effect show that more machines have been registered this year than during any of the previous years. In 1905 the number of automobiles registered was 736, while in 1906 there were 649 registered, showing a falling off of 87 compared with the business of the preceding year. The number registered to date in 1907 is 836, showing a gain of an even hundred over the business of the first year. The number of automobiles registered during October was 41, the number of licenses issued to operators 48, with a total of 2,616, and the number of motorcycles registered 4, with a total of 228.

Automobile agents in Portland report that the past season was the most successful in the history of the industry in this State. Portland is the distributing point for Maine and the majority of the cars coming here have to pass through this city. The demand during the whole of the season has been great and conservative business men, the last whom one would think would take up the sport, have come forward and purchased high-priced cars.

During next season there will not be as many agencies in Portland, but those that will be here are well backed financially and form the backbone of the industry here. The Spear Auto Company has just been organized to handle the Ford cars. Albert M. Spear, Jr., is the manager of the concern. Mr. Spear is practically the pioneer in the business in Maine. He first handled automobiles for the F. B. Bailey Co. He was later identified with the Maine Motor Carriage Company for several years, and last year he was the manager for the J. A. Dowling agency. He has now branched out in business for himself and the indications point to a successful year.

The other agencies in Portland and the cars they will handle during 1908 as far as the stock has been selected are:

J. A. Dowling, Thomas; Maine Motor Carriage Company, Stevens-Duryea, Peerless, and Pope-Hartford; Stoughton & Folkins Company, Maxwell; Herbert A. Harmon, White Steamer; Stranahan-Eldridge Company, Buick; F. A. Nickerson, Pierce Great Arrow; L. C. Gilson Company, Stanley and Reo; The Swan Company, Cadillac.

During the past season more visitors have come to the State of Maine than during any other year. Conservative estimates place the number of out-of-the-State callers at 2,500. Practically all of these have represented the richest men in the great cities who have been on their way to the Maine summer resorts of the State. The coming of fall saw little diminution in the numbers, hundreds coming to take advantage of the excellent hunting.

Though the third annual automobile and power boat show of Portland is still four months off, exhibitors are already being hard-pressed to secure space. The show will be held at the Portland Auditorium during the week beginning February 24 and will, as in past years, be under the direction of Frederick M. Prescott, of Boston. The exhibition for 1908 promises to be the biggest and best the city has yet had and the decorations for the event will be elaborate in the extreme.

CHEMICAL AUTO ENGINE FOR BRIDGEPORT.

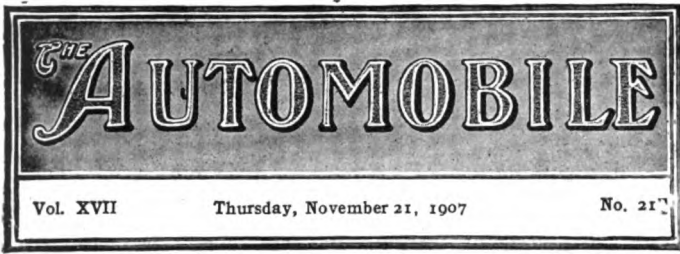
BRIDGEPORT, CONN., Nov. 18.—Within the next two weeks the big Locomobile chemical engine, built by the Locomobile Company for the city of Bridgeport, will be completed. The body was designed and built by the Bridgeport Vehicle Company and is ready for mounting on the chassis. The new chemical fire engine will make its trial trip through the streets of Bridgeport as soon as completed, and it is confidently anticipated that its success will bring about the adoption of other auto fire-fighting apparatus.

PASSING OF THE HORSE ILLUSTRATED.

Ever since there has been such a thing as an automobile, the ultimate passing of the horse has been freely predicted, and the fulfillment of the prophecy, as illustrated by the sight of a horse towing a broken-down car home, has furnished abundant copy for the cartoonist. To turn the tables, the Studebaker Brothers Company recently adopted the novel expedient shown by the accompanying photograph. Three big Studebaker electric trucks were each loaded with a team of heavy truck horses and their usual burden pulled behind. In this manner, the novel cavalcade paraded the length of Broadway from Forty-eighth street to the Battery, and the procession, together with the moral it so pointedly illustrated, attracted no end of attention along the route. As a wind-up to the parade, the 3 1-2-ton trucks were delivered to the H. B. Clafin Company, which makes a total of six vehicles of this size and make now employed by the latter firm.



START OF THE PARADE OF STUDEBAKER AUTOMOBILE TRUCKS THAT RECENTLY ATTRACTED SO MUCH ATTENTION ON BROADWAY



THE CLASS JOURNAL COMPANY

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT

A. G. BATCHELDER, Managing Editor

R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager

LOUIS R. SMITH FRANK B. BARNETT

W. I. RALPH, 1035 Old South Building, Boston, Mass.

C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES:

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Illiffe & Sons, Limited, 20 Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903, and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905	- - - - -	730,000
" " in 1906	- - - - -	791,000
" " this issue	- - - - -	18,000
" " since January 1	- - - - -	780,900

Are Six-Cylinder Cars Striking Wide of the Mark? Whatever may be the merits of the six-cylinder motor, as compared with the four, it is quite plain that merely tacking an extra pair of cylinders on the existing four-cylinder engine is not the most efficient means of taking advantage of these benefits. And this is exactly what the majority of builders of six-cylinder models for the coming season have done. Granted that the extra flexibility, smoothness of running, and capacity for taking grades with less gear-changing compensate for the extra mechanism involved, it can hardly be said that this forms a sufficient reason for making the six-cylinder car a ponderous creation that well merits the title of road locomotive. But this is what the average builder who is marketing a car of this type is making of it, in support of which it may be mentioned that the majority of the six-cylinder cars revealed at the shows in New York City averaged 70 to 90 horsepower. They were rated far more conservatively than this, of course, but nominal ratings do not alter the facts. The reason for this is equally plain, as most of the makers are still in more or less of a quandary regarding the six-cylinder car. They feel certain that there will be a demand for it, but do not wish to go to any unnecessary expense in placing themselves in a position to take advantage of this demand. If the six-cylinder type is the car of the future and is destined to eventually supplant the four, as so many believe, then some of the present developments along this line certainly seem designed to place that day further off, rather than to bring it nearer.

A Vital Lesson from the European Situation.

One thing which stands out unmistakably clear in the European shake-up—variously designated as crash, revolution, evolution, and dull season—is the disfavor into which the high-powered car has fallen. Enter any French or Italian factory producing both large and small models, ask for a \$7,000 60-horsepower car, and it will be produced on the spot. But state that your wants are a modest 16-20-horsepower chassis, and although you may offer spot cash you will be asked to wait a few weeks for delivery.

Most significant is the fact that instead of being a temporary glut due to overestimation of the possible number of users of automobiles, the slump is the outcome of the decision of the automobile public that there is little need for high-powered cars. From the early days when a single cylinder under a big bonnet developed eight horsepower users have been led on to twos, fours, and sixes, each season's car bigger and more powerful than its predecessor, until all natural requirements have been surpassed. The number of persons capable of purchasing powerful road locomotives has not decreased, but the number of those willing to face the maintenance expenses of a "sixty" when a "twenty" will meet all natural requirements is not as large as it used to be, as European constructors are finding out to their cost.

In this connection there is a significant story in the report of the Royal Automobile Club of Great Britain on the 15,000-mile journey of the Hotchkiss six-cylinder car. Tire expenses worked out at the rate of twelve cents a mile; gasoline consumption was not better than 7 1-2 miles to the gallon, tires and gasoline together approximating sixteen cents per mile. This does not substantiate the theory of advocates of six-cylinder cars that the smoother-running engine diminishes wear of tires, nor is any consolation to be found in the plea that the car is not one of the best of its class.

There will always be a certain demand for powerful engines for elaborate closed touring cars and for the special use of speed lovers, but America will find, as Europe has already discovered—and that at no distant date—that the popularity of the monster has gone. With the lesson before them, it is to be hoped that home constructors will be better prepared to meet this phase of evolution than their confrères on the other side of the Atlantic.



Overwhelming Influence of Fashion on Auto Design.

If there be any one thing of current production on which the influence of fashion would be regarded generally as a minus quantity, machinery would most naturally be accorded that distinction. It is nothing strange that fashion should dictate body lines, upholstery, or the details of finish, but that its influence is much more far-reaching than these purely non-technical matters must be evident to anyone who has observed the trend of design during the past few years. Three years ago there were a number of makers who had evolved systems embodying numerous special features of design, on which they dwelt at great length and to which were ascribed many, if not all, of the superior points offered by their productions. Observation brings to light the fact that many of these have gone by the board in the interim, so that the numerous distinctive features which formerly served to identify such cars have, in the 1908 models, been completely overshadowed by the demand for a machine that shall conform as closely as possible to the dictates of fashion.

Not that these particular details of design and construction were lacking in merit—probably the truth of the matter would show them to have been quite the contrary in some instances—but they had the fatal defect of not conforming to what the automobile buyer has come to consider as a standard. On the other hand, many of them were nothing more than talking points, and as such deserved to be eliminated, as the car was better without them. It is not to be presumed from this, however, that American cars, one and all, have settled down to a single standard, but the trend is a striking illustration of the influence of fashion on something generally considered beyond its pale.

SUCCESSFUL OPENING OF THE BALTIMORE SHOW

BALTIMORE, Nov. 18.—Shortly after eight o'clock on Saturday night, Baltimore's third annual automobile show was opened to the public in the hall and warerooms adjoining the garage on Mt. Royal avenue, the scene of the first and most successful show ever held in Baltimore. Only about half the cars to be exhibited had arrived, and it was not until Sunday night that five carloads of exhibits arrived from the Philadelphia show, which were soon placed in shape by a gang of workmen.

Despite the absence of the chief exhibits from Philadelphia, the opening night was a successful one, and a large audience inspected the machines and the accessory departments. This year there have been many new features added to the show. Profuse decorations—bunting and flags—make an attractive setting for the big machines, while a concert is rendered each day and

evening by a concealed orchestra. One of the features of the show was the Winton and Maxwell exhibits, which arrived Sunday night. In the spaces to be occupied by the Philadelphia exhibits were large signs: "Wait for us until Monday night." The exhibit of the Maryland Motor Car Company, makers of the Maryland, the only car made outright in Baltimore, also attracted considerable attention. The machine is operated by an electric motor, and is made by the Sinclair-Scott Company.

While the auto show is holding the center of the stage, much interest was manifested in the private show of Tuesday and Wednesday at the Hotel Belvedere, where the Palmer & Singer Manufacturing Company exhibited their polished Matheson chassis that was the talk of the recent New York show. The agent in Maryland is the Matheson Automobile Company.

SPACES FOR DETROIT DECEMBER SHOW.

DETROIT, MICH., Nov. 18.—The drawing for and allotment of space in the show which is to be held under the auspices of the Detroit Auto Dealers' Association, in the big pavilion at River-view (formerly Wolf's) Park, December 9-14, took place at the office of the association Thursday evening. The Cadillac Motor Car Company was the lucky one in getting first choice of space, J. P. Schneider and Grant Brothers, drawing second and third choices respectively. Strangely enough, the Ford Motor Company and Maxwell-Briscoe-McLeod Company drew 13 and 14 respectively. Inasmuch as I. A. McLeod is chairman of the Exhibition Committee, and Mr. Pelletier, advertising manager of the Ford Motor Company, is manager of the show, the luck of these two occasioned much amusement among the other applicants.

Henry Ford has promised to uncover at his home show, for the first time, the new Ford models about which there has been much speculation in trade circles. Winton will show no less than six models, including his six in various styles of body. There will be several Maxwell and Reo models, all the Pope vehicles, Whites, and other makes.

SAN FRANCISCO NOT TO HOLD A SHOW.

SAN FRANCISCO, Nov. 10.—At a meeting of the San Francisco Automobile Dealers' Association, held last night, it was decided to abandon the proposed automobile show for the present season. Few of the dealers have been able to secure their new cars, and it was felt that an attempt to hold a show at this time would result in a poor and incomplete exhibition. The members of the association were unanimously of the opinion that it would be better to abandon the show for the season rather than postpone it indefinitely, as there was no certainty when it would be possible to secure sufficient cars to make a creditable showing. This course was adopted with but little discussion.

PHILADELPHIA'S SHOW A BIG SUCCESS.

PHILADELPHIA, Nov. 18.—Opened a week before with not a few misgivings—due in large measure to the present tight-money time—the seventh annual automobile show of the Philadelphia Automobile Trades Association came to an end last Saturday evening in a blaze of glory and with an attendance that created a new record for a record-breaking week. Not only were all local attendance figures shattered—and this despite the inclusion of two double-price nights—but the total gate receipts exceeded the previous best by many precious simoleons; sales were more plentiful, and excellent "prospects" were booked in sufficient numbers to keep agents and branch managers on the go for many a week to come in the effort to convert them from possibilities to sure things. It was, indeed, a great show.

PROVIDENCE SHOW IN FEBRUARY.

PROVIDENCE, R. I., Nov. 18.—Frank M. Prescott, who managed the previous automobile show in this city, will have charge of next year's event that is to be held from February 1 to 8 under the auspices of the Rhode Island National Guard. The new State Armory will be used, and as it has five times as much floor space as Infantry Hall, which housed the show last year, it is expected that all prior events of the kind will be totally eclipsed. It will be held in conjunction with a military carnival.

NO REDUCED RATES TO CHICAGO SHOW.

F. C. Donald, commissioner of the Central Passenger Association, Chicago, has notified the American Automobile Association and the American Motor League that there will be no reductions in railroad fares to members of those organizations attending the Chicago show, November 30 to December 7. It is understood that abuse of the privilege by the American Motor League is responsible for the declination to grant rates.

PROOF THAT AUTOMOBILE HAS COME TO STAY

FROM THE CLEVELAND PLAIN DEALER.

THE real moral to be drawn from the popularity of automobile exhibitions is the proof which it affords of the theory that the automobile has come to stay. It is not a fad, like the bicycle, roller skates and tiddle-de-winks. It is an accomplished fact. It is not the automobile but the horse that is on an unstable footing. The automobile, once the plaything of the very rich, is now utilized in numberless activities of life. It is a delivery van and an ambulance, a fire engine and an advertising dodge, a racer for the high spirited and a family hack horse for the elderly woman. Everywhere it is the "rubberneck car," and in some places it is the omnibus. It is fast losing its aristocracy,

fast becoming the most democratic of vehicles. The day is at hand when the man who drives a horse will be accused of plutocratic affectation.

Meanwhile may the automobile show live long and prosper. It has become a fixed annual affair in all cities where automobiles are commonly in use. For the automobile owner and prospective purchaser it provides an easy way for the comparison of the merits of the various makes. And for those who have no automobiles and who do not aspire to own one, the exhibitions furnish as pleasant an amusement as the horse shows, and are infinitely more instructive.

HOW THE AUTO CROSSES AFRICA.

A hazardous trip equal in daring to the Pekin-Paris tour is now being undertaken by Lieutenant Colonel Grätz of the German Army. The undertaking is made to prove the practical utility of the automobile in colonies where no railways exist.

The route starts from Dar-es-salam on the east coast of Africa and traverses the "Dark Continent" to Sawakomund on the west coast, starting and ending in German territory, but passing through Rhodesia and Bechuanaland.

Leaving Dar-es-salam the route follows the old caravan road to Tabora, which is the largest city in German East Africa; then it turns south to Bismarckburg on Lake Tanganika. This last section is considered to be probably the most difficult stretch of the trip; especially the descent to the shores of Lake Tanganika. The route then continues through Rhodesia to Karonga at the north end of Lake Victoria-Nyassa, then on rafts to Domari Bay at the south end of the lake; next it crosses a mountain chain to Fort Jameson, and thence to Miwomboshi, where it intersects the Cape to Cairo Railroad. The road from here to Bulawayo, the capital of Mozambique, is reported fairly good. Beyond it is planned to reach Palapye and then down from the high plateau to Kalahari in a desert region. This part of the route is not considered so very difficult to trace owing to the fact that Professor Passarge and several English have covered it and prepared road directions and maps. At Rieffontain the route again enters German territory, and the rest of the way to the Atlantic coast is not deemed particularly difficult.

A Gaggenau car, made in Germany, is being used. It has been specially fitted with an enormous gasoline tank.

CONCERNING THE ORMOND-DAYTONA MEET.

An arrangement has been consummated between the Florida East Coast Automobile Association and the Florida East Coast Railway interests in Florida, whereby the two will jointly conduct the annual race meet on the Ormond-Daytona beach. W. J. Morgan, who was responsible for the inauguration of the annual Florida meet, will be the general manager of the affair as usual. It had been anticipated that the Racing Board of the A. A. A. would be approached by the F. E. C. A. A. and asked to conduct the next meet on the Ormond-Daytona course. Apparently a majority of the Florida organization prefers that the meet be under its own direct control, though this action was taken by the F. E. C. A. A. previous to the conference of its representative, ex-President Asa Paine, with members of the A. A. A. Racing Board in New York City, and at a time when there was no certainty of anything being accomplished in this direction. The races will probably take place during the third week in March.

COMMITTEE FOR STOCK CHASSIS RACE.

T. F. Moore, secretary of the promoting organization of the stock chassis road race, proposed to be held in Westchester county in April next, announces the executive board and rules committee just appointed by Robert Lee Morrell, the general chairman. The list is as follows: Col. George Pope, Hartford, Conn.; Henry Ford, Detroit, Mich.; E. R. Hollander, New York City; H. A. Lozier, Plattsburgh, N. Y.; A. Massena, New York City; C. A. Singer, New York City; James Joyce, Providence, R. I.; Paul Lacroix, New York City; Hayden Eames, Cleveland, O.; F. P. Brand, Williamsport, Pa.; Walter Allen, New York City, and F. B. Stearns, Cleveland, O. Mr. Morrell's intention is that this board, in addition to framing the rules, will decide upon the entry fee, date of the race, and take charge of the contest.

A. A. U. BARS PROFESSIONAL AUTOMOBILISTS.

At the annual meeting of the Amateur Athletic Union of America, held at the Grand Union Hotel, New York City, November 18, it was decided to refuse amateur registration to all automobilists who have raced for cash, or who have competed in races with professionals.

NOT RESPONSIBLE FOR DRIVER'S NEGLIGENCE.

PHILADELPHIA, Nov. 18.—The familiar rule of law under which the master is not responsible for injuries accruing from a servant's negligence when not engaged in the business of his employer, has been applied to the case of a chauffeur who runs down a person and kills him, while using the car unknown to the owner, by the State Superior Court of Pennsylvania, reversing a decision of the Court of Common Pleas in Philadelphia. The case was decided on the appeal of an owner whose car killed a child while being driven by his servant who had taken several of his friends riding in opposition to the wishes of his employer.

FEDERAL JURISDICTION ON CONDUIT ROAD.

ROCKVILLE, MD., Nov. 18.—In the case of J. A. Lutz, who was fined by the Glen Echo authorities for fast driving on the Conduit Road, an appeal to the higher court has just been decided by Judge Henderson, who declares that the jurisdiction of the United States over the Conduit extends to its use as a road, and that the automobile regulations of the town of Glen Echo or of Montgomery County, Maryland, are consequently of no force and effect on it. He added that the State has general jurisdiction over the road, but that it is not a public highway within the meaning of the statute.

STRANG'S SOUTHERN BARN STORMING.

Walter Christie's front-drive racer is somewhere in the South, its performances being contrary to the wishes of the owner and apparently of a somewhat unsatisfactory sort. Strang, apparently under the management of one W. H. Pickens and calling himself Louis Christie Strang, is driving the championship mile car in unsanctioned race meets, and of course it means his future disbarment from sanctioned events. From the Birmingham (Ala.) *News* comes the following "story" of a recent "meet" there:

"The automobile races at the fair grounds Tuesday afternoon proved to be a flat failure for the reason that Strang's car blew up when he had gone half a mile and because of the lack of interest in the three or four local events. A remarkable thing about the accident was the fact that the driver, Louis Christie Strang, was not hurt, as the timers claim he was going a mile in less than a minute when there was a loud report, a puff of smoke and the car came to a standstill at the half mile post. It was announced that the crank-tank burst, causing the cylinder head to blow out. The reason given for the bursting was that 94 per cent. pure gasoline was being used when 84 per cent. would have been safer.

"There was little interest in the other events on the program and few people were in the grandstand when they were over. The local owners themselves realized that enthusiasm died when the crank-tank burst and the mile event was declared off until some future time when it is said Strang will once more make a dash around what has been declared as 'the fastest mile track in the world.'"

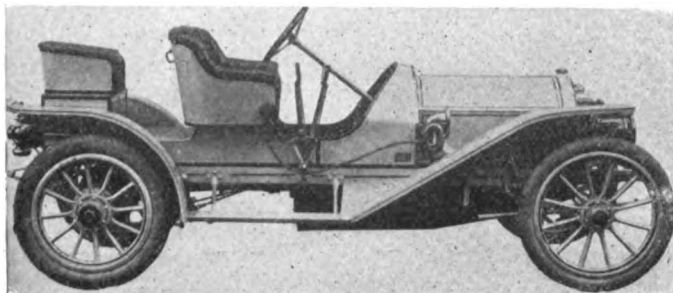
GEARLESS GREYHOUND, 75 H.P., \$4,000.

Sometimes, in even the best regulated print shops, the types get mixed, and this was the case in the November 14 advertisement of the Gearless Transmission Company, 295 Plymouth avenue, Rochester, N. Y., which concern manufactures three models as follows: "Model Seventy-five, of 75 h.p., selling at \$4,000; "Model Sixty," of 60 h.p., selling at \$3,500; and the "Greyhound," of 75 h.p., selling at \$4,000. The advertisement erroneously stated that the latter car sold for a thousand dollars less.

In the report of the very successful experiments conducted by the New York School of Automobile Engineers with alcohol, it was erroneously stated in the last issue of *THE AUTOMOBILE* that the fuel employed consisted of alcohol with 10 per cent. of benzene and 2 per cent. of wood alcohol. The U. S. Industrial Alcohol Company, who supplied the fuel, inform us that it is composed of 90 per cent. of 188 degree proof grain alcohol, 10 per cent. of wood alcohol and 1-2 per cent. of benzol.

HOL-TAN COMPANY TO MARKET AMERICAN CAR.

Since relinquishing the Fiat agency, developments in the metropolitan representation of American cars have been looked for on the part of the Hol-Tan Company, of which C. H. Tangeman is president and Harry Fosdick, vice-president, and the announcement that this concern had just concluded negotiations for the building of a special American car to be marketed under the name of Hol-Tan is of considerable interest. The new car is to be built by the Moon Motor Car Company, St. Louis, Mo., of which L. P. Mooers, originally with the Peerless Company, is the designer. It is intended to follow foreign practice to a certain extent in marketing the cars, the bodies being supplied by Locke, Quinby and



HOL-TAN STANDARD MODEL WITH THREE-PASSENGER BODY.

Demarest, in many cases, to the purchaser's order. Two models will be offered at first, the smaller of which will be known as the Hol-Tan Standard, while the larger car is the Hol-Tan Special, the chief points of difference being in the length of the wheelbase, size of the wheels and chassis length. Both will be equipped with the Moon 4 1-2 by 4 1-2-inch, four-cylinder water-cooled motor, fitted with dual ignition employing the Eisemann high-tension magneto and a standard coil and accumulator system. The car will be known as a 25-horsepower model, though even the conservative A. L. A. M. rating gives it 32 horsepower. The gear-set provides four speeds forward and operates on the selective plan, final drive being by shaft. With a touring body and full equipment, the weight of the Standard model with its 110-inch wheelbase, is 2,500 pounds, and it is listed at \$3,000. It will also be fitted as a two, three or four-passenger roadster, but no bodies will be built to order for this chassis. The Special type has a 121-inch wheelbase, permitting the use of a five-passenger tonneau, or of the fitting of a limousine or landaulet type of body. Chassis only lists at \$2,750, and at \$3,750 with touring body.

ONE MAN'S OPINION ON MAGNETO IGNITION.

Designer Sam Hartley, of the Cleveland Motor Car Company, sets forth the merits of magneto ignition as follows:

"We believe that the gasoline car should be independent of outside necessities so far as possible and that, given fuel and oil, there should not be a further expense to the user, but that by the mechanical generation of electricity the ignition problem should be made reliable, durable and without further expense to the buyer for batteries or for charging storage cells, which may be exhausted at inopportune times, as well as being some considerable expense to replace or recharge. Further than this, the magneto gives a better spark than the usual battery, because it is not considered advisable to carry a sufficient weight of battery to produce a spark larger than actually necessary, although it is well recognized that an increased spark size results in increased power and therefore is really economical in the saving of fuel. This as well affords greater satisfaction in the vehicle, as greater flexibility arises from the increased motor power given by the large spark.

"We prefer the gear-driven magneto, because this produces the electric impulse just when wanted and therefore of greater size than the direct current, friction-driven magnetos frequently used, although these latter are quite satisfactory. As an adjunct and a reserve against any possibility of trouble, we provide a set of batteries, but since these are seldom used, we avoid the expense connected with them. The rapid growth of the use of the magneto is evidence of this great value and is simply another pointer that automobile makers are sparing no expense to give their users the most reliable and economical constructions possible to build."

RUNABOUTS NOW A BUSINESS NECESSITY.

INDIANAPOLIS, IND., Nov. 12.—There will be a large number of changes in Indiana automobile agencies next season. Probably the most important change will be in the State agency of the Marmon, which has been held for the last two seasons by the Gibson Automobile Company. This will be held in 1908 by the H. T. Hearsy Vehicle Company, who have added the Marion in addition to their old agencies, consisting of the White, Rambler, and Pope-Waverly.

There are a number of companies seeking representatives in the city that have not been represented in the past. It is believed that the auto buggy manufacturers, which are without representatives in the city, with one exception, will make a strong effort to get business here next year.

The 1907 season has been much larger than that of last year. More and higher priced cars have been sold. There has been a great demand for runabouts, chiefly among physicians and city and traveling salesmen. Men buying automobiles for pleasure have, with few exceptions, purchased three-passenger roadsters or touring cars.

It is safe to estimate that from 1,300 to 1,500 automobiles have been sold in Indianapolis this season. Indications for next year are good, and many orders for March, April and May delivery are already filed. Preference has been shown to a large extent for six-cylinder cars and the popular roadsters for next year. However, there is no fear but that four-cylinder touring cars and the runabouts will retain their popularity.

"Runabouts," said a prominent local dealer, "are like the bicycle. They have grown from a pleasure vehicle to a business necessity and now constitute something that many business men in certain lines find that they cannot well afford to do without."

FIRE IN LEATHER TIRE GOODS CO.'S PLANT.

BOSTON, Nov. 18.—Fire which started in the plant of the Leather Tire Goods Company at Newton Upper Falls, a suburb of this city, on Thursday last, did a limited amount of damage. The concern manufactures the patent Woodworth detachable steel-studded leather treads for protecting pneumatic tires. No serious interruption to business was caused.



E. J. MOON IN CAR OF THE SAME NAME.



NORTH SIDE GARAGE, CHICAGO'S NEWEST ARTISTIC TYPE.

Latest Addition to Chicago's Garage List.

CHICAGO, Nov. 18.—Among the influences that are tending to improve Chicago architecturally, not the least important is that of the new garages which are being erected in all parts of the city. A representative instance of this is to be found in the establishment of Joseph Paupa, Jr., known as the North Side Garage, and which is located at 605-607 North Clark street. Some idea of the pleasing facade of the building may be obtained from the accompanying photograph. The building is of fireproof construction, and the garage space, which measures 50 by 155 feet, is entirely clear of supporting pillars. The remainder of the building is devoted to an accessory supply store, measuring 20 by 50 feet, a chauffeurs' reading room and a waiting room. The building is electrically lighted and steam heated, and includes in its facilities a charging plant capable of taking care of twelve electric cars at once. This is as finely equipped a garage as is to be found anywhere in Chicago.

New York State's Garage List Growing Fast.

AUBURN, N. Y., Nov. 18.—A notable addition to the list of up-to-date New York garages was made with the opening of the establishment of the Auburn Automobile Company this summer. This concern, of which George H. Leonard is the proprietor and manager, has had an 80 by 60 one-story building especially erected for the purpose. It is of brick and concrete construction and is fitted with offices and salesroom, chauffeurs' locker room and ladies' waiting room at one end and a complete repair shop at the other. One corner is devoted to charging and caring for electric and storage batteries. This year the Auburn Automobile Company has handled the Franklin, Buick and the Pope-Waverley electrics and has done an excellent business with all three.

Model Garage Opened in Bridgeport.

BRIDGEPORT, CONN., Nov. 18.—The New York to Boston route is becoming famous for its garages and a notable addition to the chain is to be found in the recently opened Blue Ribbon garage on Fairfield avenue, Bridgeport. The building is three stories in height and is of steel and concrete from cellar to roof, even the latter being of concrete. In fact, there is a testing station for cars on top of it. The freight elevator runs the height of the building, accommodating the largest cars, and is to be extended to the roof. Among the conveniences are a ladies' waiting room, chauffeurs' room and every facility for handling cars.

NEW DOINGS AMONG THE GARAGES.

Spencerville, O.—H. A. Mack, the pioneer auto dealer in this section, has had erected for him a modern garage building, on the site of his former establishment, on East Market

street. It is two stories high and measures 50x100 feet; of fireproof construction throughout, and is equipped with every facility for handling and repairing cars.

Omaha, Neb.—The Powell Automobile Company has gone out of the garage business and will in future devote its entire attention to the handling of a general line of accessories and supplies. The company's location will be at 2010 Farnam street. Several men will be put on the road this fall, and a much larger territory covered than previously.

San Mateo, Cal.—Before the end of the year the garage facilities of this town will have two notable additions in the shape of the new garage of Brown Brothers, at B street and Fourth avenue, now in operation, and the \$25,000 garage building of the Pope estate, being erected at Third avenue and El Camino Real, which is expected to be finished in December.

Madison, Wis.—The model establishment on which the Hokanson Automobile Company began construction last summer is now about completed. It is located nearly opposite the old place, on East Doty street, and consists of a one-story and basement structure measuring 77x132 feet. It is of brick construction, with very few posts on the floor, and has been erected at a cost of \$10,000.

Savannah, Ga.—Thompson & Company, who carried on a general business, with salesrooms at Bull and Jones streets, have been succeeded by the Wilson Automobile Company, which has established quarters at 349 Bull street, where they have fitted up a place to take care of repairing and storing as well as selling cars. Renting will also be a feature of the business. Thompson & Company became bankrupt, and the Wilson Automobile Company is nominally its successor.

Charleston, S. C.—This city can boast of one of the largest automobile livery services in the entire South. It is known as the Charleston Hotel and Auto Livery Company, and during the past summer has moved into a new and commodious garage just opposite the hotel on Haynes street. It is a four-story brick building, the interior of which has been remodeled especially for this purpose. The company now has in operation three transfer 'buses, a sight-seeing car of large capacity and eight touring cars for rental purposes, the different cars being Mitchells, Ramblers and Reos.

Detroit.—Under the title of the Joseph Chene Auto Garage Company, Detroit acquired a notable addition to its already long list of automobile dealers, and the new firm has had erected for it a building quite in keeping with its importance in the trade. It is located at 1086-1090 Jefferson avenue, and is one of the most completely equipped in Detroit. The firm consists of Joseph Chene, an expert machinist, who has been with the Olds, Cadillac, Northern and Standard Automobile companies, and Bert Allen, an associate of Mr. Chene's in the repair department of the Standard Company. It will be evident from this that the new firm will make a specialty of repairing.



INTERIOR OF THE GARAGE OF THE AUBURN AUTOMOBILE CO.



THERE is less actual business in automobile shows for accessory people than for car makers, yet the parts and supply men feel obliged to go into every show. Concerning this, H. T. Dunn, president of the Fisk Rubber Company, says: "It would be a waste of time for the tire makers to go to a show seeking wholesale business. We have an organization for that trade. As to retail business, tires are not an accessory that a man buys and orders sent home, as a rule. About all we can hope to do is some advertising and missionary work. In our own case this is eminently satisfactory. The presence of all the different grades of tires at the shows gives men who really want to know a chance to make comparisons which otherwise are difficult, and this is the best thing for any exclusive class of goods such as Fisk tires. Going from one stand to another nearby, it is possible for a man to learn what there is about tires that warrants the Fisk being a little higher in price. A field for educational work is chiefly what the shows offer the makers of tires.

With the increase in Lozier agencies, due to the campaign which the Lozier Company is making for wholesale business, the territory has been separated into two divisions, eastern and western, the former in charge of W. S. M. Mead, and the latter under the direction of F. C. Chandler. The retail sales department of the metropolitan district will be in charge of C. A. Emise. Mr. Chandler, for a number of years manager of the Hamburg branch of the Lozier Company, will also have charge of the foreign sales department, and as this firm has previously done a large export business in bicycles and marine motors, this places them in an excellent position to enter the foreign market with their cars.

Interest in the taxicab development in New York is revealed by the recent incorporation of two companies to undertake this business. One is the National Taxicab Company, organized by W. Bernard Vanse, Brooklyn; George A. Knoblich, New York, and Woodford Mobry, New York, with a capital of \$25,000, while the other is the Manhattan Taximeter Company, having a capital of \$5,000, of which Cecil P. and Arthur A. Stewart, and Arthur Kleve, all of New York, are the incorporators.

One million two hundred and fifty thousand tires is the total output to date of the great French house of Michelin. This is sufficient to equip 300,000 cars or a greater number than the total registration of automobiles in this country. Last year Michelin

did a \$11,000,000 business, including that of his English and Italian factories. Now that the big Michelin plant at Milltown, N. J., is in full operation, the output and consumption of these tires will be materially increased.

This item is from the Mobile, Ala., *Herald*: "There is a noticeable increase in the size of the automobiles to be seen on the streets in the city within the last few months. A year ago a large touring car was the exception, whereas now there are any number of goodly sized machines to be seen daily on the streets. One of the most recently purchased machines in the city is the largest ever owned by a Mobilian."

RECENT BUSINESS CHANGES.

The Frederick E. Randall Company, Boston, Mass., representing the Pullman and Pennsylvania interests in that city, have been reorganized owing to the death of the late Frederick E. Randall. Milber Dykeman is now president, Mrs. N. C. Randall, treasurer, and H. F. Cross, secretary. Charles Bates continues as general manager—in fact, the only new officer of the company is Mr. Dykeman.

The Oldsmobile Company of Canada has just moved into its new offices and sales-rooms, located at 80 King street, East, Toronto, Ont. An up-to-date garage and completely equipped repair shop having all modern facilities is conducted for the convenience of Oldsmobile owners in that section of the Dominion.

NEW AGENCIES ESTABLISHED.

The Studebaker Brothers Company has just opened a branch in Philadelphia, where a complete line of their gasoline and electric pleasure vehicles and trucks will be handled. The new branch will be in charge of A. J. King as manager and Frank Yerger as assistant. Mr. King was formerly connected with the Keystone Automobile Company, while Mr. Yerger was with Titman, Leeds & Company, the former Studebaker agents. The location of the new branch headquarters will be announced in the near future.

The John N. Loeser Manufacturing Company will continue to push the cars of the Logan Construction Company, Chillicothe, O., in the New York metropolitan district during the coming year. They have added a complete line of the Logan commercial vehicles for demonstrating purposes and

expect to do a largely increased business with this end during 1908.

The Pope agencies in Chicago have just been divided, Orlando F. Weber retaining the representation of the Pope-Toledo, while George F. Kehew takes the Pope-Hartford interests in that territory. Mr. Kehew started with the Columbia people at Hartford some time ago, but has handled the Moon and Queen cars in the interim.

The Glide interests for the South during the coming year have been taken over by J. S. Russell, who has taken the agency for the Southern States. Headquarters have been fitted up at 327 Baronne street, New Orleans, La., from which point agents will be appointed.

IMPERIAL IN PHILADELPHIA.

PHILADELPHIA, Nov. 18.—Show week as usual furnished its usual quota of trade sensations along "Gasoline Row." One of the most startling was the announcement that the Bergdoll Bros. have secured the local selling rights for the Imperial line. Just now the Bergdolls are rushing work on their big establishment at Broad and Wood streets, where they hope to install their full line—they will also handle the Welch and Benz cars—by the first of the year. Meantime they are carrying on business at 310 North Broad street. Joseph L. Keir, local Renault agent, has been secured as manager.

PERSONAL TRADE MENTION.

E. C. Morse, who has been connected with the sales department of the National Cash Register Company, Dayton, O., for the past eight years, has been appointed to the new office of "commercial manager" of the E. R. Thomas Motor Company, Buffalo, N. Y. He will have full charge of all matters pertaining to the advertising and sale of the Thomas cars, his past experience in what is generally conceded to be one of the world's best schools for salesmen fitting him well for his new position.

W. M. Botto, general sales agent for the Matheson Motor Car Company, is making the rounds of the local shows and exhibiting the 1908 chassis at the principal hotels. In Baltimore he is making his headquarters at the Belvedere; in Washington he will show at the New Willard; in Pittsburgh at the Schenley, and in Cincinnati at the Sinton. After the shows he will take the chassis to New Mexico.

E. P. Nussbaum, for many years general manager of the National Electric Supply

Company, Washington, D. C., and who, in the past few years, has been handling the well-known Harris oils, has just severed this connection with the Harris Oil Company to become a special sales representative of the Jones Speedometer Company, Broadway and Seventy-sixth street, New York City.

C. S. Henshaw, of the Henshaw Motor Car Company, 97 Massachusetts avenue, Boston, Mass., who handle the Oldsmobile and Columbus electrics in that territory, has announced that he will sever his connections with the firm in the near future and is open for negotiations with any large concern, New England territory with Boston headquarters being preferred.

Rene Beauchemin, formerly with the Lozier Motor Company, has again taken up the sale of Lozier cars, but for H. C. & C. D. Castle, Inc., who handle this line in the New England territory. He will make his headquarters at Boston.

H. H. Everett, a well known writer on automobile topics, connected in the past with *Outing*, *Collier's*, *Motor* and the *Cosmopolitan Magazine*, is now associated with A. B. Tucker in his well-conducted bureau of automobile publicity.

Burton Parker, formerly of the Hartford Rubber Works Company and later with the Fisk Rubber Company, has joined the Michelin Tire Company and will be located at the general offices in Milltown, N. J.

Frank E. Clark, formerly of the Western Tool Works, Galesburg, Ill., has been appointed purchasing agent for the American Motor Car Company, Indianapolis, Ind.

THE BANKRUPTCY LIST.

CHARLOTTE, MICH., Nov. 18.—A voluntary petition in bankruptcy has been filed in the United States Circuit Court at Grand Rapids by the Dolson Automobile Company of this city. Three Chicago creditors with claims aggregating \$1,000 are responsible for the filing of the petition. The book value of the assets reaches \$250,000, with unsecured claims of \$140,000. C. R. Hathaway of the Muncie Auto Parts Company, Muncie, Ind., has been appointed custodian of the plant, pending the naming of a trustee.

NEW YORK, Nov. 20.—John Gruenberg has been appointed receiver for the Duplex Ignition Company, manufacturers of spark-plugs and auto supplies, 307 West Thirty-sixth street, a petition in bankruptcy having been filed by Fritz Lowenstein, with a claim of \$1,075; W. T. Hoofnagle, \$259, and the Telephone Manufacturing Company, \$250.

NEW YORK, Nov. 20.—A petition in bankruptcy has been filed against the Kalb & Berger Manufacturing Company, 530 East Seventy-second street, maker of transmission gears, and other specialties, by the following creditors: D. S. Holcomb, \$700; Eaton, Schleich & Wall, \$49, and W. F. Dunker, \$425. Charles Weiser was appointed receiver.

FRANKLIN CO.'S SELLING PLAN.

Important changes in the selling organization of the H. H. Franklin Mfg. Co. have just been announced from Syracuse. The entire selling division which heretofore has been under the supervision of Mr. Franklin himself has been turned over to V. E. Minich, who has just been appointed assistant to the president.

Mr. Minich was formerly general manager of the Haynes Automobile Company of Kokomo, Ind. More recently he has occupied the position as advertising manager for the National Cash Register Company of Dayton, O. As director of the selling division of the Franklin Company, Mr. Minich will have under him the sales, sundry, and advertising departments, and the branches of the Franklin Automobile Company. F. R. Bump will continue as sales manager and J. G. Barker as manager of the sundry department.

Charles M. Steele, a former Chicago newspaper man, has been appointed advertising manager. Mr. Steele was until recently at the head of the publicity department of the National Cash Register Company, of Dayton, O.

The three branches of the Franklin Automobile Company at New York, Boston and Chicago are in charge of W. S. Jewell, C. E. Wheeler and F. L. Thomas, respectively. Frank G. Carrie, formerly New York representative for the Haynes Co., has been appointed assistant manager of the Franklin Automobile Company's branch in New York.

NEW TRADE PUBLICATIONS.

Soberly printed in black and gray, embellished only by a colored frontispiece, the Packard 1908 catalogue has a very distinctive appearance. Line drawings only illustrate the mechanical features of the 1908 output of the Detroit concern, and the word story does not err on the score of verbosity; it is sufficiently lengthy, however, to adequately cover all the distinctive features of Packard construction and to make known the improvements in detail over the model of the previous year.

In a business-like manner the Hatfield buggyabout for 1908 is presented to the public in a well-produced sixteen-page catalogue. The vehicle is driven by a double opposed air-cooled engine and has a number of features above the usual run of buggyabouts, all of which are clearly set forth in the publication. Its makers are the Hatfield Motor Vehicle Company, Miamisburg, O.

A very clear understanding of the structural features of the Holley carbureter can be obtained by a perusal of a booklet issued by the Holley Brothers Company, of Detroit, Mich. Sectional drawings and very explicit text matter make possible an appreciation of the features of the Holley in a manner which will be appreciated by the professional and the amateur.

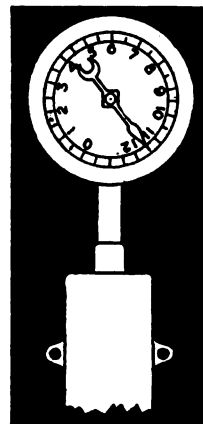
The Kiblinger, an automobile haling from Auburn, Ind., where it is manufactured by the W. H. Kiblinger Company, has its virtues extolled in a catalogue just sent broadcast from headquarters. A romance is woven around the Kiblinger for those interested in romantic stories, and there are plenty of illustrations and descriptions for the technically inclined.

Details of the 1908 Mason automobile, built by the Mason Motor Car Company, Des Moines, Ia., are contained in the firm's new illustrated catalogue. The machine is a two-cylinder horizontal opposed, with single chain drive. Its features are well presented in the catalogue.

Frontenac touring cars and runabouts are presented to the public in an illustrated booklet of pleasing appearance, issued by the Abendroth & Root Manufacturing Company, of Newburg-on-the-Hudson, N. Y.

INFORMATION FOR AUTO USERS.

The Hans Gasoline Gauge.—It goes without saying that if every car were equipped with a gasoline gauge on the dash, there would be less need for an emergency fuel tank and fewer instances of being caught on the road with an empty tank. The Edmund E. Hans Company, Minneapolis, Minn., has brought out a gauge for this purpose, which consists of a float chamber of rectangular section, of approximately the same height as the depth of the gasoline tank and which is surmounted by an indicating pointer and dial, somewhat similar to a steam gauge in appearance. The indicating mechanism is composed of two pinions and a drum and is connected with the float by means of a cable of special braided silk, which is entirely unaffected by the action of gasoline and will last indefinitely. The apparatus can be used with any style of tank and whether operated by gravity or pressure, an important feature being

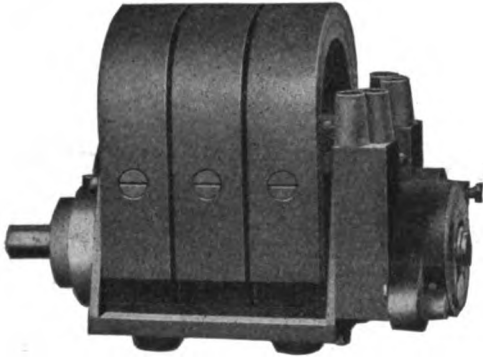


HANS GASOLINE GAUGE.

the fact that the indicating needle is not affected by the jolting or vibration of the car. The construction is of the simplest and all the parts are very substantial, so that the makers give an unconditional guarantee with the instrument. It can be used to equal advantage whether the tank happens to be hung under the frame at the rear, is placed under the seat or under the bonnet, and is made in special form for use on steam cars. The necessary connections are simple and easily made.

Motor and Parts Specialists.—The Michigan Automobile Company, Ltd., Kalamazoo, Mich., having discontinued the building of complete cars, is devoting its entire attention to the manufacture of motors, gear-sets and other machined parts in large quantities, being engaged at present in turning out one order for gear-sets which aggregates \$50,000. This concern manufactures all types of motors from one to six-cylinders and all styles of gear-sets from blue-prints, being specially equipped to produce this class of work in large quantities for prompt delivery. It is also in a position to do other machine work connected with automobile manufacture, such as cylinder-grinding, and is now installing a number of modern machine tools of the best types, which will make its facilities unequalled for the production of work of this special character. The members of the firm have had five years' experience in this particular line, following upon a number of years in other lines of machine shop practice.

New Remy Magneto.—As an entirely new comer for their 1908 line, the Remy Electric Company, Anderson, Ind., have brought out a high-tension magneto. This is styled the Type F, and is claimed to be the most simple jump-spark ignition equipment ever devised for a four-cylinder engine. No independent coil is employed and the magneto can be installed on a car with a minimum of expense. It is also adapt-



REMY TYPE F MAGNETO.

ed for use with single and twin-cylinder engines, the complete wiring in any case consisting of but a single connection between each spark-plug and the magneto, with a primary wire to the switch for shutting off the generator when stopping. This new magneto is of the true high-tension type, in that it has both the primary and secondary windings placed directly on the armature, but unlike most others, it employs no gearing or distributor. It is intended to run at the same speed as the motor crankshaft, and as the armature moves from a position with its core parallel with the fields, the primary circuit is mechanically broken and a high-tension current induced in the secondary winding of the armature, this being conducted through brushes and a simple arrangement of segments on a hard-rubber drum to the cables leading to the plugs. The point at which the primary circuit is broken may be advanced or retarded to an extent equivalent to 30 degrees on the circle of armature rotation, which gives ample leeway for altering the timing of the spark. The construction throughout is of the most durable nature and the magneto is both dust and waterproof, the only attention required being an occasional oiling. Some idea of the extreme simplicity of the new Remy may be obtained from the illustration.

Improved Barrett Auto Jacks.—For the season of 1908 "The Jack That Duff Builds," otherwise known as the Barrett jack, and made by the Barrett Manufactur-

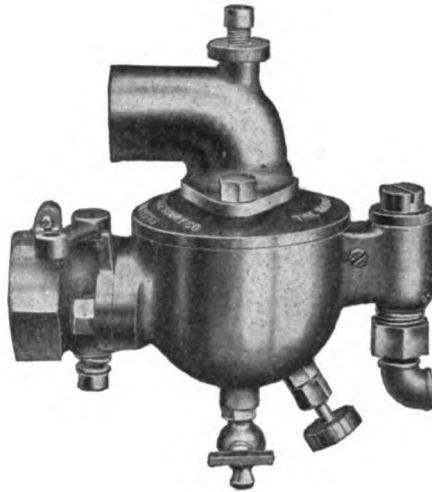


IMPROVED BARRETT JACK.

ing Company, Pittsburg, Pa., has been improved by the addition of a new reversing lever which controls the movement of the jack, up or down. Working at the

front of the jack and displacing the side eccentric or thumbscrew formerly used, the reversing lever is always accessible, no matter in what position the jack may be placed under the car. And it is in ready reach without groping between the spokes of the wheel or crawling beneath the car. It is not even necessary to reach under the car to operate the lever, as a slight blow with the jack handle will set it as desired in a second. This ingenious device adds greatly to the efficiency and convenience of the Barrett jack, on which it is an exclusive feature, patents covering it now being pending.

National Carbureter.—Under the title of the "National," the National Auto Accessory Company, 84 State street, Boston, Mass., are just placing on the market a new carbureter which is claimed to embody numerous features of merit, and on which patents have been applied for. It is adapted to run with alcohol as well as with gasoline and one of its chief features of distinction consists of a non-seating air-valve that not only makes it noiseless, but sprays the incoming air around the gas-

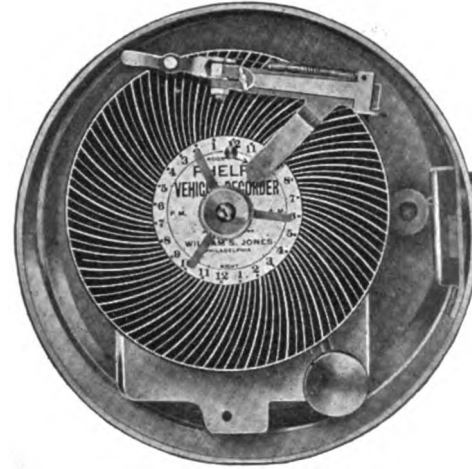


NATIONAL SILENT VALVE CARBURETER.

oline nozzle in such a manner as to thoroughly mix it with the gasoline, completely vaporizing the latter. Its makers claim this construction makes it particularly adaptable to two-cycle motors of the three-port type, though it is equally well adapted to both two and four-cycle motors, and is intended for both automobile and motor-boat service. It is constructed of brass throughout with the exception of the float, and is made in standard pipe sizes.

The Phelps Vehicle Recorder.—This is a device which automatically records the movements of all kinds of vehicles, and has been constructed to meet the requirements of team and vehicle owners and operators, livery stables, cab companies, automobiles, motor trucks and the like. The entire apparatus is enclosed in a locked aluminum case, its record, which covers seven consecutive days, being made on sensitized dials, but the instrument differs radically from all other devices of this character, in that it requires no connection with the wheels or other moving part of the vehicle, and may be mounted in any convenient location in the body or top of the vehicle away from contact with passengers or merchandise. Moreover, it is unbeatable, as it cannot be opened without leaving a

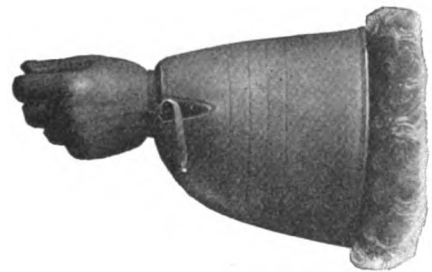
record of that fact on the dial. The latter is printed on a hard surface paper with blue sensitizing, upon which a white record is made of an entire week, day and night. The clock movements used are twelve-day, nine-jeweled Seth Thomas, with compensating balance, and are not only accurate timekeepers, but are constructed to withstand the hardest kind of service without



PHELPS VEHICLE RECORDER.

derangement. It shows the number of stops, the time of starting, elapsed time of every stop and elapsed time between each start and stop, as well as time of night or day that the vehicle was in operation beside the time of return to garage and a complete record of movement during the night, if any, thus putting an effective stop on "joy riding." The entire mechanism is under lock and key and cannot be tampered with without detection, nor in any other way put out of service. The instruments are sold outright with a year's supply of dials and are handled exclusively by William S. Jones, 112 North Broad street, Philadelphia, or 101 West Sixty-sixth street, New York City.

Grinnell "Rist-Fit" Gloves.—Comfortable gloves are essential for the driver's peace of mind, and just what constitutes comfort in this respect has been made a study by the makers of the Grinnell "Rist-Fit" gloves, Morrison, MacIntosh & Company, Grinnell, Ia. As their name indi-



GRINNELL "RIST-FIT" GLOVE.

cates, these gloves fit snugly about the wrist, which is accomplished by providing a strap at that point, a slight pull on which draws the glove closely about the wrist, holding them neatly and securely in place, with the cuffs well up, thus keeping out snow and cold winds. The gloves themselves are made of soft, pliable "reindeer" and colt-skin leathers, which are claimed to possess exceptional wearing qualities and are not injured by either heat or wetting.

THE AUTOMOBILE

PUBLISHERS' SPECIAL ANNOUNCEMENT TO ALL SUBSCRIBERS

Owing to extensive improvements in THE AUTOMOBILE, as well as to general increased cost of production, the subscription rates will be

\$3.00 A YEAR

after January 1, 1908, and all amounts mailed after that date will be credited at that rate.

All present subscribers and subscriptions mailed before January 1, 1908, may renew for any period from the date of any expiration as shown on the wrapper at the present rate of

\$2.00 A YEAR

All subscriptions renewed for 5 years for \$10, now paid to some period of 1908, will be credited to January 1, 1914, or all subscriptions expiring this year (1907) may renew to January 1, 1914, by paying \$11 before January 1, 1908.

RENEW AT ONCE

while the matter is before you, avoiding the increased rate for any period covered by your renewal.

Improvements in the paper will continue. Time is valuable. You cannot afford to read cheap papers.

THE AUTOMOBILE,
Flatiron Building,
NEW YORK

Nov. 21, 1907.



THE AUTOMOBILE

VOL. XVII

NEW YORK—THURSDAY, NOVEMBER 28, 1907—CHICAGO

No. 22



CHICAGO, Nov. 28.—Holding a show under the auspices of an organization which includes the adjective national in its title does not necessarily imbue the event itself with that characteristic, but, for the past three years, the Chicago Show has had other and much more substantial claims to the honor than the mere fact that the National Association of Automobile Manufacturers was responsible for it.

Constituting, as it does, the only show of the year in which American makers come together regardless of trade or other affiliations, it has a claim on the title of national that is indisputable, and the event which will occupy every available foot of space in the Coliseum and First Regiment Armory, as well as the overflow of the commercial section in the Seventh Regiment Armory, during the period of November 30-December 7, will be more truly representative of the American industry as a whole than any other gathering of manufacturers that has ever been held in this country.

There will come together under one roof, figuratively speaking, makers of every class of power-driven vehicles that may be termed automobiles, from the smallest and most recent comers in the shape of buggabouts up to the most ambitious production of the old-established maker, the value of whose exhibit alone is frequently more than a score of smaller cars.

The fact that the aggregation thus assembled embraces not only all the most representative makers, but likewise the great majority of those generally referred to as "the American industry," will be evident from the fact that the bulk of the exhibitors is made up of the membership of the National Association of Automobile Manufacturers, Inc., the Association of Licensed Automobile Manufacturers, and the American Motor Car Manufacturers' Association, where complete vehicles are concerned, and the members of the Motor and Accessory Manufacturers, Inc., in the realm of those productions of smaller size, but equally great importance, that always serve to fill every

available inch of space not adapted to showing cars, and that add much of interest to every automobile show.

To the seasoned show-goer, the collection on the main floor of the Coliseum alone has a real national flavor, for here are invariably gathered that coterie of old-line makers who have always formed the backbone of the industry, and who are given the preference in the allotment of spaces to which their standing entitles them. And, in fact, age and responsibility of standing are the only qualifications that result to the advantage of the exhibitor in this manner, for otherwise the distribution of space is entirely according to lot, the drawing being held last July, when practically everything available was contracted for. This concentration enables the visiting dealer to examine practically all the productions of the year in one show, and, as usual, complimentary admissions will be issued to the trade during the usual hours and under the same conditions as before.

In the matter of decorations the Chicago show has always been distinctive, and, on the present occasion, Manager Miles has outdone all his previous efforts in this line and prepared a setting that will be a surprise to the seasoned rounder, as well as the newcomer who gets his first look at the interior of the Coliseum next Saturday afternoon and evening, for, unlike the New York shows, Chicago opens its doors in the afternoon.

Some idea of the magnitude of the task of decorating such a place may be gained from the fact that there will be approximately 9,000 square feet of oil paintings alone. There are 142 of these in all, ranging in size from 4x8 to 8x24 feet. The subjects of these paintings have not been selected at random, but, in the majority of cases, the smaller ones situated close to the exhibits represent scenes in which the cars shown near them have actually taken part, while others picture American cars in all parts of the world, each scene representing an actual occurrence reproduced from a photograph. Racing has not been overlooked, the subjects including two scenes at the Vanderbilt Cup





SAMUEL A. MILES,
General Manager N. A. A. M.

race of 1906, a race on the Detroit track, scenes at Brookland's track in England and the twenty-four-hour races at Morris Park. In other ways, the plan of decoration and equipment is even more elaborate than that of the last show, which was generally conceded to be the finest thing of the kind ever seen in connection with a purely industrial exhibition. The amount of material employed to complete this truly elaborate setting for the automobile is literally stupendous, and all of it has been designed to harmonize in a complete *ensemble*,

in which the automobile itself shall be the chief attraction and not the decoration. In other words, effort has been directed toward the creation of an automobile atmosphere, and that Manager Miles has more than succeeded in realizing this ideal goes without saying.

The great demand for space, which the amount available in both the Coliseum and the First Regiment Armory falls far short of filling, has led to the adoption of one expedient after another to extend the cramped interior of what appeared to be a vast "unfillable" hall to the exhibitors in the Coliseum of early Chicago show days. The First Regiment Armory was long since made an annex by the now familiar "pneumonia alley" connection, but even its ample floor and galleries failed to satisfy the needs of all intending exhibitors, so that for the first time in its history the basement of the Coliseum has been impressed into service for this purpose, both cars and accessory exhibits being shown. There will be 20 of the former and more than twice as many of the latter thus housed in space never hitherto considered available.

Though not denominated as such, the independent exhibit of purely commercial vehicles which is to be housed in the Seventh Regiment Armory, located at Sixteenth and State streets, about four blocks from the Coliseum, is really another expedient which would naturally be considered as relieving, in great measure, the demands for space in the main buildings, but this has not proved to be the case. As a matter of fact, it is stated that, after mature consideration, the National association decided that the time had arrived for a comprehensive and independent exhibition of commercial vehicles of all types, as that portion of the industry, in many respects identified with the building of pleasure cars, has assumed such importance as to be well able to support a show of its own, giving to the world a much more definite idea of its development and future possibilities than could be obtained where the business automobile was scattered at random among those designed purely for pleasure purposes.

The Seventh Regiment Armory is 353 feet long and 153 feet wide without a post to encumber its floor, so that the thirty odd exhibitors who have taken space in it will have ample opportunity to display their productions to the best effect. It will be known as the First Annual Exhibition of Commercial Motor Vehicles, and though really forming part and parcel of the old show despite its isolation, it has been thought fit to give it a separate title, thus marking the time when the commercial vehicle assumed sufficient importance to warrant separate representation in an independent show of its own.

One admission will entitle the visitor to enter all three buildings, but for the first time in its history the Chicago show will have two high-priced days. These will be Wednesday and Thursday, on which the admission will be raised to one dollar,



THOMAS HENDERSON
President N. A. A. M.

otherwise remaining at 50 cents, as usual. It is not intended, however, to crowd the commercial vehicle's exhibit so as to impede or prevent proper investigation by visitors genuinely interested, the management feeling that it is due to the exhibitors in this department to afford the interested investigator every opportunity to secure all the information he desires. Thus, only visitors to the Coliseum who are sufficiently interested to ask for tickets to the commercial show will be given them. There will be no charge for these admissions, and every effort is being made to secure the attendance of those interested in automobile transportation. Season tickets have been forwarded to department heads of large houses, members of such bodies as the Illinois Manufacturers' Association, and to prominent merchants throughout the country. Each exhibitor has been furnished with as many invitations as he may require for distribution to his prospective customers.



MILTON J. BUDLONG
General Manager A. L. A. M.

ONLY OPTIMISTS ARE WANTED AT CHICAGO.

A letter was addressed to all those who for business purposes are to be in attendance at the Chicago show. Here is some of the good advice which Manager Miles sent through the mail:

There is no money panic in Chicago; but for the newspaper reports of the doings of Wall Street, Chicago would long ago have forgotten that there had been so much as a ripple. And the great West, about which the East knows so little, is fairly bulging with prosperity.

The agents will be at Chicago; the public will turn out at Chicago. Shall we dampen their ardor by displaying long faces? Or shall we instill confidence and beget enthusiasm by a week of activity, bustle and cheerful bearing?

Your agent in Chicago can get only a certain number of cars, tires, or whatever it is you make. It is his business to make the people understand that to secure early deliveries it is necessary to order now. He can't do it by encouraging the belief that business is poor. Tell him that if he is an agent worth having it is "up to him" to see that his men make every endeavor to influence public opinion in the right direction. And remember that it is equally "up to you."

Let us banish the thought that there is anything wrong with the automobile business. I ask you, in justice to yourself, to your company, and to the show, to carry out and insist that your men carry out this suggestion; that you and they refuse to admit, even to your intimates, that there is any scarcity of business. Leave your troubles at home.

A. L. A. M. BRANCH TO MEET IN CHICAGO.

A meeting of the Mechanical Branch of the Association of Licensed Automobile Manufacturers will be held during the Chicago show. The principal subjects of the meeting will be the standardization of automobile bodies, co-operation between the automobile engineers and coach builders, the reduction of weight, and proper wheelbase for a practical car.

Representatives of the leading body builders will address the Mechanical Branch meeting and an endeavor will be made toward co-operation between the coach building and automobile industries. The meeting will be held at the Chicago Athletic Club, as it was last year. The following day the engineers will visit the show in a body and make an official inspection of the cars on exhibition.

A. M. C. M. A. MEETING AT CHICAGO.

The Committee of Management of the American Motor Car Manufacturers' Association will hold an important session at the New Southern Hotel, Chicago, Wednesday morning, December 4. It is understood that the 1908 show question will receive some attention.

THE CHICAGO AUTOMOBILE CLUB.

The Chicago Automobile Club is just entering upon the fifth year of its incorporate existence. The club was organized in 1902, but it was not until July 2, 1903, that authority was granted by the State of Illinois to incorporate this pioneer western motoring organization. During the first year of the club's existence,



IRA M. COBE, C. A. C.

prior to incorporation, the membership reached a total of about seventy-five. Meetings were held in Steinway hall, and the ardor increased of the devotees of the new sport.

The officers at that time were: President, Arthur J. Eddy; vice-president, F. C. Donald; secretary, Charles T. Jeffery; treasurer, D. David Cottrell. Mr. Eddy soon after left for New York and Mr. Donald succeeded to the chief executive position in the organization.

Plans for the occupancy of a permanent home were early discussed by the club members, and a short time

lease was soon executed for the Hetty Green property at 243 Michigan avenue. Shortly after the occupancy of this building the application for incorporation was made, the signatures on the articles being those of J. A. Ellis, Charles E. Bartley, Robert Tarrant, Jr., and Charles W. Gray. The first board of managers of the club consisted of F. C. Donald, Charles E. Bartley, Robert Tarrant, Jr., Charles W. Gray, W. H. Hoops, Dr. F. C. Greene, J. A. Ellis, F. X. Mudd, S. A. Miles, John Farson, and Dr. F. H. Davis.

John Farson assumed the leadership of the club in the fall of 1903 and was succeeded the following year as president by Ira M. Cobe. Mr. Farson again became president in 1905 and Mr. Cobe again succeeded him in 1906. During this entire period Sidney S. Gorham remained in office as secretary. Mr. Cobe has been re-elected as president for 1907-1908. The new board of managers follows: President, Ira M. Cobe; first vice-president, F. H. Pietsch; second vice-president, T. J. Hyman; secretary, N. H. Van Sicklen; treasurer, C. E. Gregory. Directors: John Farson, T. N. Koehler, A. J. Banta, Claude Seymour, F. D. Countess, W. W. Shaw.

The club's home on Michigan avenue did not long prove adequate to the needs of the rapidly growing organization, and when the temporary lease expired in 1905 it was decided to relinquish the club home for the present and direct all energies toward the construction of the new clubhouse in Plymouth Place. During the intervening period the club occupied rooms.



HOME OF CHICAGO AUTOMOBILE CLUB.

THE CHICAGO MOTOR CLUB.

A particularly energetic organization has been the Chicago Motor Club, which has been aptly designated as the "do something" club. While it is probably true that the burden of the work has devolved upon a few, it must be stated that the other members have loyally supported, whenever called upon, the various successful events conducted by the club. The president of the organization is one of the pioneers of automobiling in Chicago, F. C. Donald, who, with two other friends, was responsible for the formation of the Chicago Automobile Club. The trio at the time were the owners of the only three gasoline cars in Chicago. Mr. Donald was twice honored with the presidency of that club, which, at the conclusion of its second year, had a membership of over 500 and was comfortably located in a clubhouse.

Mr. Donald was the presiding officer of the Chicago meeting which resulted in the birth of the American Automobile Association. Subsequently he served for two years on the Racing Board and as a member of the Vanderbilt Cup Commission. Treasurer of the National Good Roads Association and of the Chicago Signboards Commission, a director of the New York-Chicago Good Roads Association, and lastly and mostly president of the energetic Motor Club, Mr. Donald is a prominent figure in Western automobiling. Charles P. Root and Secretary George G. Greenberg complete a trio with President Donald which is considered largely responsible for the activities of the Chicago Motor Club.



F. C. DONALD, C. M. C.

THE ILLINOIS STATE ASSOCIATION.

The Illinois State Association of the A. A. A. recently secured a new president in the person of L. E. Myers, a well-known figure in Chicago automobiling and one of the early members of the Chicago Automobile Club. President Myers succeeded Sidney S. Gorham, the organizer of the State Association, and who was a factor in the passage of the present Illinois automobile law. The State Association, under the leadership of Mr. Myers, is rapidly gaining in membership and several new clubs will be added in the near future. It is expected that before the end of another year the State Association will have grown very appreciably and prove of great benefit to the automobilists of Illinois, which State needs all kinds of roads building. It is the intention of the State body particularly to work for highways improvement, for its directors believe that the day has arrived when the autoists should come out in the open and use every bit of their influence for the betterment of roads. Touring in Illinois, during the rainy seasons of the year, is a wearisome task, for few



L. E. MYERS, I. S. A. A.

of the roads have any bottom and the mud is usually axle deep. In assuming the presidency of the Illinois association, Mr. Myers brings to the task a ripe experience in automobile matters and possesses an accurate comprehension of the great work which can be done for the general good of automobiling by an organization which reaches out to all sections of the State. President Myers will distribute his appointments in such manner as to make all the clubs feel that they are a part of the machinery.

THIRTY-SIX TO START IN THREE-DAY MUD DRIVE

CHICAGO, Nov. 25.—Almost upon the eve of the start of the Chicago Motor Club's reliability contest, which begins its first day's drive of 230 miles to South Bend, Ind., and return to-morrow, 26 makers have signified their intention of taking part in what is doubtless destined to be a glorious mud rout, by nominating 36 cars. The discrepancy between the number of makers and cars is accounted for by the fact that in a few instances more than one car of the same make has been entered. For example, there will be two Locomobiles, three Mathesons, three White steamers, and two representatives each of the Stoddard-Dayton, Jackson and Pierce-Arrow, both of the last-named being six-cylinder cars. Of this number, 24 are five and seven-passenger touring cars; one is a four-seated tourabout, the Marion, and 10 are three-seated roadsters, the Reo being the only real representative of the runabout class, while the commercial end also has a single representative in the shape of the Rapid 'bus. Under the usual classification the last-named would ordinarily be placed in Class B, the members of which are compelled to average 17 miles an hour, but as this would be manifestly unjust, it will compete in Class C, or the 14-mile-an-hour class.

A review of the tabulated classification shows a total of 18 cars in Class A, cars listing over \$3,000 and which will have to make an hourly average of 20 miles; 12 in Class B, cars listing between \$1,800 and \$3,000, and six in Class C, listing under \$1,800, the last two classes, as already mentioned, having to

travel at an average speed of 17 and 14 miles an hour, respectively. In addition to the penalties incurred during the running of the contest, the cars are to be examined after the conclusion of the three-day run and they will be penalized according to their condition. For instance, wheels spread more than 1-2 inch, five points for each 1-2 inch or fraction; the same penalty for each 1-4-inch sag in springs over the one-inch permanent set allowed; 15 points for each 1-4-inch sag in frame; 10 points for each 1-8-inch variation in steering knuckles; one or more cylinders of motor missing in two-block test, 50 points; failure of brakes to stop car in reasonable distance, 30 points; failure of change-speed gear, either forward or reverse speeds, 50 points; perceptible slipping of clutch, 30 points. This examination will certainly add considerably to the value of the awards.

In view of the size and power of the cars in the first two classes, it may appear strange at first sight that such a low average speed will be required of them, but to any one who is familiar with the roads constituting the route of the three-day contest the fact that even these conservative speeds will call for most consistent running on the part of the contestants, if they are to turn up at the various controls on time, will be recognized. And consistent running will mean strenuous effort on the part of the drivers in view of the bogs and mud-holes that form such a large part of the roads to be traveled over. The list of entrants is as follows:

CLASS A. CARS LISTING OVER \$3,000. AVERAGE 20 MILES AN HOUR.

Nos.	Car	H.P.	Cylinders	Tires	Entrant	Driver	Observer
17.	Frayer-Miller	50	4	Diamond	Oscar Lear Auto Co.	J. Barnes	R. M. Hess
11.	Jackson	20-24	4	Goodyear	Det. Jackson Auto Co.	F. L. Holmes	W. Diehl
33.	Locomobile		4		Locomobile Co. of America		
34.	Locomobile		4		Locomobile Co. of America		
6.	Matheson	50	4	Diamond	Palmer & Singer Mfg. Co.	R. G. Kelsey	
7.	Matheson	50	4	Diamond	Palmer & Singer Mfg. Co.	D. Buck	
26.	Matheson	85	4		Palmer & Singer Mfg. Co.	J. Heineman	
4.	Peerless	30	4	Diamond	W. G. Tennant	C. Burman	
2.	Pierce-Arrow	40	6	Goodrich	H. Paulman & Co.	P. Hoffman	F. Paulman
29.	Pierce-Arrow	40	6	Goodrich	H. Paulman & Co.	A. Kumpf	
1.	Royal Tourist	45	4	Diamond	R. W. Cook	R. W. Cook	L. S. Jullien
32.	Silent Knight	35-40	4		Knight & Kilbourne	E. Kilbourne	S. Goodwin
8.	Stevens-Duryea	50	6	Fisk	Louis Geyler	C. Clark	F. Leavenworth
27.	Stoddard-Dayton	50	6	Goodrich	McDuffee Auto Co.	B. Payne	G. F. Discher
20.	Studebaker	30	4	Diamond	Studebaker Mfg. Co.	H. M. Chambers	
21.	Thomas Flyer	60	4	Goodrich	C. A. Coey	C. A. Coey	L. Jackman
22.	White	30		Diamond	White Co.	H. Sheridan	A. Edmondson
23.	White	30		Goodrich	White Co.	W. Leitch	H. P. Thompson

CLASS B. CARS LISTING FROM \$1,800 to \$3,000. AVERAGE 17 MILES AN HOUR.

Nos.	Car	H.P.	Cylinders	Tires	Entrant	Driver	Observer
13.	Auburn	30	4	Fisk	J. Levy Co.	B. Oldfield	Frank Vaughan
15.	Dragon	24	4	Diamond	Dragon Auto Co.	J. W. Haynes	A. L. Kull
14.	Haynes	30	4	Diamond	Haynes Auto Co.	F. Nutt	J. C. Graves
28.	Kisselkar	30-35	4		Webb Jay Motor Co.	Webb Jay	Frank Jay
19.	Marion	24	4		Favorite Auto Co.	C. Price or H. Stutz	W. Bowman
36.	National		4		Ralph Temple Auto Co.	John Aitken	
30.	Oldsmobile	38	4	Diamond	Olds Motor Works	R. Owen, C. Hunter	P. Henderson
31.	Pierce-Racine	40	4	Goodyear	Pierce Engine Co.	J. Henson A. Pierce	L. F. Stevens
35.	Premier	35	4		Premier Motor Mfg. Co.		
3.	Rambler	32	4	Goodrich	T. B. Jeffery & Co.	T. Collier	E. Dickson
16.	Rapid 'Bus	25	2	Firestone	Rapid Motor Vehicle Co.	F. Grogan	R. Johnson
9.	Stoddard-Dayton	30-35	4	Goodrich	McDuffee Auto Co.	C. A. Englebeck	W. McDonald
5.	Wayne	30	4	Morgan & Wright	Wayne Auto Co.	F. Gremel	J. Porter
21.	White	20		Diamond	White Co.	C. E. Denzer	G. L. Schofield

CLASS C. CARS LISTING AT \$1,800 AND UNDER. AVERAGE 14 MILES AN HOUR.

Nos.	Car	H.P.	Cylinders	Tires	Entrant	Driver	Observer
18.	Auburn	24	2	Goodrich	Auburn Auto Co.	R. E. Parker	G. Howard
10.	Jackson	20-24	2	Goodyear det.	Jackson Auto Co.	E. Schffler	R. Johnson
13.	Maxwell	20	2		Maxwell-Briscoe-Chase Co.	O. W. Klose	W. B. Jameson
25.	Reo	18-20	2	Michelln	W. W. Shaw Co.	M. D. Vandercar	H. F. Musgrave

GATHERED AT AMERICA'S NATIONAL AUTO SHOW

COMPARISONS are odious, 'tis true, but it is only by the light of former achievements that progress can be measured, so that it is in no spirit of disparagement that the vast aggregation which will be housed in Chicago by the Coliseum, the First Regiment Armory, and the Seventh Regiment Armory, from November 30 to December 7 this year, calls attention to itself and its size as compared with that of either of the show functions fostered in New York City. Chicago is accustomed to doing big things and calling them bigger, so that the average man who is not of the Windy City must have recourse to the salt at times, but he will certainly not need it where the Chicago show is concerned. If the following statistics of the "Who they are and where they exhibit" order fail to convey an adequate impression, as statistics usually do, the fact that there will be gathered together under the three roofs which have been found necessary to accommodate the aggregation no less than 120 exhibitors of complete cars cannot be other than extremely significant when it is recalled that New York's two shows did not bring together more than 110 all told. In short, Chicago's show is New York's two functions rolled into one, with on the side a very generous sprinkling of manufacturers who do not regard the affairs in the metropolis as within their show program. And how large a "side" this is becomes apparent both on examination of the list of car exhibitors, as well as those in the seemingly

boundless field of accessory making. No further comparison or comment as to proportions would appear to be necessary after this.

Perusal of the list of automobile builders reveals the fact that the "old guard" of the industry is lined up in full force, gasoline, steam and electricity all being well represented, while the showing of new productions, particularly those light cars that are distinctly of American evolution, is such as only the Chicago show can boast of. In brief, here the popular-priced car is to be seen in all its glory and in its widest range of price and perfection.

Accessory makers are here, there, and everywhere, even to the extent of having a separate show of their own in connection with the gathering of business wagons in the Seventh Regiment Armory. No section of the tri-partite gathering of cars lacks its concomitant showing of accessories of everything under the sun for the auto and the autoist. And seldom has such a very comprehensive gathering of manufacturers who devote their attention to the production of the thousand and one things generically known as accessories been brought together at one time. It is somewhat of a misnomer to dub them all accessory exhibits, for, besides the many who make tires, lamps, ignition apparatus, distance-recording instruments, tops, lubricants, and so on *ad infinitum*, there are those who show motors, frames and similar important essentials of the car which cannot be viewed in any light as accessories.

GASOLINE PLEASURE VEHICLES.

ACME: Acme Motor Car Co., Reading, Pa.
 APPERSON: Apperson Bros. Auto Co., Kokomo, Ind.
 AEROCAR: Aerocar Motor Co., Detroit.
 AMERICAN LOCOMOTIVE CAR: American Locomotive Automobile Co., 1886 Broadway.
 AMERICAN: American Motor Car Co., Indianapolis.
 AUTOCAR: Autocar Co., Ardmore, Pa.
 AUSTIN: Austin Automobile Co., Grand Rapids, Mich.
 AUBURN: Auburn Automobile Co., Auburn, Ind.
 ATLAS: Atlas Motor Car Co., Springfield, Mass.
 AURORA: Aurora Motor Works, Aurora, Ill.
 BUGMOBILE: Bugmobile Co. of America, 208 Wabash Ave., Chicago.
 CADILLAC: Cadillac Motor Car Co., Detroit.
 CLEVELAND: Cleveland Motor Car Co., Cleveland.
 COLUMBIA: Electric Vehicle Co., Hartford, Conn.
 COLT RUNABOUT: Colt Runabout Co., 1549 Michigan Ave., Chicago.
 CORBIN: Corbin Motor Vehicle Corp., New Britain, Conn.
 C. F.: Cornish-Friedberg Motor Car Co., 1233 Michigan Ave., Chicago.
 C.V.I.: C.V.I. Motor Car Co., Jackson, Mich.
 DE LUXE: De Luxe Motor Car Co., Detroit.
 DRAGON: Dragon Automobile Co., Philadelphia.
 DUER: Chicago Coach & Carriage Co., 1223 Michigan Ave., Chicago.
 DIAMOND T: Diamond T Auto Co., 3 Huron St., Chicago.
 ELMORE: Elmore Mfg. Co., Clyde, O.
 FRANKLIN: H. H. Franklin Mfg. Co., Syracuse, N. Y.
 FRAYER-MILLER: Oscar Lear Automobile Co., Springfield, O.
 GAETH: Gaeth Automobile Co., Cleveland.
 GALE: Western Tool Works, Galesburg, Ill.
 GEARLESS: Gearless Transmission Co., Rochester, N. Y.
 GLIDE: Bartholomew Co., Peoria, Ill.
 GREAT SMITH: Smith Automobile Co., Topeka, Kan.
 HATFIELD: Hatfield Motor Vehicle Co., Miamisburg, O.
 HAYNES: Haynes Automobile Co., Kokomo, Ind.
 HOLSMAN: Holzman Automobile Co., Monadnock Block, Chicago.
 IMPERIAL: Imperial Motor Car Co., Williamsport, Pa.
 JACKSON: Jackson Automobile Co., Jackson, Mich.
 KISSELKAR: Kissell Motor Car Co., Hartford, Wis.
 KNOX: Knox Automobile Co., Springfield, Mass.
 LAMBERT: Buckeye Mfg. Co., Anderson, Ind.
 LAUTH-JUERGENS: Lauth-Juergens Motor Car Co., Chicago.
 LOCOMOBILE: Locomobile Co. of America, Bridgeport, Conn.
 LORRAINE: Lorraine Automobile Mfg. Co., Chicago.
 LOZIER: Lozier Motor Co., 55th and B'way, New York.
 MARMON: Nurdyke & Marmon Co., Indianapolis.
 MATHESON: Matheson Motor Car Co., Wilkes-Barre, Pa.
 MAXWELL: Maxwell-Briscoe Motor Co., Tarrytown, N. Y.
 MITCHELL: Mitchell Motor Car Co., Racine, Wis.
 MOLINE: Moline Automobile Co., East Moline, Ill.

MONARCH: Monarch Motor Car Co., Chicago Heights, Ill.
 MOON: Moon Motor Car Co., St. Louis, Mo.
 NATIONAL: National Motor Vehicle Co., Indianapolis.
 NORTHERN: Northern Motor Car Co., Detroit.
 OAKLAND: Oakland Motor Car Co., Pontiac, Mich.
 OLDSMOBILE: Olds Motor Works, Lansing, Mich.
 PACKARD: Packard Motor Car Co., Detroit.
 PEERLESS: Peerless Motor Car Co., Cleveland.
 PIERCE-RACINE: Pierce Engine Co., Racine, Wis.
 PIERCE: George N. Pierce Co., Buffalo.
 POPE-HARTFORD: Pope Motor Car Co., Hartford, Conn.
 PREMIER: Premier Motor Mfg. Co., Indianapolis.
 PULLMAN: Pullman Motor Car Co., 131 La Salle street, Chicago.
 PUNGS-FINCH: Pungs-Finch Auto & Gas Engine Co., Detroit.
 RAINIER: Rainier Co., B'way and 50th street, New York.
 RAMBLER: Thomas B. Jeffery & Co., Kenosha, Wis.
 RELIABLE-DAYTON: Reliable-Dayton Motor Car Co., Chicago.
 REO: Reo Motor Car Co., Lansing, Mich.
 RICHMOND: Wayne Works, Richmond, Ind.
 ROYAL TOURIST: Royal Motor Car Co., Cleveland.
 SCHACHT: Schacht Mfg. Co., Cincinnati.
 STAYER: Stayer Carriage Co., 76th and Wallace streets, Chicago.
 SILENT KNIGHT: Knight & Kilburn, 1238 Michigan Ave., Chicago.
 STEARNS: F. B. Stearns Co., Cleveland.
 STODDARD-DAYTON: Dayton Motor Car Co., Dayton, O.
 STUDEBAKER: Studebaker Automobile Co., South Bend, Ind.
 STEVENS-DURYEA: Stevens-Duryea Co., Chicopee Falls, Mass.
 SHOEMAKER: Shoemaker Automobile Co., Freeport, Ill.
 THOMAS: E. R. Thomas Motor Co., Buffalo.
 TINCHER: Tinchler Motor Car Co., South Bend, Ind.
 WALTHAM: Waltham Mfg. Co., Waltham, Mass.
 WAYNE: Wayne Automobile Co., Detroit.
 WELCH: Welch Motor Car Co., Pontiac, Mich.
 WINTON: Winton Motor Carriage Co., Cleveland.
 WOODS: Woods Motor Vehicle Co., Chicago.

STEAM PLEASURE VEHICLES.

WHITE: White Co., Cleveland.

ELECTRIC PLEASURE VEHICLES.

BABCOCK: Babcock Electric Carriage Co., Buffalo.
 BAKER: Baker Motor Vehicle Co., Cleveland.
 COLUMBIA: Electric Vehicle Co., Hartford, Conn.
 COLUMBUS: Columbus Buggy Co., Columbus.
 R. & L.: Rauch & Lang Carriage Co., Cleveland.
 STUDEBAKER: Studebaker Automobile Co., South Bend, Ind.
 WOODS: Woods Motor Vehicle Co., Chicago.

ACCESSORIES OF ALL KINDS THAT MEET ALL NECESSITIES

TIRES.

Ajax-Grieb Rubber Co., 420 East 126th street, New York.
 Continental Caoutchouc Co., 43 Warren street, New York.
 Diamond Rubber Co., Akron, O.
 Empire Auto Tire Co., Trenton, N. J.
 Firestone Tire & Rubber Co., Akron, O.
 Flak Rubber Co., Chicopee Falls, Mass.
 G & J Tire Co., Indianapolis.
 Goodrich Co., B. F., Akron, O.
 Goodyear Tire & Rubber Co., Akron, O.
 Hartford Rubber Works Co., Hartford, Conn.
 Healy Leather Tire Co., 1251 Michigan avenue, Chicago.
 Leather Tire Goods Co., Newton Upper Falls, Mass.
 Michelin Tire Co., Milltown, N. J.
 Morgan & Wright, Detroit.
 Motz Clincher Tire & Rubber Co., Akron, O.
 Pennsylvania Rubber Co., Jeannette, Pa.
 Republic Rubber Co., Youngstown, O.
 Swinehart Clincher Tire & Rubber Co., Akron, O.

TIRE ACCESSORIES, TOOLS, AND MISCELLANY.

Auto Pump Co., Springfield, N. Y.
 Imperial Brass Mfg. Co., 242 So. Jefferson street, Chicago.
 Leather Tire Goods Co., Newton Upper Falls, Mass.
 Newmastic Tire Co., 68th street and Broadway, New York.
 Shaler Co., C. A., Waupum, Wis.
 Weed Chain Tire & Grip Co., 28 Moore street, New York.
 Wray Pump & Register Co., Rochester, N. Y.

COILS, TIMERS, SPARK-PLUGS, ETC.

Atwater-Kent Mfg. Co., Philadelphia.
 Bemus, T. Alton, Boston.
 Connecticut Telephone & Electric Co., Meriden, Conn.
 Duplex Coil Co., Fond du Lac, Wis.
 Hardy Co., R. E., 86 Watts street, New York.
 Heinze Electric Co., Lowell, Mass.
 Igniter Appliance Co., Cleveland.
 Jeffery-Dewitt Co., Newark, N. J.
 K. W. Ignition Co., Cleveland.
 Kokomo Electric Co., Kokomo, Ind.
 Mosler & Co., A. R., 163 West 29th street, New York.
 National Carbon Co., Cleveland.
 Never-Miss Spark Plug Co., Lansing, Mich.
 Pfanstiehl Electrical Laboratory, North Chicago, Ill.
 Pittsfield Spark Coil Co., Dalton, Mass.
 Splittorf, C. F., 261 Walton avenue, New York.
 Uncas Specialty Co., Norwich, Conn.

DRY AND STORAGE BATTERIES.

American Electrical Novelty & Mfg. Co., 304 Hudson St., New York.
 Chicago Battery Co., 1400 Michigan avenue, Chicago.
 Dayton Electrical Mfg. Co., Dayton, O.
 Electric Storage Battery Co., Philadelphia.
 National Battery Co., Buffalo.
 National Carbon Co., Cleveland.
 Stackpole Battery Co., St. Mary's, Pa.
 Vesta Accumulator Co., 1334 Michigan avenue, Chicago.
 Vivax Storage Battery Co., 2224 Michigan avenue, Chicago.
 Witherbee Igniter Co., 541 West 43d street, New York.

MAGNETOS AND DYNAMOS.

Bosch, Robert, Inc., 160 West 56th street, New York.
 Dayton Electrical Mfg. Co., Dayton, O.
 K. W. Ignition Co., Cleveland.
 Mottlinger Device Mfg. Co., Pendleton, Ind.
 Pittsfield Spark Coil Co., Dalton, Mass.
 Remy Electric Co., Anderson, Ind.
 Splittorf, C. F., 261 Walton avenue, New York.

MAKERS OF AUTOMOBILE PARTS.

Auto Parts Co., 975 Monticello avenue, Chicago.
 Baldwin Chain & Mfg. Co., Worcester, Mass.
 Briscoe Mfg. Co., Detroit.
 Brown-Lipe Gear Co., Syracuse, N. Y.
 Brownell Motor Co., F. A., Rochester, N. Y.
 Cramp & Sons, William, Philadelphia.
 Diamond Chain & Mfg. Co., Indianapolis.
 Gemmer Mfg. Co., Detroit.
 Gray-Hawley Mfg. Co., Detroit.
 Hyatt Roller Bearing Co., Harrison, N. J.

Indestructible Steel Wheel Co., 1303 Michigan avenue, Chicago.
 Kinsey Mfg. Co., Dayton, O.
 Long Mfg. Co., 1432 Michigan avenue, Chicago.
 Muncie Auto Parts Co., Muncie, Ind.
 McMullen, Roger B., 1241 Michigan avenue, Chicago.
 Midgley Mfg. Co., Columbus.
 Shelby Steel Tube Co., Pittsburg.
 Ross Gear & Tool Co., Lafayette, Ind.
 Spicer Universal Joint Mfg. Co., Plainfield, N. J.
 Standard Roller Bearing Co., Philadelphia.
 Timken Roller Bearing Axle Co., Canton, O.
 Triple Action Spring Co., 1254 Michigan avenue, Chicago.
 Prosser & Son, Thomas, 15 Gold street, New York.
 Warner Clutch Co., 1481 Michigan avenue, Chicago.
 Warner Gear Co., Muncie, Ind.
 Western Malleable Steel Co., Detroit.
 Whitney Mfg. Co., Hartford, Conn.
 Whiteley Steel Co., Muncie, Ind.

LAMPS.

Atwood Mfg. Co., Amesbury, Mass.
 Badger Brass Mfg. Co., 437 Eleventh avenue, New York.
 Dietz Co., R. E., 60 Laight street, New York.
 Edmunds & Jones Mfg. Co., Detroit.
 Gray & Davis, Amesbury, Mass.
 Ham Mfg. Co., C. T., Rochester, N. Y.
 Manhattan Screw & Stamping Co., 57th street and West End
 avenue, New York.
 Rose Mfg. Co., 910 Arch street, Philadelphia.
 Standard Lamp & Mfg. Co., 45 South Canal street, Chicago.

SPEEDOMETERS.

Auto Improvement Co., 316 Hudson street, New York.
 Hoeffcker Co., Boston.
 Jones Speedometer Co., 76th street and Broadway, New York.
 Lipman Mfg. Co., Beloit, Wis.
 Motor Car Specialty Co., Philadelphia.
 Oliver Instrument Co., Minneapolis.
 Smith Mfg. Co., R. H., Springfield, Mass.
 Stewart & Clark Mfg. Co., 502 Diversey Boulevard, Chicago.
 Veeder Mfg. Co., Hartford, Conn.
 Warner Instrument Co., Beloit, Wis.

BODIES, TOPS, WINDSHIELDS, AND PROTECTORS.

Auto Accessories Mfg. Co., Detroit.
 Chase & Co., L. C., Boston.
 Chicago Coach & Carriage Co., 1223 Michigan avenue, Chicago.
 Chicago Windshield Co., 235 Johnson street, Chicago.
 Limousine Carriage Mfg. Co., 3515 Michigan avenue, Chicago.
 Lingdin-Brugger Co., Fond du Lac, Wis.
 Rands Mfg. Co., Detroit.
 Sprague Umbrella Co., Norwalk, O.
 Troy Carriage Sun Shade Co., Troy, O.
 Vehicle Top & Supply Co., St. Louis.

LUBRICANTS AND LUBRICATING APPLIANCES.

Cook's Sons, Adam, 313 West street, New York.
 Dixon Crucible Co., Joseph, Jersey City, N. J.
 Hancock Mfg. Co., Charlotte, Mich.
 Harris Oil Co., A. W., Providence, R. I.
 McCord & Co., Old Colony Building, Chicago.
 Neeley, Edward, & Co., 244 Wells street, Chicago.
 N. Y. & N. J. Lubricant Co., 14 Church street, New York.
 Precision Appliance Co., 840 Austin avenue, Chicago.
 Randall-Faichney Co., Boston.
 Robinson & Son Co., W. C., Baltimore.

SHOCK ABSORBERS.

Gabriel Horn Mfg. Co., Cleveland.
 Hartford Suspension Co., 67 Vestry street, New York.
 Hotchkiss Mfg. Co., 1256 Michigan avenue, Chicago.
 Kilgore Mfg. Co., Old Town, Me.
 Sager Company, J. H., Rochester, N. Y.

CARBURETERS.

Breeze Carbureter Co., Newark, N. J.
 Byrne-Kingston & Co., Kokomo, Ind.
 Heltger Carbureter Co., 205 West South street, Indianapolis.
 Wheeler & Schebler, Indianapolis.

UNIVERSAL PROVIDERS.

Arnsteln, Eugene, 35th street and Shields avenue, Chicago.
 Excelsior Supply Co., 233 Randolph street, Chicago.
 Franco-American Auto Supply Co., 1404 Michigan avenue, Chicago.

TOOLS, JACKS, ETC.

Cook Standard Tool Co., Kalamazoo, Mich.
 Duff Mfg. Co., Allegheny, Pa.
 Oliver Mfg. Co., 203 South Desplaines street, Chicago.

COMPRESSED ACETYLENE TANKS.

Avery Portable Lighting Co., Milwaukee.
 Prest-O-Lite Co., Indianapolis.

PAINTS, VARNISHES, ETC.

Sherwin-Williams Co., Cleveland.
 Standard Varnish Works, 2620 Armour avenue, Chicago.
 Valentine & Co., 277 Dearborn street, Chicago.

FUEL AND OIL SUPPLY TANKS.

Bowser & Co., Inc., S. F., Fort Wayne, Ind.
 National Oil Pump & Tank Co., Dayton, O.

MOTORCYCLES.

ARMAC: Armac Motor Co., 472 Carroll avenue, Chicago.
 THOR MOTORS—Aurora Automatic Machinery Co., Aurora, Ill.
 COLUMBIA: Pope Mfg. Co., Hartford, Conn.
 CURTIS: G. H. Curtis Mfg. Co., Hammondsport, N. Y.
 EXCELSIOR: Excelsior Motor & Mfg. Co., 233 Randolph St., Chicago.
 F. N.: Ovington Motor Co., 2234 B'way, New York.
 FOWLER: Fowler-Manson-Sherman Cycle Mfg. Co., 45 Fulton St., Chicago.

HARLEY-DAVIDSON: Harley-Davidson Motor Co., 35 E. Adams street, Chicago.

HORNECKER: Hornecker Mfg. Co., Whiting, Ind.
 INDIAN: Hendee Mfg. Co., Springfield, Mass.
 LIGHT: Light Mfg. & Foundry Co., Pottstown, Pa.
 MERKEL: Merkel Motor Co., Milwaukee.
 YALE: Consolidated Mfg. Co., Toledo, O.

MISCELLANEOUS.

Acetyvone Co., Niagara Falls, N. Y.
 American Aluminum Coating Co., Pittsburg.
 Auto Goods Co., Boston.
 Automobile Topics, New York.
 Chicago School of Motoring, 264 Michigan Ave., Chicago.
 Central Rubber Co., 82 Lake St., Chicago.
 Cowles & Co., C., New Haven, Conn.
 Class Journal Company, New York.
 Cycle & Automobile Trade Journal, Philadelphia.
 Electric & Mechanical Development Co., Asbury Park, N. J.
 Elite Mfg. Co., Ashland, O.
 Hans Co., Edmund E., 424 S. 4th St., Minneapolis.
 Horseless Age, New York.
 McCanna Mfg. Co., 56 N. Jefferson St., Chicago.
 Morrison, McIntosh & Co., Grinnell, Ia.
 Motor, New York.
 Motor Age, Chicago.
 Motor Way, Chicago.
 Norris Auto Co., Saginaw, Mich.
 Norton Co., Worcester, Mass.
 Pantasote Co., 11 Broadway, New York.
 Ventilated Cushion & Spring Co., Jackson, Mich.

COMMERCIAL VEHICLES IN THE SEVENTH REGIMENT ARMORY

AMERICAN: American Motor Truck Co., Lockport, N. Y.
 BRUSH: Brush Runabout Co., Detroit, Mich.
 CONTINENTAL: Continental Motor Car Co., 785 Jackson Blvd., Chicago.
 COPPOCK: Coppock Motor Car Co., Marion, Ind.
 COUPLE-GEAR: Couple Gear Freight Wheel Co., Grand Rapids, Mich.
 FRANKLIN: H. H. Franklin Mfg. Co., Syracuse, N. Y.
 FRAYER-MILLER: Oscar Lear Auto Co., Springfield, O.
 GIFFORD-PETTIT Mfg. Co., 720 Devon avenue, Chicago.
 KNOX: Knox Automobile Co., Springfield, Mass.
 LAMBERT: Buckeye Mfg. Co., Anderson, Ind.
 LOGAN: Logan Construction Co., Chillicothe, O.
 MEISELBACH: Meiselbach Motor Wagon Co., A. D., No. Milwaukee.
 MITCHELL: Mitchell Motor Car Co., Racine, Wis.
 PLYMOUTH: Commercial Motor Truck Co., Plymouth, O.

POPE-HARTFORD: Pope Motor Car Co., Hartford, Conn.
 RAPID: Rapid Motor Vehicle Co., Pontiac, Mich.
 RELIANCE: Reliance Motor Car Co., Detroit, Mich.
 SAFIR: Safir Automobile Co., Zurich, Switzerland.
 SAMPSON: Aiden Sampson Mfg. Co., Pittsfield, Mass.
 SAYERS & SCOVILL, Cincinnati.
 STREATOR: Streator Motor Car Co., Streator, Ill.
 THOMAS: E. R. Thomas Motor Co., Buffalo.
 WORTH: Worth Motor Car Mfg. Co., Evansville, Ind.

STEAM COMMERCIAL VEHICLES.

WHITE: White Co., Cleveland.

ELECTRIC COMMERCIAL VEHICLES.

GENERAL: General Vehicle Co., 62nd and Broadway, New York.
 PITTSBURGH: Pittsburgh Motor Vehicle Co., Pittsburgh.
 STUDEBAKER: Studebaker Automobile Co., South Bend, Ind.

ACCESSORIES AT THE SEVENTH REGIMENT ARMORY**TIRES.**

Automobile Utilities Co., 9 Motor Mart, Boston.
 Diamond Rubber Co., Akron, O.
 Firestone Tire & Rubber Co., Akron, O.
 Goodyear Tire & Rubber Co., Akron, O.
 Hartford Rubber Works, Hartford, Conn.
 Morgan & Wright, Detroit.

GENERAL.

Atlas Mfg. Co., Fostoria, O.
 Cartier, Chapman & Co., Ludington, Mich.
 Hartford Auto Parts Co., Hartford, Conn.
 Indestructible Steel Wheel Co.
 National Battery Co., Buffalo.
 Timken Roller Bearing Axle Co., Canton, O.

SOME STATISTICS OF THE ONLY NATIONAL SHOW

IN all, the show will house more than 300 exhibitors, of which no less than 82 are manufacturers of complete automobiles of the gasoline-driven pleasure type, in addition to which there is 1 maker of pleasure vehicles, 7 of electrics and 13 motorcycle makers. In the commercial section of the show there are 23 manufacturers of gasoline-driven vehicles, 1 steam-driven, and 3 makes of electrics, making a total of 130 exhibits of complete vehicles of both the pleasure and commercial classes. There are close to 200 exhibitors of accessories of every nature, including some 18 manufacturers of tires, 31 of ignition apparatus, 28 of automobile parts, large and small, 9 of lamps, 10 of speed-recording instruments, 10 of tops, bodies and the like, 10 refiners

of lubricating oils, and so on down through many minor classifications, ending up with 47 exhibitors of miscellaneous wares.

If it were possible to even approximately figure the value of the cars and accessories shown, it would make a truly astounding total, as the 130 makers stage between 300 and 500 cars of an average value of about \$1,500, while the value of the accessory exhibits ranges from a few dollars up to thousands. Statistics of the materials employed in decorating are no less impressive, as there will be some 9,000 square feet of oil paintings, 100,000 square feet of ornamental work in the ceilings, 20,000 feet of paneled wall covering, 110,000 square feet of carpeting, and three or four tons of miscellaneous staff ornaments.

TABULAR STORY OF THE AMERICAN AUTOMOBILE

If it were possible to reconcile the many variations of design to be found even in the close approach to a standard that at present prevails in automobile design, and to make a composite of the result, it would doubtless be found that the American car thus produced would be characterized by all those features of design and construction that have come to be generally recognized by engineers as the best current practice. It would be readily possible to construct a composite, or rather composites, taking as the basis of each those cars that fall within certain classifications.

For instance, there is that typical product of the soil, the buggyabout, which has already sprung up in such numbers and taken such a firm hold on the popular fancy of the class of users for which it is destined that there can be no possible doubt as to its future. It is characterized by the use of a single or twin-cylinder motor, almost invariably of the horizontal type, ranging from 4 to 12 horsepower, and with a liberal sprinkling of air-cooled engines among the number. Change-speed gears are mainly of the planetary type, with friction types a very close second, and chains practically a standard form of final drive. Some have single-chain drive, others steel cables—but to run over the exceptions would be out of the question. Where price is concerned \$600 may probably be put down as the average figure.

But while dwelling on cars at this price it must be mentioned that there is the small, single-cylinder runabout at one end of it and the four-cylinder high-speed runabout at the other, which only goes to show that even when adhering to a particular classification it is extremely difficult to evolve a composite that shall reflect the features of all its component parts. In brief, there are too many American cars that are in a class of their own to make such a division practical or of any value. A price classification brings all these small cars in the "under \$1,000" division and it is noticeable that there is far more diversity within this limited price range than is to be found among the cars costing several times as much, for it is mainly in the high-priced cars that the effects of standardization are apparent.

In the \$1,000 to \$2,000 class there is quite as much diversity as in the initial price division, such extremes as the single-cylinder, 10-horsepower car and the four-cylinder, 20-horsepower car being found at the first-named figure, while the addition of \$150 to \$250 brings with it a number of vehicles of far more ambitious

size and appointments, though even at the \$1,000 line there is a wider choice permitted the prospective purchaser than has been the case in past years, as, in addition to two single-cylinder 10-horsepower cars at this price, he will find two representatives of the 20-horsepower four-cylinder type and two of the 18-horsepower two-cylinder opposed type.

Price increases are marked by small jumps—as low as \$25, and not exceeding \$100, until the \$1,850 line is reached. Between \$1,000 and the last-named figure there is a wide choice of vehicles designed expressly for American road conditions and capable in large measure of all that their far higher-priced and higher-powered confreres can perform in the shape of endurance and "get-there" qualities, which are sought for by the American buyer above all things. In the lower limits of this division the planetary gear and chain drive prevail, with a scattering instance or two of the friction type, then emerging into the borders of higher standards in the shape of sliding gears and shaft drives, with frequent instances of selective types of gearboxes. Here also are met the air-cooled car and the two-cycle, though these are also to be found under the \$1,000 mark.

But it is in the \$2,000 to \$3,000 class that the American car becomes at once the pride of its builder and owner, and the despair of the foreign manufacturer, who finds it impossible to build a competing model to sell at the lower limits of this classification and can barely succeed in squeezing his lightest models in at its upper line of demarcation. Here standards at once become more uniform, and differences far less striking than is the case in lower-priced constructions, where financial limitations apparently act by contraries in giving far wider latitude of design. In both this and the next classification of \$3,000 to \$4,000 it would not be particularly difficult to construct a composite that would accurately reflect the characteristics of its numerous components. As a matter of fact, from the \$2,000 mark upward it is really but a question of more expensive materials, higher-priced accessories, some of which figure as "extras" in the lower latitudes, and more luxurious equipment and finish, so that the salesman's oft-repeated litany of "vertical motor in front, sliding gear, direct on the high, shaft drive," etc., suffices to cover their salient features fully as well as any extended description possibly could. A price limit is really reached at \$6,000, but a few straggling along to the \$10,000 figure.

COSTING LESS THAN \$1,000

CAR	Price	H.P.	Cylinders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheel-base	W'ght
Kiblinger, Model A	\$250	4	1	Buggy	2	Storage battery	Disc	Planetary	Side chains	65	600
" Model B	300	6	1	Buggy	2	Storage battery	Disc	Planetary	Side chains	65	650
Success	400	12	2	Buggy	2	Dry cells		Friction	Side chains		
Waltham, Model 17	400	4	1	Runabout	2	Dry cells		Friction	Side chains	84	625
Brush, Model 1-B	586	6	1	Piano box	2	Storage battery	Disc	Planetary	Side chains	74	900
Hatfield, Model D-E	600	12	2	Buggy	2	Storage battery		Friction	Side chains	78	900
Waltham, Model 28	600	8	2	Runabout	2	Dry cells		Friction	Side chains	84	700
Ford	600	20	4	Runabout	3	Storage battery		Planetary	Shaft	97	
Jewel, Model D	600	10	1	Piano box	2	Dry cells		Planetary	Chain	70	900
Schacht, Model H	640	12	2	Buggy	2	Storage battery		Friction	Side chains	65	900
Reo, Model B	650	10	1	Touring	4	Storage battery	Disc	Planetary	Single chain	78	
Schacht, Model K	680	12	2	Buggy	2	Storage battery		Friction	Side chains	65	900
Aurora	700	18	2	Runabout	2	Storage battery		Progressive	Cables	76	1,070
Duer, Model A	700	12	2	Buggy	2	Storage battery		Friction	Steel cables	75	940
Holsman, Model 10	750	12	2	Buggy	2	Storage battery		Friction	Side chains	72	
Columbus	750	10	1	Buggy	2	Storage battery	Disc	Progressive	Side chains	84	1,200
Reliable-Dayton, Model E	780	15	2	Runabout	2	Storage battery	External contracting	Progressive	Side chains	88	1,200
Brush, Model 2-A	800	12	2	Touring	4	Storage battery	Disc	Planetary	Side chains	88	
Ford	800	20	4	Touring	5	Storage battery		Planetary	Shaft	97	
Holsman, Model 11	800	12	2	Buggy	4	Storage battery		Friction	Steel cables	75	1,055
Lambert, Model XVIII	800	18	2		3	Storage battery		Friction	Single chain	95	1,350
Schacht, Model P	800	12	2	Buggy	2	Storage battery		Friction	Side chains	65	900
Maxwell, Model L-C	825	12	2	Runabout	2	Storage battery	Disc	Planetary	Shaft	72	1,500
Buick, No. 10	850	18	4	Runabout	3	Storage battery	Cone	Planetary	Shaft	88	
Cameron, Model 6	850	16	4	Runabout	2	Storage battery	Cone	Planetary	Shaft	84	1,000
Cadillac, Model S	850	10	1	Runabout	2	Storage battery	Disc	Planetary	Chain	82	
Continental	900	12	2	Runabout	2	Storage battery	Disc	Planetary	Shaft	90	1,000
Reliable-Dayton, Model F	925	15	2	Surrey	4	Storage battery	External contracting	Progressive	Side chains	98	1,500
Duer, Model B	950	22	4	Buggy	2	Storage battery		Cables	76	1,200	

COSTING BETWEEN \$1,000 AND \$2,000

CAR	Price	H.P.	Cyl-inders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheel-base	W'ght
Cadillac, Model T	\$1,000	10	1	Touring	4	Storage battery	Disc	Planetary	Chain	82	
Hewitt	1,000	10	1	Runabout	3	Storage battery	Disc	Planetary	Chain	84	1,200
Ford	1,000	20	4	Cab	5	Storage battery		Planetary	Shaft	97	1,600
Mitchell, Model H	1,000	20	4	Runabout	2	Storage battery	Cone	Progressive	Shaft	92	1,050
Reo, Model C	1,000	18	2	Touring	4	Storage battery	Disc	Planetary	Chain	94	
Staver, Model C	1,000	18	2	Buggy	2	Storage battery	Disc	Planetary	Side chains		1,600
Cameron, Model B	1,050	10	4	Runabout	3	Storage battery	Cone	Progressive	Shaft	98	1,150
Buick, Model G	1,150	22	2	Touring	5	Storage battery	Cone	Planetary	Chain	90	
Autocar, Model XV	1,200	12	2	Runabout	3	Storage battery	Ring	Progressive	Shaft	80	
Reliable-Dayton, E	1,200	15	2	Coupe	2	Storage battery	External contracting	Progressive	Side chains	84	1,300
Auburn	1,250	21	2	Runabout	3	Storage battery	Disc	Planetary	Chain	100	1,700
Buick, Model F	1,250	22	2	Touring	5	Storage battery	Cone	Planetary	Single chain	90	
Jackson, Model C	1,250	20	2	Touring	5	Storage battery	Disc	Planetary	Chain	96	2,000
Mitchell, Model G	1,250	20	4	Runabout	3	Storage battery	Cone	Progressive	Shaft	92	1,050
Moline, Model H	1,250	18	2	Touring	5	Storage battery	Disc	Planetary	Chain	92	1,800
Overland, Model 24	1,250	18	4	Runabout	2	Storage battery	Expanding	Planetary	Chain	96	1,590
Reo, Model A	1,250	18	2	Touring	5	Storage battery	Disc	Planetary	Chain	94	
Lambert, Model S	1,275	21	2	Touring	5	Storage battery	Disc	Friction	Side chains	94	1,800
Chalfant	1,300	22	2	Touring	5	Storage battery		Planetary	Chain	90	
Auburn	1,350	22	4	Touring	5	Storage battery	Disc	Planetary	Chain	100	1,800
Cartercar, Model A	1,350	22	2	Touring	5	Storage battery		Friction	Chain	96	1,860
Mason	1,350	15	2	Touring	5						
Maxwell, Model N-C	1,350	16	2	Runabout	2	Storage battery	Disc	Progressive	Shaft	90	1,500
Cadillac, Model T	1,350	10	1	Coupe	2	Storage battery	Disc	Planetary	Chain	82	
Rambler, Model 32	1,300	22	2	Runabout	2	Storage battery	Disc	Planetary	Chain	106	1,850
Richmond	1,350	16	4	Runabout	2	Storage battery	Cone	Progressive	Shaft	90	1,575
Waltham, Model 138	1,350	11	2	Runabout	2	Dry cells		Friction	Side chains	102	1,300
Atlas, Model R	1,400	22	2	Runabout	2	Storage battery	Disc	Planetary	Shaft	90	1,500
Rambler, Model 31	1,400	22	2	Touring	4	Storage battery	Disc	Planetary	Chain	106	1,850
Waltham, Model 158	1,400	14	2	Touring	5	Dry cells		Friction	Side chains	92	1,385
Maxwell, Model H-C	1,450	16	2	Touring	5	Storage battery	Disc	Progressive	Shaft	90	1,500
Richmond	1,450	16	4	Lgt. Touring	4	Storage battery	Cone	Progressive	Shaft	90	1,700
Colt	1,500	40	6	Runabout	2	H. T. Magneto	Cone	Selective	Shaft	105	1,800
Aerocar, Model D	1,500	20	1	Touring	4	Storage battery	Disc	Progressive	Shaft	104	2,000
Jackson, Model D	1,500	20	2	Touring	5	Storage battery	Disc	Selective	Shaft	106	2,200
Eagle, Model O	1,550	20	3	Runabout	2	Storage battery	Disc	Progressive	Shaft	100	1,750
Northern, Model C	1,600	21	2	Touring	5	Storage battery	Disc	Planetary	Shaft	106	2,200
Eagle, Model N	1,700	20	3	Touring	4	Storage battery	Disc	Progressive	Shaft	100	1,750
Stoddard-Dayton, 8-H	1,700	18	4	Runabout	4	Storage battery	Cone	Selective	Shaft	92	1,500
Stoddard-Dayton, H-H	1,700	18	4	Coupe	2	Storage battery	Cone	Selective	Shaft	88	1,500
Elmore, Model L	1,750	24	3	Touring	5	Storage battery	Ring	Selective	Shaft	102	
Franklin, Model G	1,750	16	1	Runabout	2	Storage battery	Disc	Selective	Shaft	100	1,400
Maxwell, Model D	1,750	24	4	Touring	4	Storage battery	Disc	Progressive	Shaft	96	2,100
Waltham, T-T	1,750	20	4	Touring	5	Storage battery	Cone	Progressive	Shaft	96	1,800
Lane Steamer, Model 3-2	1,800	20	2	Runabout	2				Chain	97	1,600
Waltham, Model D-L	1,800	20	4	Touring	5	Storage battery	Cone	Progressive	Shaft	96	1,850
Dragon	1,850	35	4	Runabout	2	Storage battery	Cone	Progressive	Shaft	96	1,600
Franklin, Model G	1,850	16	4	Touring	4	Storage battery	Disc	Selective	Shaft	90	1,600
Trebert	1,850	30	4	Touring	5						
Pullman, Model H	1,875	24	4	Touring	5	Storage battery	Cone	Selective	Shaft	100	1,750
Atlas, Model D	1,900	31	3	Runabout	4	Storage battery	Cone	Selective	Shaft	106	2,000
Eagle, Model M	1,900	20	2	Touring	5	Storage battery	Disc	Progressive	Shaft	100	1,750
Oldsmobile, Model X	1,900	30	4	Touring	5	Storage battery	Cone	Selective	Shaft	106	

COSTING BETWEEN \$2,000 AND \$3,000

CAR	Price	H.P.	Cyl-inders	Body	Seats	Ignition	Clutch	Transmissior	Drive	Wheel-base	W'ght
Cadillac, Model G	\$2,000	25	4	Touring	5	Storage battery	Disc	Selective	Shaft	100	2,180
Buick, Model D	2,000	24	4	Touring	5	Storage battery	Disc	Progressive	Shaft	102	2,250
Hay-Berg	2,000	20	4	Roadster	3	Storage battery	Cone	Progressive	Shaft		2,000
Jackson, Model E	2,000	35	4	Runabout	4	Storage battery	Disc	Selective	Shaft	111	2,450
Lambert, Model M	2,000	35	4	Touring	5	Storage battery	Disc	Friction	Shaft	105	1,900
Kisselkar	2,000	35	4	Touring	7	Storage battery	Cone	Selective	Shaft	108	2,400
Kisselkar	2,000	35	4	Limousine	7	Storage battery	Cone	Selective	Shaft	108	2,800
Klink	2,000	30	4	Touring	5	Storage battery	Cone	Selective	Shaft	110	2,100
Lane Steamer, Model 8-5	2,000	20	2	Touring	5				Chain	97	2,300
Mitchell, Model I	2,000	35	1	Touring	5	Storage battery	Cone	Progressive	Shaft	112	2,505
Moline, Model S	2,000	24	4	Touring	5	Storage battery	Cone	Progressive	Shaft	100	2,050
Pierce-Racine, Model E	2,000	30	4	Touring	5	Storage battery	Cone	Progressive	Shaft		
Pungs-Finch, Model F	2,000	24	4	Runabout	2	Storage battery	Cone	Progressive	Shaft	100	1,600
Richmond	2,000	28	4	Touring	5	Storage battery	Cone	Selective	Shaft	108	1,950
Selden	2,000	25	4	Touring	5	Storage battery	Cone	Selective	Shaft	109	1,850
Shoemaker, Model B	2,000	28	4	Touring	5	Storage battery	Disc	Selective	Shaft	102	2,100
Biomstrom	2,100	30	4	Runabout	3	Storage battery	Cone	Selective	Shaft		
Dragon	2,100	24	4	Touring	5	Storage battery	Cone	Progressive	Shaft	104	1,950
Aerocar, Model F	2,200	40	4	Touring	5	Storage battery	Disc	Progressive	Shaft	115	2,200
Napier	2,200	20	4	Runabout	2	Storage battery	Cone	Selective	Shaft	90	2,800
Biomstrom	2,250	30	4	Touring	5	Storage battery	Cone	Selective	Shaft		
C-F	2,250	35	4	Touring	5	Storage battery	Disc	Selective	Shaft	114	2,300
Imperial	2,250	30	4	Runabout	3	H. T. Magneto	Disc	Selective	Shaft	108	2,400
Marion, Model 8	2,250	21	4	Roadster	3	H. T. Magneto	Disc	Selective	Shaft	102	1,850
Premier	2,250	21	4	Touring	5	Storage battery	Disc	Selective	Shaft	108	2,270
Rambler, Model 34	2,250	33	4	Touring	5	Storage battery	Cone	Selective	Shaft	112	2,400
Shoemaker, Model X	2,300	40	4	Roadster	2	Storage battery	Disc	Selective	Shaft	115	2,300
Mora	2,350	24	4	Runabout	3	H. T. Magneto	Cone	Selective	Shaft	98	1,750
Atlas, Model E	2,400	40	4	Touring	5	Storage battery	Cone	Selective	Shaft	114	2,400
Continental, Model A	2,400	20	4	Runabout	3	Storage battery	Disc	Selective	Shaft	100	2,000
White Steamer, Model L	2,400	20	2	Runabout	3				Shaft	114	
Cadillac, Model H	2,500	30	4	Touring	5	Storage battery	Disc	Planetary	Shaft	102	2,880
Crawford, Model D	2,500	35	4	Runabout	3	Magneto	Disc	Selective	Shaft	112	2,300
Dolson, Model H	2,500	40	4	Touring	5	Storage battery	Band	Selective	Shaft	115	2,700
Dorris, Model C	2,500	30	4	Touring	5	Storage battery	Disc	Selective	Shaft	106	2,350
Elmore, Model M	2,500	35	4	Touring	5	Storage battery	Expanding ring	Selective	Shaft	108	
Frayser-Miller	2,500	24	4	Runabout	2	Storage battery	Cone	Selective	Shaft	100	1,800
Frayser-Miller, Combination	2,500	24	4	Combination	3-4	Storage battery	Cone	Selective	Shaft	100	2,000
Eagle	2,500	40	4	Runabout	3	H. T. Magneto	Disc	Selective	Shaft	100	2,250
Glide, Model G	2,500	36	4	Touring	5	Magneto	Disc	Selective	Shaft	120	2,900
Great Smith	2,500	30	4	Touring	5	Storage battery	Disc	Selective	Shaft	107	

CAR	Price	H.P.	Cyl-inders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheel-base	W'ght
Grout	2,500	35	4	Touring	5	Storage battery	Cone	Progressive	Side chains	115	2,600
Haynes, Model S	2,500	30	4	Touring	5	Storage battery	Band	Selective	Shaft	102	2,250
Jackson, Model E	2,500	35	4	Touring	5	Storage battery	Disc	Selective	Shaft	111	2,450
Knox, Model H	2,500	30	4	Sportabout	5	Storage battery	Cone	Selective	Shaft	102	2,250
Speedwell, Model D	2,500	40	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	116	.....
Stevens-Duryea, Model R	2,500	20	4	Touring	5	Storage battery	Disc	Selective	Shaft	90	2,000
White Steamer, Model L	2,500	20	2	Touring	5				Shaft	114	.....
Buick, No. 5	2,500	40	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	108	.....
Lambert, Model R	2,500	35	4	Touring	7	Storage battery	Disc	Friction	Side chains	106	2,700
Marion, Model 6-30	2,500	30	6	Roadster	2	H. T. Magneto	Disc	Selective	Shaft	102	1,900
Mora	2,500	24	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	103	1,900
Moline, Model A	2,500	35	4	Touring	5	Storage battery	Cone	Progressive	Shaft	110	2,650
Pierce-Racine	2,500	40	4	Touring	5	Storage battery	Cone	Selective	Shaft	106	2,600
Stoddard-Dayton, Model 8-f	2,500	30	4	Touring	5	Storage battery	Cone	Selective	Shaft	113	2,600
Stoddard-Dayton, Model 8-N	2,500	30	4	Landulet	5	Storage battery	Cone	Selective	Shaft	92	2,000
Pungs-nch, Model H	2,500	35	4	Touring	5	Storage battery	Disc	Selective	Shaft	110	2,300
Shoemaker, Model C	2,500	40	4	Touring	5	Storage battery	Disc	Selective	Shaft	115	2,600
Wayne	2,500	30	4	Touring	5	Storage battery	Cone	Selective	Shaft	107	2,400
Knox	2,600	30	4	Touring	5	Storage battery	Cone	Selective	Shaft	102	2,250
Corbin, Model S	2,650	32	4	Roadster	4	H. T. Magneto	Cone	Selective	Shaft	108	.....
Model R (Air)	2,650	32	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	108	.....
Model K (Water)	2,650	32	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	108	.....
Crawford, Model E	2,650	35	4	Touring	5	Magneto	Disc	Selective	Shaft	106	2,800
Imperial	2,650	30	4	Runabout	5	H. T. Magneto	Disc	Selective	Shaft	108	2,525
Premier	2,650	30	4	Touring	5	L. T. Magneto	Disc	Selective	Shaft	108	2,400
Continental, Model B	2,700	35	4	Runabout	3	Magneto	Disc	Selective	Shaft	110	2,150
Knox, Model L (Water)	2,700	30	4	Touring	5	Storage battery	Cone	Selective	Shaft	102	2,400
Apperson, Model M	2,750	30	4	Roadster	4	H. T. Magneto	Band	Selective	Shaft	106	2,400
Autocar, Model XIV	2,750	30	4	Touring	5	Storage battery	Ring	Selective	Shaft	112	.....
Fray-Miller, Model B	2,750	24	4	Touring	5	Storage battery	Internal expanding	Selective	Shaft	100	2,200
Hol-Tan, special (chassis only)	2,750	24	4			H. T. Magneto	Cone	Selective	Shaft	121	.....
Oldsmobile, Model M	2,750	36	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	112	2,800
Pope-Hartford, Model M	2,750	30	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	112	.....
Pullman, Model 6-30	2,750	30	6	Runabout	3	Storage battery	Cone	Selective	Shaft	104	1,800
Stevens-Duryea, Model X	2,750	24	4	Touring	5	Magneto	Disc	Selective	Shaft	124	2,600
Thomas Detroit, 4-40	2,750	40	4	Touring	5	Storage battery	Cone	Selective	Shaft	112	2,530
Eagle	2,800	40	4	Touring	7	H. T. Magneto	Cone	Selective	Shaft	110	2,400
Northern, Model C	2,800	24	2	Limousine	7	Storage battery	Disc	Planetary	Shaft	106	2,800
Franklin, Model D	2,850	28	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	105	2,200
Locomobile, Model E	2,900	24	4	Touring	5	L. T. Magneto	Cone	Selective	Side chains	102	2,000

COSTING BETWEEN \$3,000 AND \$4,000

CAR	Price	H.P.	Cyl-inders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheel-base	W'ght
Cadillac, Model G	\$3,000	25	2	Limousine	5	Storage battery	Cone	Selective	Shaft	100	.....
Columbia, Model M-K	3,000	29	4	Touring	5	L. T. Magneto	Cone	Selective	Shaft	109	2,350
Continental, Model C	3,000	35	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	120	2,500
Haynes, Model W	3,000	45	4	Touring	5	H. T. Magneto	Band	Selective	Shaft	106	2,650
Hol-Tan	3,000	25	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	110	.....
Gilde, Model 45	3,000	45	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	120	3,000
Jewel	3,000	40	4	Touring	7	H. T. Magneto	Cone	Selective	Shaft	117	.....
Lane, Steamer, 8-3	3,000	30	2	Runabout	2				Chain	112	2,000
Marmon, Model G	3,000	35	4	Touring	5	Storage battery	Disc	Selective	Shaft	104	.....
Maxwell, Model M	3,000	40	4	Touring	5	Storage battery	Disc	Selective	Shaft	104	2,750
Thomas, 4-20	3,000	20	4	Landulet	6	H. T. Magneto	Cone	Selective	Shaft	100	1,900
Pennsylvania, Model C	3,000	50	4	Touring	5	H. T. Magneto	Cone	Selective	Shaft	114	2,800
Pennsylvania	3,000	50	4	Limousine	5	H. T. Magneto	Cone	Selective	Shaft	114	.....
Pierce-Racine, Model E	3,000	30	4	Touring	5	Storage battery	Cone	Progressive	Shaft	106	2,350
Pullman, Model 4-40	3,000	40	4	Runabout	3	Storage battery	Cone	Selective	Shaft	108	2,200
Crawford, Model C	3,150	40	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	114	2,800
Selden	3,200	25	4	Limousine	5	Storage battery	Cone	Selective	Shaft	109	2,000
White Steamer, Model L	3,200	20	2	Limousine	5				Shaft	104	.....
American	3,250	40	4	Touring	5	H. T. Magneto	Cone	Progressive	Shaft	106	.....
Dolson, Model F	3,250	60	4	Touring	7	Storage battery	Band	Selective	Shaft	127	3,200
Gearless, Model 60	3,250	60	4	Runabout	3	H. T. Magneto	Expanding	Gearless	Shaft	126	3,000
Moon, Model C	3,250	30	4	Roadster	3	L. T. Magneto	Disc	Selective	Shaft	110	2,500
Pullman, Model I	3,250	40	4	Touring	5	Storage battery	Cone	Selective	Shaft	118	3,000
Stevens-Duryea, Model R	3,300	20	4	Limousine	5	Storage battery	Disc	Selective	Shaft	90	2,300
Acme, Model XXI	3,500	30	4	Touring	5	H. T. Magneto	Cone	Selective	Side chans	102	2,750
American Mors	3,500	30	4	Landulet	5	L. T. Magneto	Cone	Selective	Side chains	103	2,100
Carter Two-Engine	3,500	24-60	8	Touring	7	Storage battery	Cone	Selective	Shaft	114	2,100
Corbin, Model R	3,500	32	4	Limousine	5	H. T. Magneto	Cone	Selective	Shaft	108	.....
Cleveland	3,500	40	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	122	.....
Fray-Miller, Model C	3,500	50	4	Touring	7	H. T. Magneto	Internal expanding	Selective	Shaft	122	3,000
Knox, Model H (Air)	3,500	30	4	Limousine	5	Storage battery	Cone	Selective	Shaft	102	2,675
Northern, Model L	3,500	40	4	Touring	7	Storage battery	Cone	Progressive	Shaft	119	3,100
Pierce-Racine	3,500	40	4	Limousine	7	Storage battery	Cone	Selective	Shaft	106	3,150
Stevens-Duryea, Model U	3,500	35	6	Touring	5	Storage battery	Disc	Selective	Shaft	114	2,500
Studebaker, Model A	3,500	27	4	Touring	5	L. T. Magneto	Cone	Progressive	Shaft	104	.....
Silent Knight	3,500	40	5	Touring	5	Storage battery		Progressive	Shaft	112	2,400
White Steamer, Model K	3,500	30	2	Runabout	3				Shaft	105	.....
Gaeth, Model XV	3,500	35	4	Touring	7	L. T. Magneto	Band	Progressive	Shaft	112	2,700
Garford, Model A	3,500	30	4	Touring	5	L. T. Magneto	Cone	Progressive	Shaft	104	2,500
Gearless	3,500	60	4	Touring	5	H. T. Magneto	Expanding	Gearless	Shaft	106	3,250
Glide, Model H	3,500	54	6	Touring	5	H. T. Magneto	Disc	Selective	Shaft	132	4,000
Lane Steamer, Model 8-7	3,500	30	2	Touring	7				Chain	119	3,500
Marmon, Model H	3,500	35	4	Touring	5	Storage battery	Disc	Selective	Shaft	114	.....
Marmon, Model H (water)	3,500	40	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	114	.....
Mora Ractypte	3,500	42	6	Runabout	3	H. T. Magneto	Cone	Selective	Shaft	105	2,250
National, Model K	3,500	40	4	Touring	7	H. T. Magneto	Cone	Selective	Shaft	112	.....
Cadillac, Model H	3,600	30	4	Limousine	7	Storage battery	Disc	Planetary	Shaft	102	.....
Crawford, Model F	3,600	50	4	Touring	7	Magneto	Disc	Selective	Shaft	118	3,000
Mora Tourer	3,600	42	6	Touring	5	H. T. Magneto	Cone	Selective	Shaft	114	2,500
White Steamer, Model K	3,700	30	2	Touring	7				Shaft	102	.....
Autocar, Model XIV	3,750	30	4	Touring	5	Storage battery	Ring	Selective	Shaft	112	.....
Haynes, Model U	3,750	60	4	Touring	7	H. T. Magneto	Band	Selective	Shaft	118	3,000
Moon, Model D	3,750	30	4	Touring	7	L. T. Magneto	Disc	Selective	Shaft	121	2,800
National, Model N	3,750	30	4	Roadster	2	Magneto	Cone	Selective	Shaft	102	.....
Premier	3,750	45	6	Touring	7	L. T. Magneto	Disc	Selective	Shaft	124	3,000
Pullman, Model J	3,750	40	4	Touring	7	Storage battery	Cone	Selective	Shaft	118	3,200
Stoddard-Dayton, Model 8-F	3,750	30	4	Limousine	5	Storage battery	Cone	Selective	Shaft	118	3,000
Oldsmobile, Model M	3,800	16	4	Limousine	7	H. T. Magneto	Cone	Selective	Shaft	122	.....
Allen-Kingston, Model D	3,900	40	4	Runabout	4	H. T. Magneto	Disc	Selective	Shaft	121	3,100

COSTING BETWEEN \$4,000 AND \$5,000

CAR	Price	H.P.	Cylinders	Body	Seats	Ignition	Clutch	Transmission	Drive	Wheel-base	W'ght
Acme, Model XVIII	\$4,000	30	4	Touring	7	H. T. Magneto	Cone	Selective	Side chains	115	3,500
Allen-Kingston, Model C	4,000	40	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	106	3,300
American Mors	4,000	40	4	Touring	7	L. T. Magneto	Cone	Selective	Side chains	120	3,300
American Simplex	4,000	50	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	117	2,800
C. V. I., Model A	4,000	40	5	Touring	5	H. T. Magnet	Cone	Selective	Shaft	117	2,600
D. L. G.	4,000	35	6	Runabout	3	H. T. Magneto	Disc	Selective	Shaft	113	2,000
Frayser-Miller	4,000	36	6	Touring	5	Storage battery	Internal expanding	Selective	Shaft	120	2,750
Frontenac	4,000	40	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	124	3,300
Garford, Model B	4,000	40	4	Touring	7	L. T. Magneto	Cone	Selective	Shaft	114	2,750
Franklin, Model H	4,000	42	6	Touring	7	H. T. Magneto	Disc	Selective	Shaft	127	2,500
Gearless	4,000	75	6	Touring	6	Magneto	Expanding	Gearless	Shaft	126	3,450
Knox, Model G (Air)	4,000	35	4	Touring	7	H. T. Magneto	Cone	Selective	Side chains	112	2,800
Lozier, Model G	4,000	40	4	Touring	7	H. T. Magneto	Disc	Selective	Side chains	117	3,150
Oldsmobile, Model M	4,000	36	4	Landaulet	7	H. T. Magneto	Cone	Selective	Shaft	112	2,800
Payne-Modern	4,000	36	6	Touring	5	Storage battery	Cone	Progressive	Shaft	118	2,840
Royal Tourist	4,000	45	4	Touring	7	H. T. Magneto	Cone	Selective	Shaft	114	2,800
Studebaker, Model B	4,000	36	4	Touring	7	L. T. Magneto	Cone	Selective	Shaft	114	2,800
Apperson, Model K	4,200	50	4	Touring	7	H. T. Magneto	Band	Selective	Side chains	114	3,200
Columbia, Model 48-2	4,200	29	4	Limousine	5	L. T. Magneto	Cone	Selective	Shaft	115	2,750
Locomobile	4,200	20	4	Limousine	4	L. T. Magneto	Cone	Selective	Side chains	116	2,600
Oldsmobile, Model Z	4,200	48	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	103	3,200
Packard "Thirty"	4,200	30	4	Touring	7	H. T. Magneto	Band	Progressive	Shaft	123	2,950
Studebaker, Model H	4,200	27	4	Limousine	7	L. T. Magneto	Cone	Progressive	Shaft	104	2,800
National, Model R	4,200	40	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	116	2,800
American Mors	4,250	40	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	107	3,500
Speedwell, Model B	4,250	60	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	132	2,800
Peerless	4,300	30	4	Touring	7	H. T. Magneto	Band	Selective	Shaft	118	2,800
Austin, Model L X-T	4,500	60	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	124	3,600
Acme, Model XX	4,500	45	6	Touring	5	H. T. Magneto	Cone	Selective	Side chains	126	3,500
Cleveland	4,500	40	4	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	122	2,800
Crawford, Model F	4,500	50	4	Limousine	7	Magneto	Disc	Selective	Shaft	118	3,400
Rainier, Model D	4,500	45	4	Touring	7	L. T. Magneto	Disc	Selective	Shaft	119	2,850
Stoddard-Dayton, Model 8-G	4,500	50	6	Touring	5	H. T. Magneto	Cone	Selective	Shaft	128	3,500
Stevens-Duryea, Model U	4,500	35	5	Limousine	7	Storage battery	Disc	Selective	Shaft	114	2,860
Thomas Flyer	4,500	60	4	Touring	7	H. T. Magneto	Disc	Selective	Side chains	127	3,200
White Steamer, Model K	4,500	30	2	Limousine	7				Shaft	116	2,800
Welch, Model 4-L	4,500	50	4	Touring	5	H. T. Magneto	Individual	Selective	Shaft	128	3,150
Winton, Six-Ten-Six	4,500	48	6	Touring	7	H. T. Magneto	Disc	Selective	Shaft	120	2,800
D. L. G.	4,500	35	6	Touring	7	H. T. Magneto	Disc	Selective	Shaft	130	2,800
Stearns	4,600	30	4	Light Touring	4	H. T. Magneto	Expanding	Selective	Side chains	120	2,800
Packard "Thirty"	4,700	30	4	Touring	7	H. T. Magneto	Band	Progressive	Shaft	123	2,800
Locomobile	4,750	40	4	Touring	7	L. T. Magneto	Cone	Selective	Side chains	123	3,000
Pope-Toledo, Model XVII	4,750	50	4	Touring	7	H. T. Magneto	Disc	Selective	Side chains	126	2,800
Shawmut, Model A	4,750	40	4	Roadster	3	H. T. Magneto	Disc	Selective	Shaft	108	2,675
Stearns	4,750	30	4	Pullman	7	H. T. Magneto	Expanding	Selective	Side chains	120	3,200
National, Model M	4,900	40	4	Limousine	7	H. T. Magneto	Cone	Selective	Shaft	112	2,800

COSTING BETWEEN \$5,000 AND \$6,000

Allen-Kingston, Model E	\$5,000	40	4	Limousine	5	H. T. Magneto	Disc	Selective	Shaft	126	2,800
Apperson Jack Rabbitt	5,000	50	4	Runabout	2	H. T. Magneto	Band	Selective	Side chains	105	2,200
Apperson, Model S	5,000	50	6	Touring	7	H. T. Magneto	Band	Selective	Side chains	121	2,800
De Luxe	5,000	40	4	Touring	7	H. T. Magneto	Cone	Selective	Shaft	121	2,800
Ellsworth (chassis only)	5,000	40	4	Touring	7	H. T. Magneto	Disc	Selective	Side chains	120	2,800
Frontenac	5,000	40	4	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	124	3,600
Lozier, Model H	5,000	45	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	124	3,200
Menges	5,000	60	4	Touring	8	H. T. Magneto	Disc	Selective	Shaft	122	2,800
Pierce	5,000	40	4	Touring	7	H. T. Magneto	Cone	Selective	Shaft	124	2,800
Royal Tourist	5,000	45	4	Limousine	7	H. T. Magneto	Cone	Selective	Shaft	114	2,800
National, Model T	5,000	40	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	127	2,800
Shawmut, Model B	5,000	40	4	Touring	5	H. T. Magneto	Disc	Selective	Shaft	112	3,000
Walter	5,000	44	4	Touring	7	H. T. Magneto	Cone	Selective	Shaft	120	2,800
Franklin, Model H	5,200	42	6	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	127	2,700
Austin, Model L X-R	5,500	60	4	Combination	4	H. T. Magneto	Disc	Selective	Shaft	124	3,400
Model L X-L	5,500	60	4	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	124	3,800
Allen-Kingston, Model F	5,500	40	4	Limousine	5	H. T. Magneto	Disc	Selective	Shaft	126	2,800
Chadwick	5,500	50	6	Touring	7	H. T. Magneto	Cone	Selective	Side chains	124	2,800
Matheson	5,500	45	4	Touring	7	L. T. Magneto	Disc	Selective	Side chains	128	3,400
Peerless	5,500	30	4	Limousine	7	H. T. Magneto	Band	Selective	Shaft	119	2,800
Pierce Small Six	5,500	40	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	130	2,800
Rainier	5,500	45	4	Limousine	7	L. T. Magneto	Disc	Selective	Shaft	110	2,800
Selden	5,500	45	4	Touring	7	H. T. Magneto	Disc	Selective	Shaft	123	3,500
Welch, Model 4-I	5,500	50	4	Limousine	5	H. T. Magneto	Individual	Selective	Shaft	128	3,400
Winton Six-teen-Six	5,500	48	6	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	120	2,800
Packard "Thirty"	5,600	30	4	Limousine	7	H. T. Magneto	Band	Progressive	Shaft	123	2,800
Packard "Thirty"	5,700	30	4	Landaulet	7	H. T. Magneto	Band	Progressive	Shaft	123	2,800
Shawmut, Model B	5,750	40	4	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	108	2,800
Stearns	5,750	30	4	Limousine	7	H. T. Magneto	Expanding	Selective	Side chains	120	3,600
Peerless	5,800	30	4	Landaulet	7	H. T. Magneto	Expanding	Selective	Shaft	118	2,800

COSTING \$6,000 AND ABOVE

American Locomotive	\$6,000	22	4	Limousine	7	L. T. Magneto	Disc	Selective	Shaft	112	3,000
Austin, Model XC-R	6,000	90	6	Combination	4	H. T. Magneto	Disc	Selective	Shaft	134	3,600
Austin, Model XC-T	6,000	90	6	Touring	6	H. T. Magneto	Disc	Selective	Shaft	134	2,800
Lozier, Model I	6,000	50	6	Touring	7	H. T. Magneto	Disc	Selective	Shaft	121	3,425
Peerless	6,000	60	6	Touring	7	H. T. Magneto	Band	Selective	Shaft	134	2,800
Stevens-Duryea, Model S	6,000	50	5	Touring	7	Storage battery	Disc	Selective	Shaft	102	3,700
Thomas Special	6,000	70	6	Touring	7	H. T. Magneto	Disc	Selective	Side chains	136	3,500
Tincher	6,000	50	4	Touring	7	H. T. Magneto	Band	Selective	Side chains	127	3,000
Welch, Model 6-I	6,000	70	6	Touring	5	H. T. Magneto	Individual	Selective	Shaft	138	3,450
Pierce	6,250	40	4	Suburban	7	H. T. Magneto	Cone	Selective	Shaft	124	2,800
Stearns	6,250	45	6	Light Touring	4	H. T. Magneto	Expanding	Selective	Side chains	133	3,000
Simplex	6,300	50	4	Touring	7	H. T. Magneto	Disc	Selective	Side chains	124	2,600
American Locomotive	6,500	40	4	Touring	7	L. T. Magneto	Disc	Selective	Side chains	126	3,250
Columbia, Model 66-3	6,500	48	4	Touring	7	H. T. Magneto	Electric	Electric	Shaft	134	3,650
Matheson	6,500	45	4	Limousine	7	L. T. Magneto	Disc	Selective	Side chains	128	3,600
Napier	6,500	60	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	126	3,400
Pierce	6,500	60	6	Touring	7	H. T. Magneto	Cone	Selective	Shaft	135	2,800
Shawmut, Model D	6,500	40	4	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	126	2,800
Austin, Model XC-L	7,000	90	6	Limousine	7	H. T. Magneto	Disc	Selective	Shaft	134	4,000
Welch, Model 6	7,000	70	6	Limousine	5	H. T. Magneto	Individual	Selective	Shaft	138	3,750
American Locomotive	7,500	60	6	Touring	7	H. T. Magneto	Disc	Selective	Side chains	136	3,600
American Mercedes	7,500	45	4	Touring	7	L. T. Magneto	Disc	Selective	Side chains	110	2,800
Apperson, Model X	7,500	96	4	Runabout	2	H. T. Magneto	Band	Selective	Side chains	110	2,800
Columbia, Model 66-3	8,500	48	4	Limousine	7	H. T. Magneto	Electric	Electric	Shaft	124	3,850
American Mercedes	10,000	70	4	Demi-Lim'ne	7	L. T. Magneto	Disc	Selective	Side chains	122	2,800

ELECTRIC PLEASURE VEHICLES

CAR	Price	Motors	Cells	Body	Seats	Drive	Wheel-base	Weight
Studebaker	\$1,350		28	Runabout	2	Side chains	67	1,875
Studebaker	1,400		28	Stanhope	2	Side chains	67	1,875
Babcock	1,500	1	36	Roadster	2	Side chains	78	1,600
Pope-Waverley	1,425		30	Runabout	2		69	
Pope-Waverley	1,500		30	Runabout	2		69	
Pope-Waverley	1,600		30	Victoria	2		68	
Studebaker	1,750	1	28	Victoria	2	Side chains	68	2,000
Babcock	1,700	1	36	Victoria	2	Side chains	78	1,700
Babcock	1,800	2	40	Stanhope	2	Gear	66	1,900
Baker	1,800	1	24	Victoria	2	Single chain	70	
Detroit	1,800	1	24	Stanhope	2	Side chains		
Detroit	1,850	1	24	Stanhope	2	Side chains		
Rauch & Lang	1,850		24	Stanhope	2	Side chains		
Baker	2,000		28	Suburban	2	Shaft	74	1,800
Pope-Waverley	2,000	1	30	Victoria	2		68	
Rauch & Lang	2,050	1	24	Stanhope	2	Side chains	74	2,250
Babcock	2,100	1	36	Coupe	2	Side chains	78	1,950
Rauch & Lang	2,100	1	24	Coupe	2	Side chains	74	1,950
Baker	2,200	1	24	Coupe	3	Single chain	70	
Detroit	2,250	1	24	Coupe	2	Side chains		
Rauch & Lang	2,400	1	24	Coupe	4	Side chains	74	2,350
Baker	2,500	1	40	Roadster	3	Shaft	95	
Baker	3,000	1	28	Coupe	2	Shaft	92	
Rauch & Lang	3,000	1	24	Surrey	5	Side chains	103	3,300
Rauch & Lang	3,200	1	24	Victoria	5	Side chains	103	3,300
Babcock	4,000	2	40	Brougham	7	Gear	72	3,000
Baker	4,000	1	40	Brougham	4	Shaft	89	
Rauch & Lang	4,000	1	24	Brougham	0	Side chains	115	3,800
Columbus				Stanhope	2	Side chains	69	
Columbus				Victoria	2	Side chains	69	
Columbus				Coupe	2	Side chains	69	
Columbus				Surrey	4	Side chains	89	

GASOLINE COMMERCIAL VEHICLES

CAR	Price	H.P.	Cyl-inders	Body	Capacity	Ignition	Clutch	Transmission	Drive	Wheel-base	W'ght
Brush, Model 1-C	\$550	6	1	Delivery		Storage battery	Cone	Planetary	Side chains	75	1,000
Waltham, Model D-C	650	8	2	Delivery		Storage battery		Friction	Side chains	80	750
Brush, Model 2-B	800	12	2	Delivery		Storage battery	Cone	Planetary	Side chains	88	1,300
Cadillac, Model M	1,000	10	1	Delivery	500 lbs.	Storage battery	Disc	Planetary	Chain	75	
Cartercar, Model C	1,350	22	2	Delivery		Storage battery	Disc	Planetary	Chain	96	1,900
Waltham, Model 178D	1,375	14	2	Express	1,000 lbs.	Storage battery		Friction	Side chains	92	1,100
Model 178A	1,425	14	2	Delivery	1,000 lbs.	Storage battery		Friction	Side chains	92	1,100
Model 178C	1,450	14	2	Parcel Car	1,000 lbs.	Storage battery		Friction	Side chains	92	1,100
Gaeth, Model K	1,500	12	1	Delivery		Storage battery	Band	Planetary	Side chains	103	2,000
Hewitt	1,600	10	1	Delivery		Storage battery		Planetary	Chain	84	1,400
Rapid, Model E-11	1,700	24	2	Delivery	2,000 lbs.	Storage battery	Cone	Planetary	Chain	86	
Logan, Model R	1,800	20	4	Delivery	1,500 lbs.	Storage battery	Ring	Selective	Side chains	96	2,300
Franklin	1,850	16	4	Delivery	1,000 lbs.	Storage battery	Disc	Selective	Shaft		
Reliance-Dayton, G	1,975	18	2	Delivery		Storage battery	External contr'ng	Progressive	Side chains		
Franklin	2,000	16	4	Truck	2,000 lbs.	Storage battery	Disc	Selective	Worm	93	1,800
Meiselbach	2,000	28	2	Any	2,000 lbs.			Friction		108	3,800
Mitchell	2,000	20	4	Truck	3,000 lbs.	H. T. Magneto.	Cone	Progressive	Shaft	110	2,200
Rapid, E-132	2,000	24	2	Sight-seeing	12 pass'g'rs	Storage battery	Cone	Planetary	Side chains	90	
Logan, Model T	2,250	20	4	Any	2,000 lbs.	Storage battery	Ring	Selective	Side chains	96	2,700
Plymouth, Model G	2,250	40	4	Any	4,000 lbs.	Storage battery		Friction	Side chains	103	3,800
Plymouth, Model G-S	2,300	40	4	'Bus	16-20 pass.	Storage battery		Friction	Side chains	120	3,600
Meiselbach	2,500	28	2	Any	4,000 lbs.			Friction		108	5,000
Rapid, E-182	2,500	30	2	Sight-seeing	12 pass'g'rs	Storage battery	Cone	Planetary	Side chains	90	
Sayers & Scovill	2,500	25	4	Commercial	3,000 lbs.	Storage battery	Disc	Selective	Side chains	100	2,600
Knox, D-6	2,800	16	2	Express	3,000 lbs.	Dry cells	Disc	Planetary	Side chains	100	3,700
Reliance-Detroit, Model G	2,750	30	2	Any	4,000 lbs.	Storage battery	Cone	Progressive	Side chains	108	3,500
Frayser-Miller	3,000	24	4	Truck	5,000 lbs.	Storage battery	Internal expand'g	Selective	Side chains		2,000
Meiselbach	3,000	28	2	Any	6,000 lbs.	Storage battery		Friction		108	
Thomas, E. R.	3,000	16	4	Cab	5 passeng's	H. T. Magneto.	Cone	Selective	Shaft		1,800
Gifford-Pettit	3,500	40	4	Truck	8,000 lbs.	L. T. Magneto.	Cone	Selective	Shaft	120	4,800
Logan, Model S	3,500	40	4	Any	6,000 lbs.	Storage battery	Disc	Selective	Side chains	120	4,600
Reliance-Detroit	3,500	45	3	Any	5,000 lbs.	Storage battery	Cone	Progressive	Side chains	130	4,500
Rapid, E-145	4,000	30	2	Sight-seeing	25 pass'g'rs	Storage battery	Cone	Planetary	Side chains	111	
Knox, Model H	4,200	30	4	Truck	6,000 lbs.	Dry cells	Cone	Selective	Side chains	111	4,800
Reliance-Detroit	4,400	60	4	Truck	8,000 lbs.	H. T. Magneto.	Cone	Progressive	Side chains	136	5,500
Hewitt	4,500	30	4	Any	10,000 lbs.	H. T. Magneto.	Cone	Planetary	Side chains	138	6,400
Manhattan	5,100	50	4	Truck	10,000 lbs.	H. T. Magneto.	Cone	Selective	Side chains	168	
Manhattan	5,500	50	4	'Bus	20 pass'g'rs	H. T. Magneto.	Cone	Selective	Side chains	156	
Manhattan	5,500	50	4	'Bus	22 pass'g'rs	H. T. Magneto.	Cone	Selective	Side chains	158	

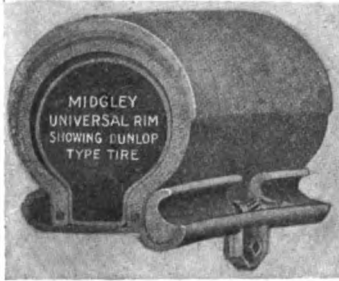
ELECTRIC COMMERCIAL VEHICLES

CAR	Motors	Cells	Body	Capacity	Drive	Weight	CAR	Motors	Cells	Body	Capacity	Drive	Weight
Baker	1		Any		Side chains	3,000	Pope-Waverley	2	42	Delivery	1,200 lbs.	Side chains	
Couple-Gear, A	4		Truck	10,000 lbs.	Direct	10,000	Pope-Waverley	2	42	Truck	6,000 lbs.	Side chains	
Couple-Gear, E	4		Truck	2,000 lbs.	Direct	3,500	Pope-Waverley	1	42	'Bus	12-passenger	Side chains	
Commercial	4	42	Truck	10,200 lbs.	Gear		Studebaker	2		Delivery	1,000 lbs.	Side chains	
Commercial	4	42	Sight-seeing	30-passenger	Gear		Studebaker	2		Truck	2,500 lbs.	Side chains	
Commercial	4	44	Truck	8,000 lbs.	Gear		Studebaker	2		Truck	4,000 lbs.	Side chains	
General Vehicle Co	2	44	'Bus		Chain		Studebaker	2		Truck	7,000 lbs.	Side chains	
General Vehicle Co	2	44	Wagon	1,000 lbs.	Chain		Studebaker	2		Truck	10,000 lbs.	Side chains	
General Vehicle Co	2	44	Truck	4,000 lbs.	Chain		McCrea Co	2	44	Truck	12,000 lbs.	Chain	
General Vehicle Co	2	44	Truck	10,000 lbs.	Chain		McCrea Co	1	22	Delivery	1,000 lbs.	Side chains	
Pope-Waverley	1	42	Ambulance	10-passenger	Side chains		Lansden	1		Delivery	4,000 lbs.	Side chains	
Pope-Waverley	1	42	Truck	2,000 lbs.	Side chains		Lansden	1		Delivery	2,000 lbs.	Side chains	
Pope-Waverley	2	40	Truck	2,500 lbs.	Side chains		Lansden	1		Truck	1,000 lbs.	Side chains	
Pope-Waverley	2	42	Truck	10,000 lbs.	Side chains		Lansden	1		Truck	6,000 lbs.	Side chains	

QUICK-CHANGE TIRES TO THE FORE

By W. F. BRADLEY.

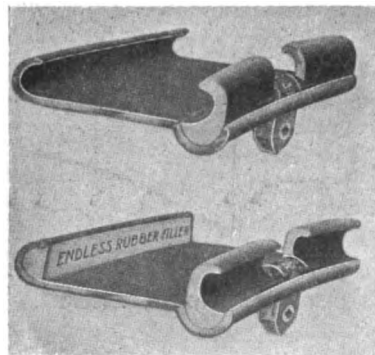
THERE was a time when it used to be a pleasure to the automobilist to "fix things." There was as much satisfaction in surmounting difficulties which cropped up from time to time as was obtained in a smooth, easy-going ride; indeed, half the pleasure of motoring came from a knowledge that you had been able, despite an inherent cussedness of the thing, to keep the machine going. That heroic phase of the sport passed away some years ago, and the motorist to-day is apt to be as unreasonable when something goes wrong as he was cheerful at more youthful seasons. Even tire troubles are not accepted with anything like the same degree of resignation as formerly, the ominous hiss of escaping air generally being greeted with a muttered curse instead of



MIDGLEY RIM WITH DUNLOP

the whistling of a cheerful air as the driver pulls off his coat. Some day, doubtless, punctures will become as extinct as the dodo; while waiting for the good time coming the automobilist who no longer loves to tinker is accepting quick-changing devices with gratitude and giving thanks for blessings to come. Whereas quick-change tires were formerly treated as an accessory and were always paid for extra by the purchaser of a car, they now form part of the standard equipment of nearly all the higher-priced automobiles. At the Madison Square show about 60 per cent. of the cars were shown with some of the better-known quick-change rims as the standard equipment; doubtless, too, most of those firms in the minority would include any of the standard devices without extra charge if requested to do so by a customer. The 1908 season is remarkable for the unanimity with which the industry has accepted the inventions of the tire firms for facilitating changing of tires.

Of the two classes before the public—quick-detachable and dismantlable, as they are variously called—the former is by far the most popular for ordinary use. While making the changing of a tire much more simple and less arduous, it has the advantage of not requiring the carrying of any extra parts and adds nothing to the weight of the wheel. Some care has still to be taken in fitting the inner tube and the pump has to be brought into use; with a mechanical pump or a really portable compressed air tank, such as is promised already, the standard types of quick-detachable rims at present on the market would be practically perfect and would leave little room for the dismantlable for ordinary



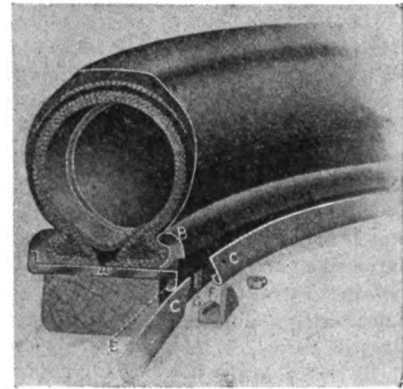
TWO TYPES OF MIDGLEY RIMS

touring. For speed work the dismantlable rim is undoubtedly superior; when a change of tire is necessary the wheel is jacked up, half a dozen nuts slackened, rim and tire pulled off together, a new rim with previously inflated tire substituted, the nuts tightened up again, and the journey continued. Carrying a spare rim and inflated tire adds to the weight of the car, and is consequently not looked upon with full favor by the average automobilist. There seems to be an impression, too, that the dismantlable type is not altogether safe, though how unfounded

this fear is long-distance speed tests have clearly proved, speeds of over seventy miles an hour having been maintained by cars fitted with all the prominent makes of dismantlables without any weakness being developed. As it becomes better known, and is brought more prominently before the public by the manufacturers, doubtless the dismantlable will run the quick-change type of tire closely for popular favor; at present, however, tourists are most closely interested in the appliances designed to allow of tires being changed with increased facility by the removal of the outer bead or clincher, and are prepared to do work on the road whenever necessary, provided it does not call for much physical effort or demand any special skill.

Some Standard Types of Quick-change Rims.

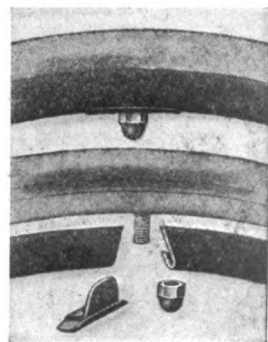
Having been adopted by such well-known tire firms as G & J, Hartford, and Morgan & Wright, and forming the standard equipment of many automobile manufacturers, the Midgley universal rim has secured a strong position in the world of quick-detachables. Instead of the outer clincher forming an integral part of the rim, it is a separate ring, fitting in a groove on the outer edge of the rim, with its two ends united by a turnbuckle.



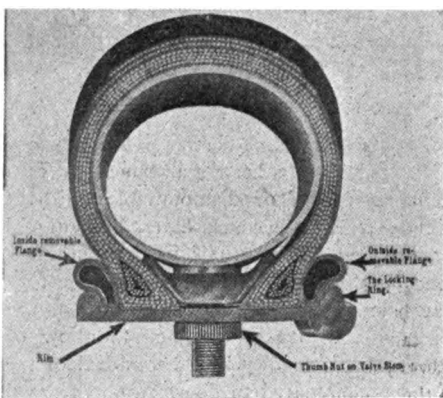
SECTIONAL VIEW MARSH RIM.

A glance at the illustration shows the simplicity of the arrangement and its ease of manipulation, all that is necessary to dismount or remount the bead being a few turns of the improved turnbuckle, the only tool needed being a little crank wrench. When required for Dunlop tires, the inner clip is filled with an endless band of rubber and the outer ring is reversed, the method of fastening remaining unchanged.

In the Marsh rim, now manufactured and marketed by the Diamond Rubber Company, the mode of attachment is a removable steel flange and a split locking ring with a curved lip fitting snugly over the projecting base plate. A wedge-shaped piece of metal fits into place between the open tapered ends of the ring, spreading it so that there is no possibility of its coming off. To give still further security the keystone locking part is itself held in place by being attached to a bolt on the main rim body and held there by a nut. An open end wrench is supplied for pulling off the locking ring when the wedge plate has been removed; the tool is not absolutely necessary, however, for with the removal of the wedge the split ring can be forced off without difficulty by inserting the point of a screwdriver. With the Diamond wrapped tread tires no stay bolts are required for use with the detachable rim, and the operation of changing an ordinary tire by a person with moderate experience need not exceed five minutes. When any regular clincher tires made for one-piece rims are employed, however, stay bolts become a necessity. Interchangeable rings are provided, by the use of which Dunlop type of tires can be used with the Marsh rim, the labor of attaching or detaching being substantially the same as for the clincher



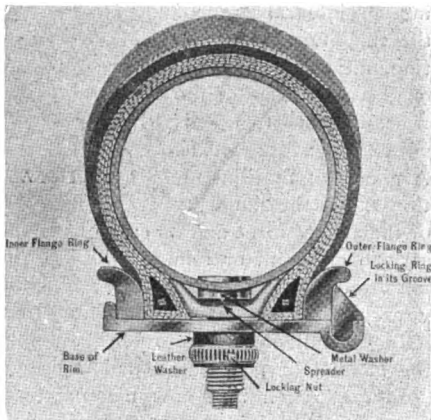
DETAILS OF MARSH.



GOODYEAR RIM AND SPREADER.

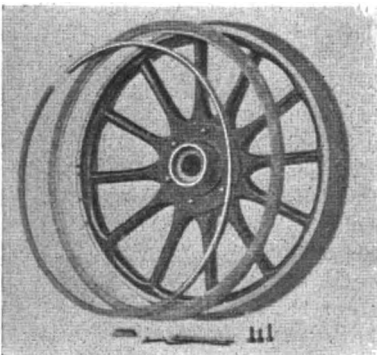
or channel on the outer edge of the plate, thus securing the outer ring. A spreader plate attached to the valve stem is the only locking arrangement, the screwing up of a rim nut pressing the flange against the split portion of the locking ring so that it cannot be lifted out or removed from the channel by any strain whatever. The single nut on the valve stem being the only fastener, no tool is required for use with this rim; it will be obvious that the thumb nut on the valve stem must be maintained tightly secured up to insure safety. This is guaranteed by the valve cap, which, when in position, acts as a check nut. One of the claims of the Goodyear rim is that it is absolutely impossible to rim cut when running flat, for the flanges are round instead of sharp, and form the arc of a two-inch circle. By substituting clincher flanges in place of those shown in the illustration, the universal rim can be used for Goodyear clincher or any standard G & J tire.

In the Fisk mechanically fastened tire there are structural differences in the casings which are not found in other types. The base of the tire is flat, formed of a tough, heavy cushion of rubber and fabric composition. This flat base rests on a steel rim, with a corresponding flat surface, and is secured there by two wedge-shaped galvanized steel rings, which set in over the rubber base head. The rims are secured in place by galvanized clamps and bolts passing through the felloe, which grip them solidly to the flat rim, the tire and rim then being as one piece of mechanism, impossible to loosen accidentally.



SECTIONAL VIEW OF FIRESTONE RIM.

In the Firestone universal rim is another example of the class adopting a fixed steel base with a raised inner edge and a groove or channel on the outer edge. A couple of flange rings slide onto this, the inner being held by the projecting edge and the outer one by the locking ring, equipped with a hole at each end to slip over a couple of pins projecting from the flange. On the valve stem is a

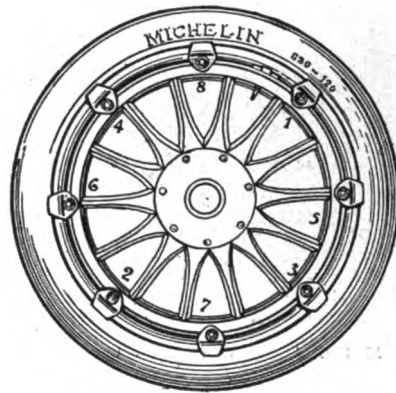


COMPONENT PARTS OF REPUBLIC.

metal plug or spreader, which fits into the base of the channel, thus holding apart the walls of the tire and the two removable rings. When Firestone clinchers are to be used, all that is necessary is to change the flange rings for those of clincher type. Standard clincher tires can be used with the rim by drilling the felloe and equipping with stay bolts.

The Republic detachable rim, intended specially for use with the Republic tire, has certain peculiarities in the design of the removal bead and locking ring, as well as in the base of the tire easing. This latter forms a perfectly cylindrical tube, without any crevice or crack in which the inner tube can be pinched. The locking ring is of U section, made to fit over the turned-down edge of the base plate and the heel of the removable flange; a wedge-shaped key piece is inserted in the split ring and secured by three cap screws.

Distinctive in the Goodrich quick-detachable tire is the securing of the split ring by two substantial hooks of almost square section. These ends are dropped into the longer and innermost holes of a slot on the base plate, then forced outward into the smaller ones, which they completely fill. A special tool is provided for this purpose. The dust cap for the valve is made to act as a retainer, so that the tire does not creep and is prevented from being blown off, whether inflated or otherwise.

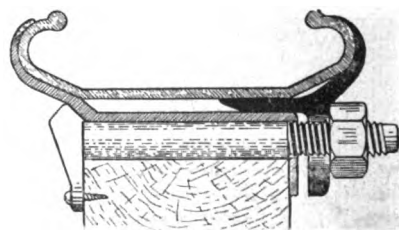


MICHELIN DISMOUNTABLE RIM.

Some of the Leaders in the Dismountable Field.

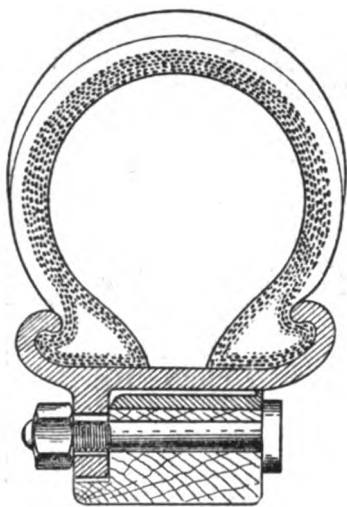
In the six or seven types of dismountable rims now on the market the problem has not been to produce a new method of attaching the tire to the rim, but to produce a double rim, one fitting over the other, which would give the maximum safety with minimum weight. The tire and method of attaching it to the rim are in no way changed, the usual clincher attachment being almost universal. Naturally some provision had to be made for the stay bolts, as well as for the valves, for it was manifestly impossible to fix a dismountable rim over the wheel with these projections. The usual plan is to cut the stay bolts short, some makers countersinking them on the dismountable rim and supplying special tools for their withdrawal, others cutting them as short

as possible, so that they would fit in the limited space between the two rim surfaces. In the same way with the valve, there have been attempts at countersinking this, with a special valve connection for inflation, which could of course only be used when the rim was dismounted; others have retained the ordinary valve, making either a hole or a notch in the felloe for its accommodation.



SECTION OF MICHELIN FASTENER.

One of the earliest of dismountable rims to be put to practical service in speed tests was the Michelin, now manufactured at that firm's American factory. Here the tire is carried fully inflated on a dismounted rim, ready to be fixed over the wheel when required. The rim placed in position on the wheel, it is secured from rotary movement by a couple of stops and held secure by eight plates fitting over a corresponding number of bolts passing through the felloe. A strong claim for this rim is that the fasteners not only slip between the two rim surfaces, but are curved to embrace the round section of the dismountable rim, each fastener being held



NEW DIAMOND DISMOUNTABLE.

by a nut on a heavy bolt passing through and secured in the felloe. A special magazine brace is furnished with the Michelin dismantable rim, by the use of which it is never necessary to handle the nuts with the fingers, each one passing into the magazine and presenting itself for use as soon as the brace is placed over the bolt.

Quite recently the Diamond Company has produced a demountable rim, in which the stay bolts and valve stem come flush with the surface of the rim. Provision, however, is made for inserting a special connection through the felloe to the valve if it is

necessary to inflate the tire when mounted on the wheel. On the dismantable rim are six projecting lugs with eyeholes which fit over bolts projecting from the face of the felloe when the rim is mounted on the wheel. A nut on each secures the two from movement. There is no danger of binding, for, as will be seen from the illustration, only a portion of the two surfaces comes into contact.

In addition to their quick-detachable, the Fisk Rubber Company has also a removable rim. The wheel is fitted with a special steel rim, one edge of which is flanged to provide an abutment for the tire rim, the other edge being beveled to provide a recess for a specially constructed expanding ring. Both felloe and expanding ring are pierced at intervals by bolts fastened so that they cannot fall or turn. When the removable rim with its tire is placed in position, the nuts on the bolts are tightened, the ring expands into the beveled groove of the wheel rim, holding the removable rim tightly in place. To remove the rim, all that is necessary is to loosen the nuts, which causes the expanding ring to contract and the removable rim is readily slipped off.

On the Crescent dismantable rim the bearing points are two beveled edges of the fixed and removable rims, made of rolled carbon steel, galvanized. Six hinged clips are permanently secured to the felloe, each one being provided with a bolt and nut. Changing is materially facilitated by the hinging of the clips, the rim being dismantled by the removal of the six nuts.

On the inner face of the Firestone dismantable rim are six projecting square steel stops corresponding with the same number of openings on the face of the fixed rim. The operation of mounting consists in slipping the movable rim over the fixed one with the stops in position to correspond with the grooves, imparting a slight rotary movement, and screwing up the six face plates on the felloe, so as to hold both rims. By this arrangement the rim is given six points of attachment against lateral and rotary movement.

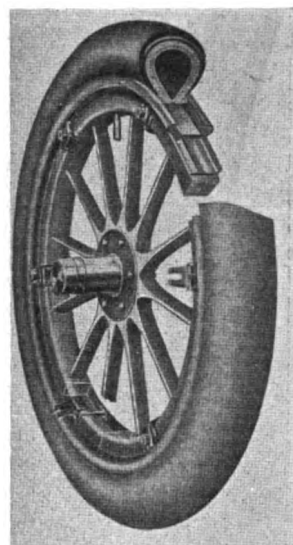
Although newly introduced into this country, the demountable rim manufactured by the Continental Caoutchouc Company is one of the oldest in existence, having been successfully used in European races nearly three years ago. The



DISMOUNTING THE FISK RIM.

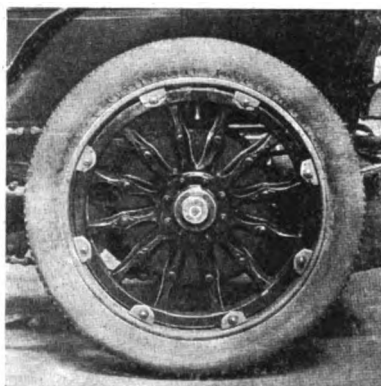
inner edge of the fixed rim is beveled to form an abutment for the dismantable one, the outside support being eight wedges fitting over as many bolts passing through the felloe, each one being secured by a nut. Special stay bolts are employed, but the valve is of the ordinary type, an opening having been made for it in the felloe.

Conversion of ordinary road wheels to the dismantable type can be effected with nearly all the types described here, the operation being a comparatively simple one and not costly. If the felloe is of sufficient thickness to allow of it being planed down, it may be retained, though as a rule it has to be taken off and the spokes



CRESCENT DISMOUNTABLE.

shortened. A new felloe is then fitted and bound with a special metal rim designed to accommodate the dismantable rim. Six to eight bolts have to be put through the wood felloe to correspond with the lugs or other fastening on the dismantable part. Where an ordinary valve is used this also has to be provided for by an opening on the face of the felloe. As regards security the converted wheel is just as satisfactory as those specially built for the improved type. To obtain the full benefit of dismantable rims, some attention should be paid to their cleanliness, dirt

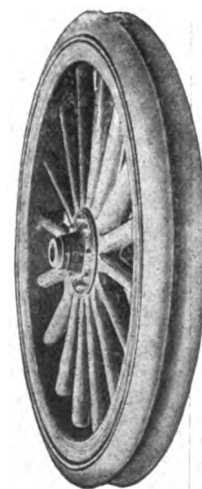


CONTINENTAL DEMOUNTABLE RIM.

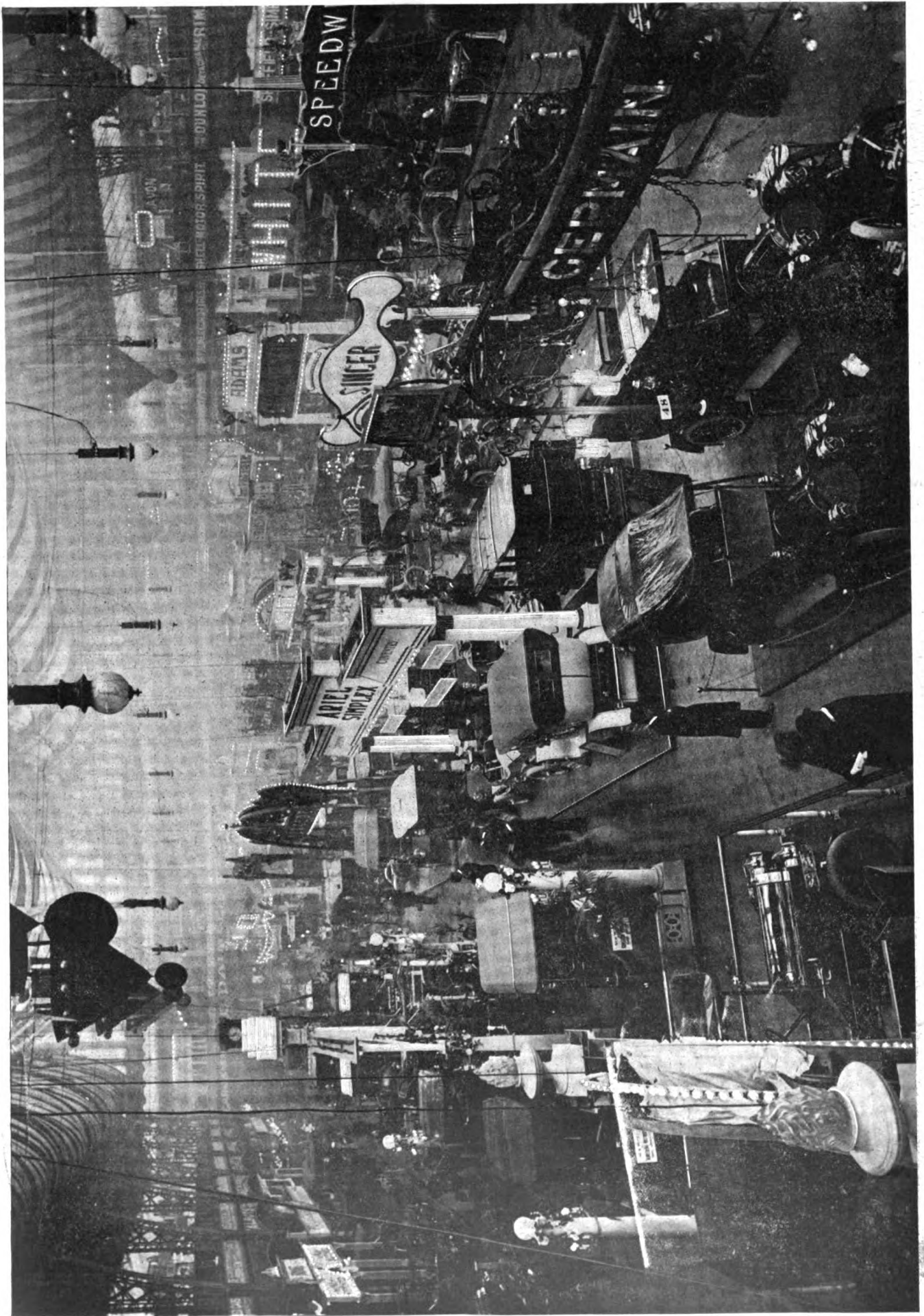
being removed from the screw heads when the car is washed, and the thread greased when a rim is dismantled. When mounting, too, it is necessary to observe that the nuts are tightened up gradually in opposite pairs in order that the pressure may be equally distributed.

THE LARGEST SOLID TIRE AT THE SHOW.

An interesting feature of the commercial vehicle section of the exhibit of the Firestone Tire & Rubber Company, of Akron, O., at the Chicago show, will be one of the largest solid tires ever exhibited. It is one of the Firestone Dual motor tires, measuring 53 1-2 inches in diameter, and will be shown with the business wagons for which it is intended, together with the other Firestone commercial tires, such as the endless and butt-end forms of both the side-wire and dual tires. In connection with the pleasure cars, the same company will show its line of quick-detachable, clincher and mechanically fastened tires and the 1908 Firestone dual tread and dismantable rim. Copies of the "Chauffeur's Moral Code," intended for the guidance of the drivers of commercial vehicles, will be distributed.



FIRESTONE DUAL TIRE.



INTERIOR OF OLYMPIA, LONDON, WHERE GREAT BRITAIN'S GREAT AUTOMOBILE TRADE IS EXHIBITING THE PRODUCTS OF ITS CONSTRUCTIVE GENIUS.

NEWS FROM BRITAIN'S AUTO SHOW AT OLYMPIA

LONDON, Nov. 13.—Olympia show should certainly be a big success this year from the salesman's point of view, for the multiplicity of provincial exhibitions which in former seasons have both drained the resources of the manufacturer and protracted the purchaser's efforts, have now been cut off by the Society of Motor Manufacturers and Traders, and but one other British show will follow Olympia, namely, at Manchester, in February next. The official opening of this, the largest yet of British motor exhibitions, was performed on Monday by the Duke of Connaught, who came down in his own car. This royal recognition of the movement is likely to be further emphasized, for, at the time of writing, the Kaiser is confidently expected to visit the show incognito, and it is not likely that Spain's motoring monarch will omit a visit before his departure from these shores.

A walk around the show at once confirms the opinion so prevalent of late. The reports of the over production of all the Continental firms was strongly contradicted by their agents. The new prices for 1908 season, however, tell their own tale. There is hardly a car of French or Italian make but shows a considerable reduction from previous prices—in some cases as much as £100 being marked off models which are unchanged in form from those of the past season.

Tendencies Evidenced in the New Models.

There are quite a number of interesting tendencies other than the main feature of price reduction mentioned above. The six-cylinder engine has gained many adherents even in the lowest powers—in several cases the rating being but 15 horsepower. The two and three-cylinder engine has been replaced by the four-cylinder type, leaving the single-cylinder engine to the smallest voiturette. The practice of casting the four cylinders in one block has grown greatly in favor, and on quite a dozen stands this short form of engine is shown. Casting in pairs is usual in other cases, comparatively few engines having separate cylinders. A distinct advance—from the user's point of view—has been made by the general placing of the crankshaft bearings in the upper half of the crankcase, enabling the lower half to be readily removed for inspection of the connecting rod ends.

Magneto ignition steadily advances in favor, particularly the high-tension variety, and even where not fitted standard, it is readily obtainable at slight extra cost. Several firms have caused surprise by abandoning the low-tension magneto for the high-tension variety, Thornycroft, in particular, having given up their well-tried system.

The general adoption of mechanical forms of engine lubrication was a prominent feature of last year's show and now comparatively few cars are found with the exhaust pressure drip feed device. On the lower priced car the drip feed is maintained, but the oil is supplied by means of a pump, belt-driven from the engine. The larger cars have almost invariably a gear-driven pump inside the crank chamber, drawing the oil from a well and forcing it through the main bearings. The nuisance of over lubrication is fast being obviated; as opposed to the general method of using an overflow, the Belsize car has a large, foot-operated pump, by which a pint or so of oil can be drawn from the crankcase whenever the engine shows a tendency to smoke.

Probably owing to the present general use of so many spirits of widely varying density, many firms have gone back to the hand-operated air lever, rightly considering it impossible for any carbureter to account for the combined effects of the many factors which enter into the question of a perfect mixture. Where the automatic carbureter is retained, the multiple type, in which the jets come successively into use as the engine speed rises, is growing in popularity. Frequently there is provision for admitting pure air into the cylinders when the engine is used as a brake in descending hills, thereby effecting a distinct fuel economy.

As regards frames, the tubular variety has been abandoned by everyone except the DeDions, and the only rival of the pressed steel frame occurs in the few instances where armored wood is adhered to. Many British makers prefer tubular cross members for their frames. In springs, on the other hand, there is more divergence of opinion. The three-quarter elliptic type of rear spring is found frequently on moderate powered cars, while even on the lowest priced four-seated cars the transverse rear spring is fitted. The use of shock absorbers has not spread, and in comparatively few cars are these fitted as standard.

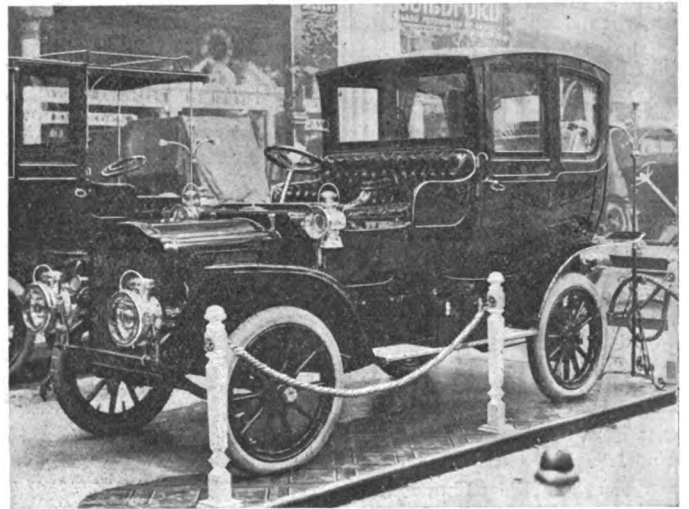
Multiple Disk Clutches Growing in Favor.

Turning to the transmission gear, the multiple disk clutch has grown considerably in favor, while the various types of expanding and contracting metal to metal clutches are rapidly dying out. Many British makers have adopted the well-known Hele-Shaw disk clutch, in which the disks are corrugated in section and alternately hard phosphor bronze and mild steel, the pack running in thin oil. The Italians, on the other hand, prefer the old Weston type of flat plate clutch, the disks being either all steel or else brass and steel. The use of a clutch brake for retarding the gearshaft when changing up has grown in favor, particularly when the large, leather-faced clutches are used.

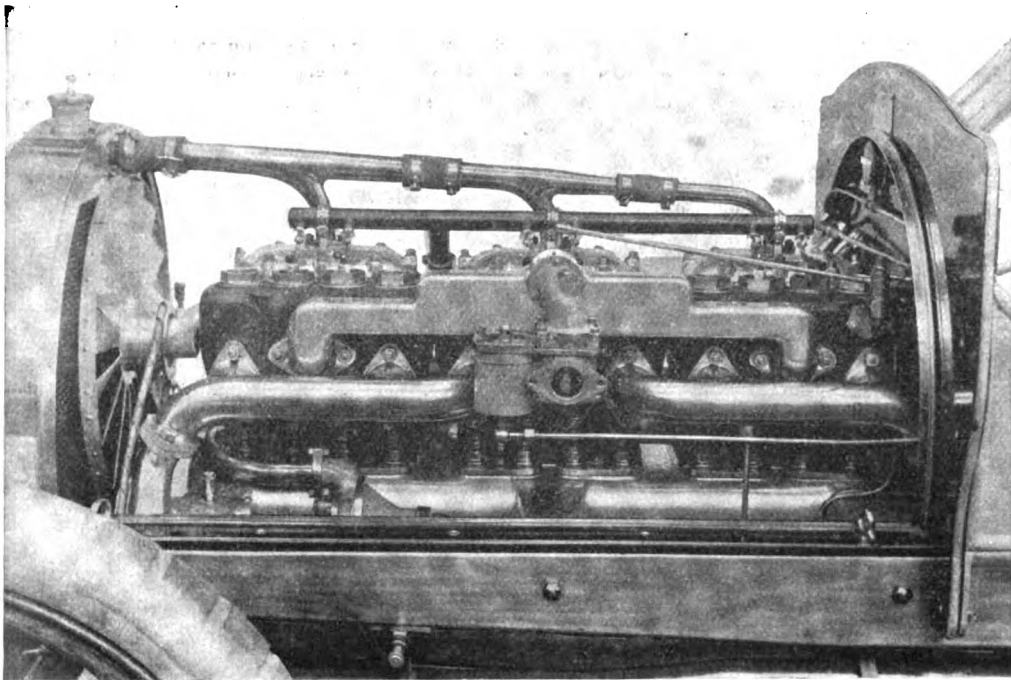
Ball bearings are almost universal for gear boxes; in fact, everywhere except in the engine, the ball bearing has come into general use. Several makers this year have adopted ball bearings for the crankshaft; on the other hand, the Hotchkiss cars, which were the first to adopt these bearings for the engine, will use plain bearings in future.

The provision of four indirect speeds is not now in favor; usually the third speed is made "direct," leaving the fourth speed rather high for use under specially favorable conditions. Some cars have arrangements of double bevel wheels in the differential, whereby direct drive on both third and fourth speeds is obtained. The gate change speed is now everywhere fitted and there is practically no British car of note which, like the Delaunay and the C. G. V., retains the old "straight through" quadrant. More attention is being paid to the protection of the striking gear from dust and mud and various are the interlocking devices which prevent the use of the reverse, while a forward speed is in gear.

A great decrease in the number of chain-driven cars is readily apparent, and so strong an upholder of the chain as Daimler now shows several "live axle" models. Where the chain is used, and this is only in high-powered cars, chain cases are frequently seen, the majority of these being substantial and oil-tight articles which



WHITE STEAM CAR FITTED WITH LOUIS XIV COACH BODY.



INTAKE AND EXHAUST SIDE OF THE SIX-CYLINDER SHEFFIELD SIMPLEX MOTOR.

will permit of the chain running in lubricant, so that the chief objection to the double chain drive of the average user, which is founded upon the dirt-gathering propensities of the chains, has been overcome. A rather interesting tendency in some live axle cars is the provision of a substantial casing round the propeller shaft which serves as a radius rod and greatly simplifies the rear part of the chassis.

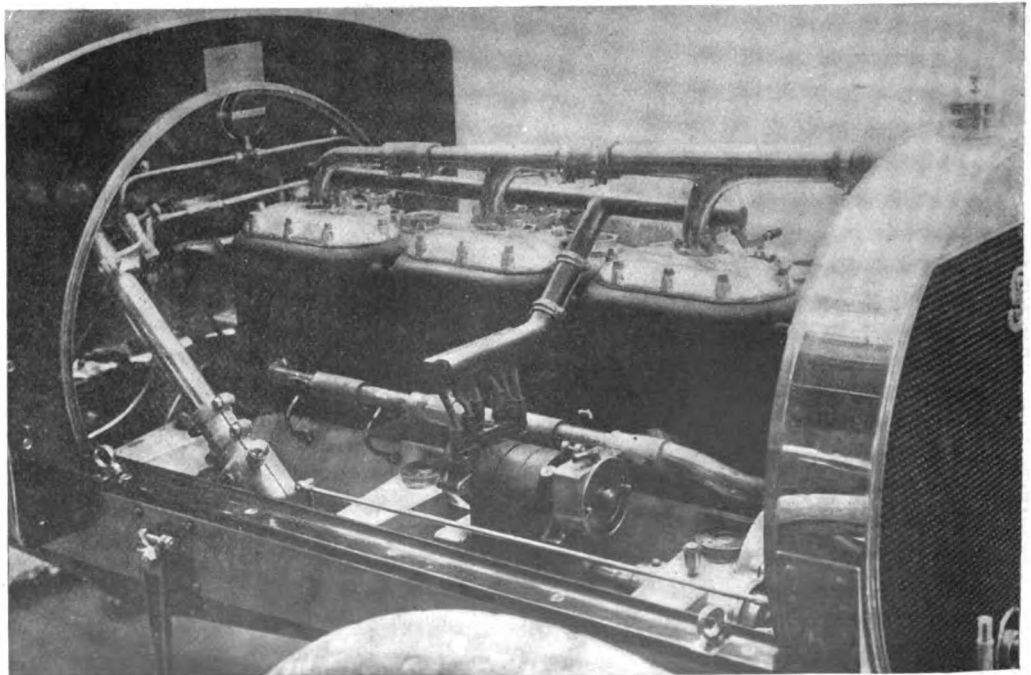
Brakes have not received very much attention, but there is in some cases the provision of both sets of brakes on the rear wheels themselves, removing the usual strain from the transmission gear. With a similar end in view, a few cars have the foot-operated brake acting on the rear wheel drums, while the countershaft brake is worked by the side lever and intended for use in emergencies only.

The final point of note—that of wheels—shows a distinct tendency towards the adoption of the wire wheel, Napier in particular offering them on all models. These wheels certainly seem to possess distinct advantages over the wooden artillery type, and if public opinion can only be got to agree to the change, many makers will be ready to adopt the wire wheel by the time of the next show.

More interesting, perhaps, than a résumé of the general body of exhibits, is a brief description of some of the most representative cars. Daimler and Napier are the names which first suggest themselves, and it would be hard to find two such equally popular cars which differ so much in main details. The Daimler firm still adheres to the slow-running four-cylinder engine with the cylinders cast in pairs, the 42-horsepower model having a stroke of 130 by 150 mm., and the 58-horsepower (note the exactness of the rat-

ing) no less dimensions than 155 by 140 mm. The normal engine speed of both these engines is 650 revolutions per minute. The camshafts and valve gear are now inclosed, thereby removing the principal objection which always existed in Daimlers from the mechanical point of view. In place of the single trembler coil and high-tension distributor formerly used, four single non-trembler coils are now placed directly over the engine, but a few inches of wiring being necessary. An autotrembler device is inserted in the battery circuit and this is in continuous operation. In the 42-horsepower model, the drive is taken through a leather-faced cone clutch to a long speed gear box in which the third speed is direct. Worm drive takes the power to the chain countershaft, a double arrangement of worms and worm-wheels necessitating

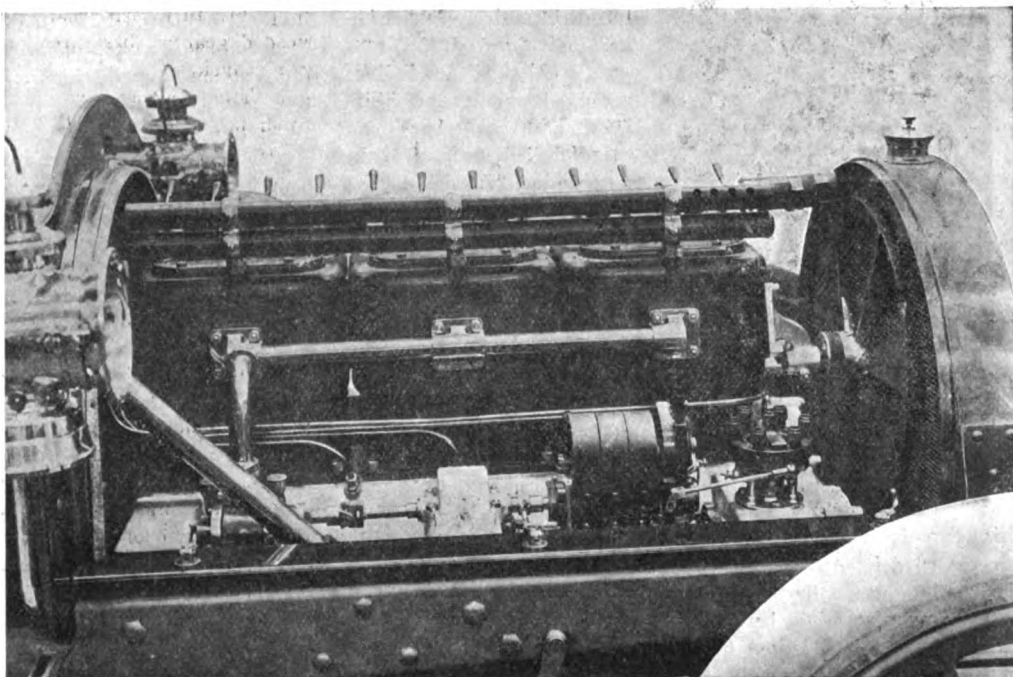
but a single gear reduction on the indirect speeds. The 58-horsepower model has four indirect speeds and bevel drive to the countershaft. Both these cars are provided with efficient chain cases, with which are combined radius rods and eccentric bosses for adjustment of the chains. Right up to the opening of the show, the public confidently looked for the production of a low priced and moderate powered Daimler car. This has not made its appearance, but two new live axle models are provided. These cars have respectively bore and stroke of 110 by 130 and 125 by 130 mm., being rated at 30 and 38 horsepower. The gear boxes have four speeds with direct drive on third. The propeller shaft is provided with universal joints at both ends. The rear axle casing is built together in two halves and the horizontal joint is then welded together by oxy-acetylene process. The differential can be removed through an opening forward and



MAGNETO AND WATER INTAKE SIDE OF 45-HORSEPOWER SHEFFIELD SIMPLEX MOTOR.

the driving shafts are withdrawn through the road wheel hubs. What might possibly be considered a defective point of design is the absence of radius and torque rods, both these duties having to be performed by the rear springs. The only other matter for possible criticism is the single control lever on the steering wheel, which actuates both spark and throttle. The general tendency makes for the separation of these two controls, and it would certainly seem impossible to get absolutely best results from an engine in which the ignition is advanced only with full throttle. The price of these cars is £620 for the 40-horsepower, £695 for the 38-horsepower, and for the remaining chain-drive models of 42 and 58-horsepower, respectively, £700 and £925, all prices being for cars complete with standard bodies.

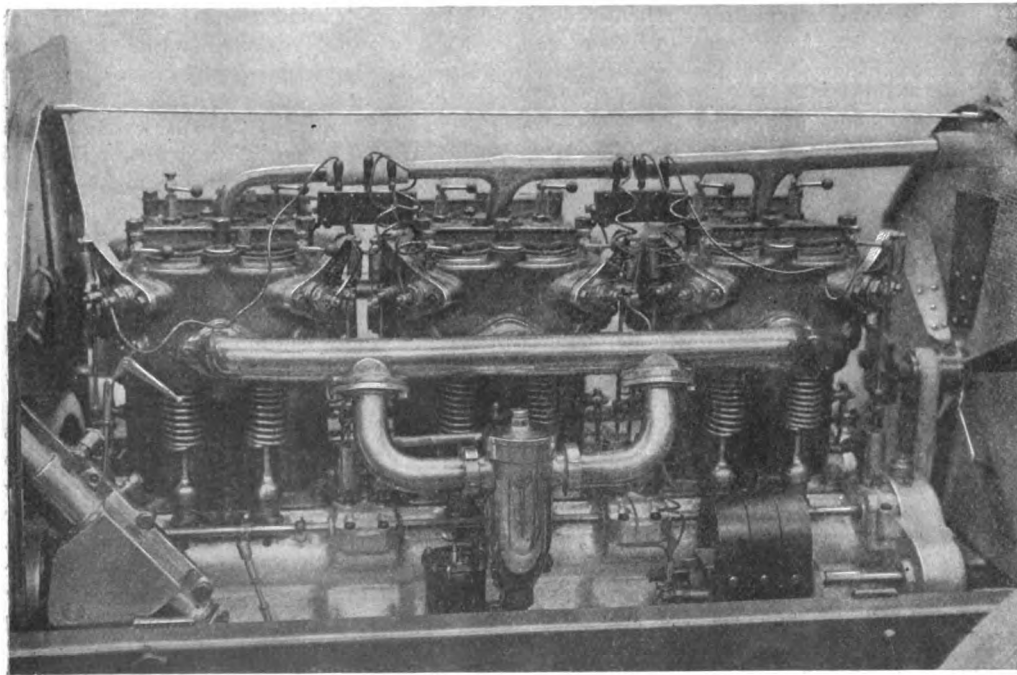
In contrast to the Daimler, the Napier has, of course, the high-speed six-cylinder engine with live axle drive. While retaining the 40 and 60-horsepower models, which have gained such a reputation for themselves during the past two seasons, the Napier stand includes the new 30-horsepower six-cylinder model, which at the chassis price of £575, brings the high-grade six-cylinder car within the reach of an entirely new section of the motoring public. This car is built exactly on the lines of its bigger fellows and, except by the absence of a few refinements, it has lost nothing in the cheapening. The engine has cylinders 102 by 102 mm., with valves all on one side. A new semi-automatic carbureter provides the mixture, its action being automatic as regards the variation in engine speed, but having a hand-operated air lever to enable the use of various grades of petrol. An excellent system of forced lubrication feeds all



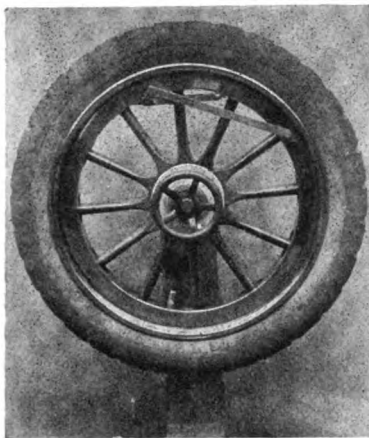
M. & M. C. SIX-CYLINDER, 35-40 HORSEPOWER MOTOR, MAGNETO SIDE.

bearings, while the splash oils the cylinder walls. Great attention has been paid to the lubrication of the other parts of the car and every single spring, shackle, and joint has its screw down greaser. The power from the engine is transmitted through a multiple disk clutch with flat steel disks and a flexible joint couples up to the three-speed gearbox. The gearbox shafts are short and have, in addition, a third inside bearing, so that no whip of the shafts can take place. When the top or direct drive is engaged, the secondary shaft is quite idle and does not revolve. Ball bearings of large size are fitted throughout the gearbox and transmission gear. Special attention has been paid to the springing and brakes and, taking every point into consideration, this Napier 30-horsepower may be called the most interesting British-built chassis to be seen at the show.

The Crossley car is the production of the famous gas engine concern of that name, and has the additional advantage of embodying much of the practical experience of Charles Jarrott, who holds the selling rights. The characteristic features of the single model—40-horsepower—is the accessibility of every part and the ease with which any portion of the transmission gear may be removed without disturbance of the adjacent members. The four-cylinder engine is cast in pairs and has bore and stroke of 120 by 150 mm. The carbureter is an improved form of the Xenia, with extra air inlets operated by a piston floating on mercury, the level of which is raised or depressed according to the varying pressure in the induction pipe. The clutch is one of the few remaining examples of the internal expanding metal type and the gearbox is remarkable in that its casing is cast in one piece,



SIX-CYLINDER, 60-HORSEPOWER BRITISH MERCEDES MOTOR, INTAKE SIDE.

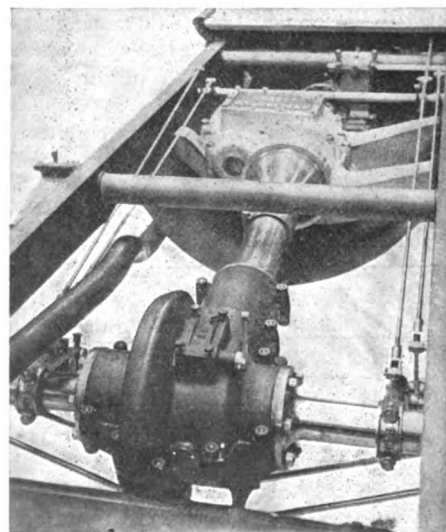


DUNLOP DETACHABLE RIM.

the main and lay shafts being inserted from the rear end. Oil-tight joints are arranged at the end bearings, and the gears can therefore be run in oil without undue leakage taking place. The same gear pump which effects the force lubrication system of the engine keeps the gearbox supplied with oil. In the back axle, the differential can readily be withdrawn without removing the body or the axle itself. But it is not so much in distinctive points as in general excellence of workmanship and attention to details that this car is noteworthy, and at its price of £800 ready for the road it will without doubt find a good following during the coming season.

Similar praise might be accorded to the Austin cars, the comparatively new productions of the designer of the early Wolseley cars—those marvels of reliability. The 18-20 and 40-horsepower four-cylinder cars and the 60-horsepower six-cylinder model all follow standard lines, with special reference to accessibility of valves, pump and carbureter. On the 60-horsepower, an interesting feature is the provision of two magnetos. The ordinary magneto (Simms-Bosch high-tension) will run the engine well at very low and at normal speeds, but for high speeds above 1,500 revolutions per minute (and this well-balanced engine can attain over 2,500 r. p. m.) the second specially wound magneto is switched into use and runs the engine till speed falls to normal again. By this method, it is found possible to run the car on top gear through a most remarkable range of speed. A special system of lubrication through the hollow crankshaft to the main and connecting rod bearings is worked by two gear-driven pumps, which draw the oil from either end of the crankcase, so that the lubrication is efficiently performed when the car is on the steepest grades as well as when the oil supply is low.

To meet the "all-British" demand, the new Fiat works at Wembley were expected to have produced home-built Fiat cars by this time, but these have not put in an appearance, nor has the British edition of the Metallurgique, the well-known Belgian car. There is on view, however, a 45-horsepower Mercedes made in London under license and exactly following the lines of the Cannstatt production. As a matter of fact, the Daimler-Mercedes



M. & M. C. DIFFERENTIAL HOUSING.

car has been built at Sheffield for some time, but this is on somewhat distinct lines from the Mercedes proper. One other new departure is the Birmingham built Lorraine-Dietrich. This 20-30-horsepower car has four-cylinder engine with 90 by 120 mm. cylinders cast in pairs. The ignition is low-tension magneto and can be advanced by sliding the roller ended tappets along the

face of the cam. Some 60 flat plates are found in the clutch; these have no separating springs but are each slightly bent. When the pressure is upon the plates, they are flattened out and transmit the power, but as soon as the clutch pedal is depressed, the plates jump into their bent shape and so free themselves. The four-speed gearbox has direct drive on third, and all the striking gear is inclosed, so that no part of it can be deprived of lubrication. The propeller shaft is surrounded by a pressed steel casing which acts as torque and radius rod and also retains the lubricant for the universal joints of the shaft itself. Two independent radius rods are also provided, these being pressed steel of girder section. The rear wheels are canted outwards somewhat at the top, and for this purpose the driving shafts are provided with universal joints at their inner ends. Complete, this car sells at £550, and should serve to maintain the reputation held by the French chain-drive Dietrich models.

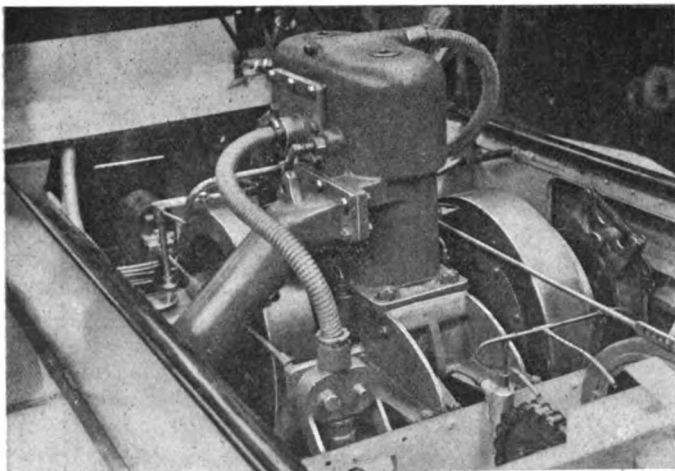
The Siddeley cars now include in their number a low powered model of high grade which well meets the demands of that section of the public, whose car, though low in price, must be a four-cylinder model of good construction and fair speed. The new 14-horsepower Siddeley (which the makers alternately list at the R. A. C. rating of 20-horsepower) has cylinders in pairs, the bore and stroke being 90 by 102 mm. The valves are operated by a camshaft and cooling is by thermo-syphon circulation, without pump. The power is transmitted through a leather clutch to a three-speed gearbox with gate control, whence a double universal jointed propeller shaft takes the drive to the rear live axle. This is formed of tapered, flanged, drawn steel tubes, the weight of the car being carried on the sleeves. The chassis scales at but 1,650 pounds total, and its price of £320 attracts much attention. The other Siddeley productions range up to the six-cylinder 45-horsepower car at £850, which model is owned by the Queen for her special use.

The Siddeley cars now include in their number a low powered model of high grade which well meets the demands of that section of the public, whose car, though low in price, must be a four-cylinder model of good construction and fair speed. The new 14-horsepower Siddeley (which the makers alternately list at the R. A. C. rating of 20-horsepower) has cylinders in pairs, the bore and stroke being 90 by 102 mm. The valves are operated by a camshaft and cooling is by thermo-syphon circulation, without pump. The power is transmitted through a leather clutch to a three-speed gearbox with gate control, whence a double universal jointed propeller shaft takes the drive to the rear live axle. This is formed of tapered, flanged, drawn steel tubes, the weight of the car being carried on the sleeves. The chassis scales at but 1,650 pounds total, and its price of £320 attracts much attention. The other Siddeley productions range up to the six-cylinder 45-horsepower car at £850, which model is owned by the Queen for her special use.

What Is Shown in the Lower-priced Types.

Round the £300 price are numerous other well-made cars, all strongly similar in construction and of such equal value that the intending purchaser is hard pressed to make his selection. Calthorpe, Bell, Alldays, and a dozen others all fulfill this need, for it is perhaps in this particular department that the British maker has specialized with best results. Mention might be made of the Star 12-horsepower car which gives a well-constructed four-cylinder engine, with magneto ignition and a special multiple jet carbureter and, unusual in so low powered a car, an indirect fourth speed, while the price, with five seated body, comes out at but £300.

The Humber is without doubt the most popular car in Britain and therefore deserves some attention. The firm runs two distinct works: at Beeston, the higher powered cars are produced, the new season's models being the 30-horsepower and the 20-horsepower. The 30-horsepower model is nearer 45-horsepower than its rated power, the bore and stroke of the four-cylinder engine being 120 by 150 mm. Two magnetos, high and low tension, are employed, disposed on opposite sides of the engine. The H. T. magneto is carried on a rocking cradle by metal straps and is capable of being rocked about the armature shaft, thereby advancing or retarding the ignition. The lubrication is effected by gear pump through the drilled-out crankshaft. The drive is transmitted through a Hele-Shaw clutch, with an ingenious form of gearshaft brake which does not come into action when changing down. Ball bearings are fitted in every possible part of the transmission gear. Special attention has been paid to the brakes, which are all easily adjusted by hand, and it would be impossible to find a more powerful speed arrester than the countershaft brake, while for the back wheel brakes an ingenious differential movement introduced into the rod system insures perfect equalization of action. The price for this car, with body complete, is £575. It is interesting to note that this model is evolved from the car that won the last Heavy Tourist Trophy race, while from

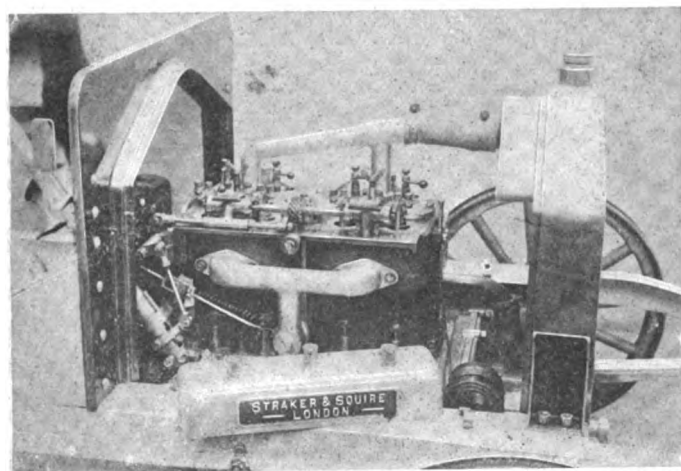


VALVELESS 20-HORSEPOWER, TWO-CYLINDER MOTOR.

the Beeston car that ran second in the Tourist trophy itself the present 20-horsepower car has been designed. The engine has four separate cylinders with twin magneto ignitions, high and low-tension. With cone clutch, four speeds, and ball bearings everywhere except in the engine, this car sells, complete, at £424.

It is the Coventry Humber car, however, that has secured the greatest success, and the 10-12-horsepower model might well be claimed the most popular European car yet built. To replace last year's 10-12-horsepower the new 15-horsepower model has been brought out, listed at £315, complete with body and full kit of tools. The four separate-cylindrical engine has 95 by 115 mm. bore and stroke and develops about 24 horsepower maximum. The engine relies on splash lubrication, but on a separate model, slightly higher in price, an efficient forced lubrication system is fitted. The gearbox has three forward speeds with direct drive on top. Both shafts run on ball bearings and control it by gate change, the knot on top of the gear lever rocking inwards to operate the reverse catch. In the rear axle the wheels run on sleeves on the axle casing, the drive being transmitted through outside dog clutches.

This car is undoubtedly excellent value, but the big Coventry Humber feature and the car which is expected to keep busy the new Humber works at Coventry—the biggest in the world—is the small 10-12-horsepower model. This engine has four separate cylinders, 84 by 96 mm., with splash lubrication and accumulator and coil ignition, the commutator being driven vertically and brought to a convenient position on a level with the tops of the cylinders. The frame is of channel steel, with tubular cross members. The clutch is leather-faced and self-contained, the pressure



STRAKER & SQUIRE FOUR-CYLINDER 16-20 H.P. MOTOR.

being given by three coiled springs which pull on a ball thrust ring on the crankshaft. The gearbox gives three forward speeds and reverse operated by a gate lever and, as in the back axle, ball bearings are employed throughout. The brakes are well looked after, and the control levers are brought up to sectors on the wheel. With side-entrance body, supported upon an additional transverse spring at the rear, and with full kit of tools, the price is £250—as low a figure as is likely to be reached for some time to come.

There are, of course, two-seated cars with single-cylinder engines, in price down to £130, but, with the exception of the little Rover and the Riley, the British makers have left the production of small voitures to the French and have preferred to interest themselves with the light type of four-cylinder cars with four-seated body.

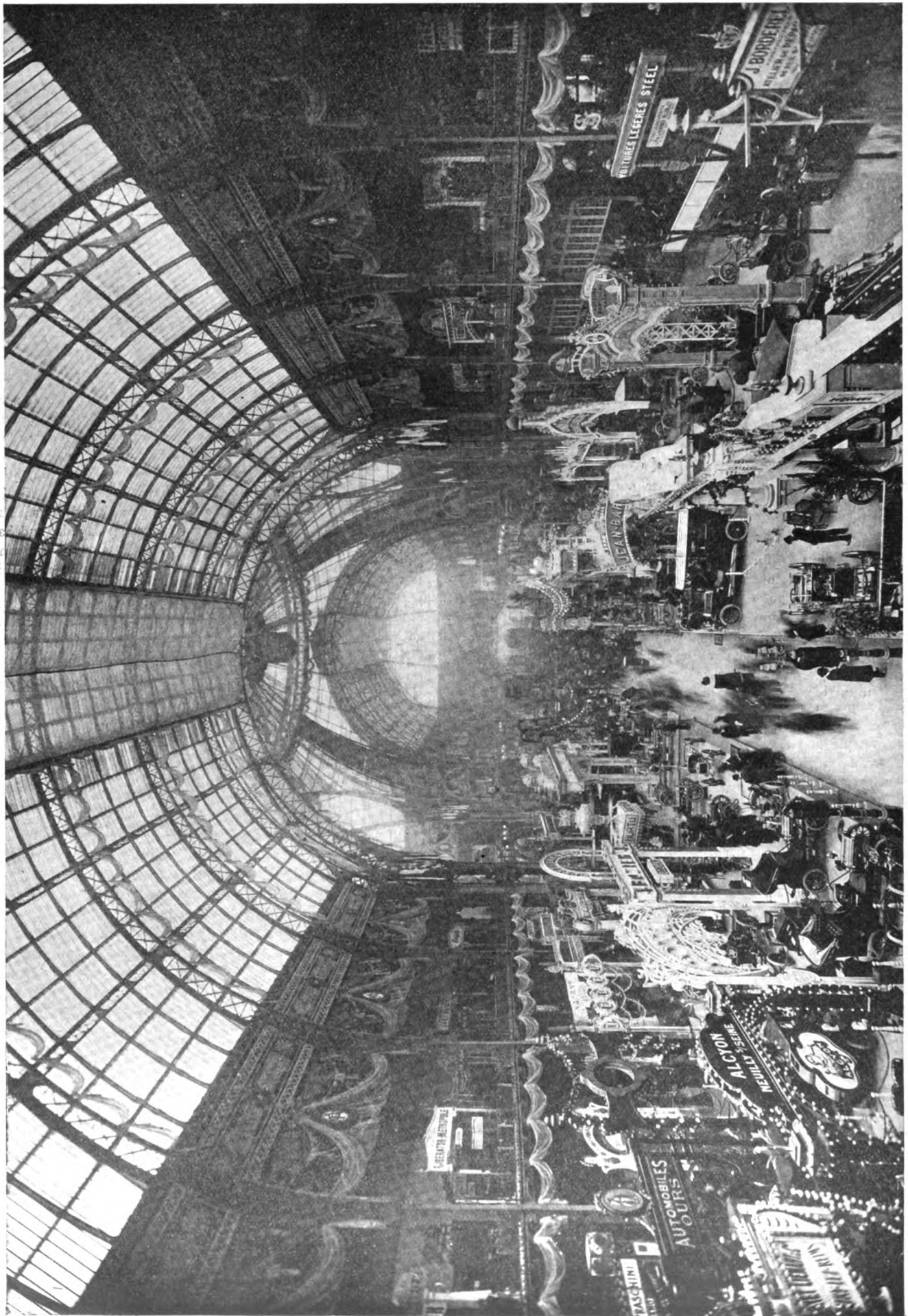
ENGLISH VANADIUM STEEL FOR AMERICAN CARS.

Vanadium steel having come to be regarded as the highest standard for automobile construction is now largely employed in many of the best-known American cars, and the demand for it has led one of the oldest English mills to enter the American market. This is the Ferry Works of Willans & Robinson, Ltd., situated at Queen's Ferry, S. O. Flintshire, England. G. F. Ehrenzeller, the Pennsylvania Building, Philadelphia, Pa., has taken the sole agency for the United States and Canada, and has been recently sending the trade illustrated catalogues showing the wide range of shapes in which this material is offered by his firm. Some of the principal of these are crankshafts and axles, springs, forgings and stampings, gear-wheel blanks and the like. In the catalogue in question illustrations of the micro-structure of some types of the steel are given, as well as the particulars of a great number of tests, which should be of interest to the designer. The qualities of the vanadium steel produced are set forth in detail, in addition to which a large number of different parts are shown. This firm also manufactures high-quality carbon steels suitable for various purposes, including special steels for tube-drawing and for forging, the former being the result of long-continued experiments, and is said to be particularly adapted to the making of the highest grade of solid-drawn tubes. Forging steels of special quality, as well as high-grade nickel steels, constitute another line specialized by this firm. Copies of the pamphlet describing the entire range of steels produced by this mill may be had of the American agent.

SOME BOOKS FOR AUTOMOBILISTS.

Gas Engines and Producers; Marks-Wyer. Under this title the American School of Correspondence, Chicago, has just issued a treatise on the modern development of the internal combustion motor and efficient methods of fuel economy and power production, the subject of Gas and Oil Engines being handled by Lionel S. Marks, S.B., M.M.E., and that of Gas-Producers by Samuel S. Wyer, M.E. The volume, of about 150 pages, really contains two independent treatises, about half being devoted to each, both subjects being copiously illustrated and detailing the latest achievements of modern practice where engines and producers are concerned.

Balancing of Engines, Steam, Gas and Petrol, is the title of a work by Archibald Sharp, just issued by Longmans & Company. With the exception of a few analytical investigations, the treatment of the subject is graphical and the work is intended both as a textbook for the student and a reference volume for the engineer. It forms a welcome addition to the works on the subject owing to the greatly increased amount of attention devoted to the subject of engine balancing as the result of the rapid development of the automobile motor. The only standard work on engine-balancing hitherto available is that by Professor Dalby (England), so that much of the subject matter of the new volume is published for the first time.



TENTH ANNUAL EXPOSITION AT THE GRAND PALAIS, WHICH HOUSED THE GREATEST NUMBER OF CARS EVER SEEN IN A EUROPEAN AUTOMOBILE SHOW.

THE PARIS SALON IS GRANDER AND LARGER

PARIS, Nov. 21.—A few minutes before 10 o'clock on Tuesday morning, November 12, a Panhard limousine rolled out of the Faubourg Saint-Honoré entrance of the Elysée Palace, crossed the Champs-Élysées and pulled up in front of the main entrance of the Grand Palais as the neighboring clocks chimed ten. President Fallières and his military attachés stepped out, were met by the Minister of War, the Minister of Commerce, the heads of the Parliament, police and military forces of the capital, and mounted the broad staircase lined by tall, white-breached Republican Guards, while the strains of the "Marseillaise" rung out and all hats were doffed. At the head of the stairs Gustave Rives, Marquis de Dion, Baron de Zuylen and a host of constructors whose names are known the world over, stood hat in hand to receive the distinguished group. The usual words of greeting, and the tenth annual Paris Salon was inaugurated much as its immediate predecessors had been. But the presidential duties only terminated an hour and a half later, after all the principal stands had been visited rapidly and some speech-making done at each.

In its main lines the tenth salon is like that of last year; the ground floor of the Grand Palais is reserved exclusively for pleasure vehicles, the lower gallery is given over to complete cars and examples of bodywork, and on the extensive upper galleries, with their adjoining halls equal in floor space to the area of Madison Square, are shown motorcycles, bicycles, and the thousand and one accessories connected with automobiles.

Temporary Buildings Erected for Commercial Vehicles.

Three hundred yards away, on the opposite side of the River Seine, a huge temporary building, equal in area to the Grand Palais, has been erected specially for commercial vehicles. Although interior decoration has not been neglected, there is more of the factory than the reception hall in this building, scores of power plants being in motion, for the production of electric light and a variety of industrial purposes, big gasoline and still larger gas engines furnishing the motive power; machine tool makers from Germany, America, France and England have machines at work cutting gears, grinding cylinders, and transforming more or less rough bars of steel into finished crank and camshafts. On the stands are omnibuses, trucks varying in size from the light rapid delivery vehicle to the formidable Renard train, gasoline cabs, a few steam tractors and still fewer electric trucks.

Motor boats have broken adrift from the main exhibition and are housed in the Palais Moderne, a short distance further out of town. Although the penalty of excommunication is declared to await any constructor who exhibits at a rival show, there are a sufficiency of firms interested only in the motor boat to form a fairly satisfactory independent nautical show.

What Ten Years Have Brought Forth.

The present salon being the tenth in an unbroken line of succession, an effort has been made to give it even greater éclat and make it more of a national event than any of its predecessors. In 1898 Gustave Rives organized a sixteen-day show in the Tuileries Garden, uniting 340 firms and receiving 140,000 paying visitors. Two years later a move was made to the Grand Palais, the present being the eighth annual exhibition held there, each one under the control of the Automobile Club of France, and with Gustave Rives as manager. From 33,000 square yards of exhibition space last year the amount has been increased to 47,840 square yards by the construction of the hall on the Esplanade des Invalides, making this automobile show not only the largest in the world, but also the largest trade exhibition of any kind ever organized. The total number of exhibitors is 1,400, of which 1,100 are French and 300 foreign. Italy, Germany, and Belgium are represented by all their most prominent firms; Eng-

lish makers of automobiles are present to the number of four, and America has Ford as sole representative. In the machine tool section America is completely represented, all the makers from across the Atlantic being represented by agents. The estimated value of the exhibits, according to the declarations made for insurance purposes, is \$8,000,000, compared with \$6,000,000 last year. In 1906 there were 450,000 paid entries during the seventeen days of the salon; this year, owing to the decennial, it has been decided to remain open twenty days, half a million paid entries being expected. Actual attendance will be considerably larger, for on all but society days free passes are distributed.

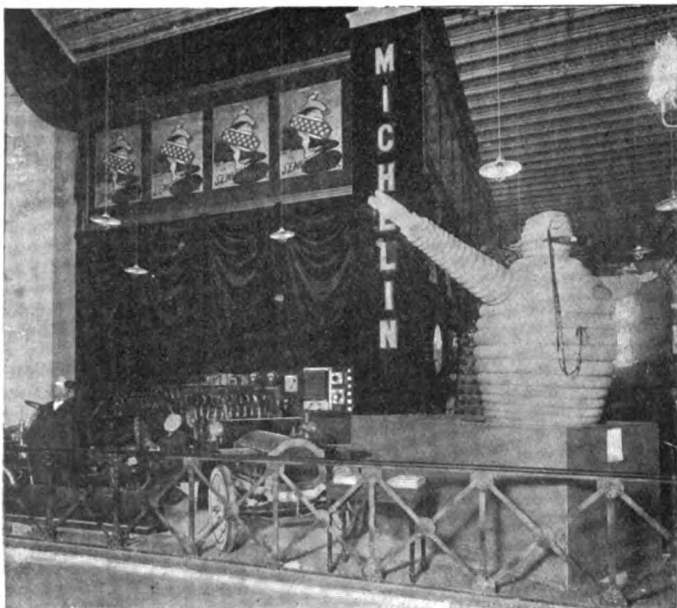
Illuminations Are on a Grand Scale.

External illuminations comprise not only the two exhibition halls, but all the surrounding avenues, from the Rond Point in the Avenue des Champs-Élysées to the extreme east of the Place de la Concorde, including the premises of the Automobile Club of France; from the Champs-Élysées to the temporary hall on the south side of the river is a magnificent luminous avenue, enhanced by the graceful decorations of the bridge itself. The Grand Palais being one of the most artistic buildings in the city, illuminations have been employed only to throw into relief its graceful outline and sculptures, all the lights being placed behind the columns or in the roof of the wide gallery, throwing a gentle white light on the inner portions and decorative friezes of the building, but developing the main lines more pronouncedly by reason of their sombreness. The temporary hall, on the other hand, is a mass of light, forming a termination to the luminous avenue passing in front of the Grand Palais and over the river.

The internal decorations are marvelously effective and artistic, the metal columns of the building and the metal work of the roof being picked out in bands of soft colors. Under the big central glass dome is the masterpiece of luminous decoration, a ball of light in the center, with colored bands radiating from it, and a background giving the effect of illuminated lace work. From each corner of the big hall electric searchlights shine upon the central portion, the ensemble being of such an effect as to altogether beggar description. The estimate of \$600 an hour for lighting the building and stands does not appear at all exaggerated, when one has seen the effect produced by the quarter of a million lamps. Although the full illuminating power is only turned on from 4 to 6 o'clock each day, it is estimated that the total cost of illuminations for the entire exhibition will be \$34,500. An unfortunate feature of the decorative scheme is that it has been the cause of loss of life, several workmen dropping from the dome with fatal results in one if not two cases.

Lavishness of the Decorations.

Individual stands are on the same lavishness as the decorations of the hall, and although the design is left entirely to the firms concerned, there is not a single case of inartistic construction or anything which mars the beauty of the whole. Illuminated wrought ironwork stands predominate, last year's designs being employed in more than half the cases, with certain embellishments. De Dion is one of the few having entirely departed from last year's design with a model of the gate of the famous Winter Palace at Pekin, in commemoration of the journey of their cars from Pekin to Paris this summer. For the first time since a show was held in the Grand Palais there were one or two vacant places on the stands. Forty-eight hours before the official opening order was given that no more vehicles should be allowed to enter the Palais. Previous to this trucks had been entering by the north door, passing down the main alley, dropping off their loads where needed and leaving by the south door. After they were refused admission, one of the doors had to be built up, several pits filled, some of the pathways cemented and carpets laid.



MICHELIN EXHIBIT, WITH "BIBENDUM," THE TIRE MAN.

Late arrivals, therefore, will have to be carried to their respective stands by gangs of workmen during the night.

Opposite the main entrance, in the most conspicuous part of the building, is the stand of honor, decorated in blue satin and containing the Fiat victorious in the Grand Prix, the Darracq which won the Sporting Commission Cup, a Peugeot winner of the Coupe de la Presse, and a De Dion which took part in the Pekin-Paris run. At the commercial section there is an interesting retrospective exhibition of automobiles which attracts considerably more attention than the retrospective bicycle exhibition of last year, also organized by M. Baillif of the Touring Club of France. From the first road locomotive invented in 1770 by Cugnot, the development of the automobile is shown by such models as Léon Bollée's "Mancelle," De Dion steam tricycles, a 2 1-2-horsepower Panhard Levassor of 1892, the Peugeot which won Paris-Bordeaux and return in 1895, Thery's Brasier which won the Gordon Bennett Cup for France in 1904, and a modern machine by way of comparison.

Tendency Is Towards Six Cylinders.

Contrary to what is generally reported on the fixity of design, there are fully as many changes on 1908 European models as were to be observed for 1907 or 1906. Speaking generally, the tendency is towards six cylinders for the largest cars—the automobile de luxe—and towards the greater development of small popular vehicles. It cannot be denied that the six-cylinder engine has gained ground enormously, for whereas in 1905 there were only three types at the Paris Salon and 23 in 1906, there are this year 77 distinct six-cylinder models on exhibition, this number comprising only those firms building a complete car. Those having joined the ranks this year include such well-known firms as Renault, Panhard, Berliet, Delaunay-Belleville, Brasier, Gobron Brillie, and Mors. Panhard and Brasier both had a six model last year, but so far as can be learned it was more of an experiment than a commercial proposition, produced to meet the request of a few enthusiasts. Generally there is little enthusiasm shown for sixes, even among those now marketing them. Builders recognize their superiority in the matter of flexibility and absence of vibration, but they cannot sufficiently forget the disadvantage of a six-cylinder engine to recommend them unanimously to the public. Although everybody who is anybody is now producing sixes, nobody is building them in large quantities, and there is not a single house in France building sixes exclusively, as is the case with some English and American firms. Prices generally are maintained. On the largest models

there is a reduction in price, it is true, but the medium and lower-powered cars are marketed at the same price as last year, with a few exceptions where increase has been made.

Voiturettes are being given the attention they deserve, there being now on the market a score of excellent little single or two-cylinder cars selling at slightly less than \$1,000. There is the same pronounced tendency, too, for the big firms to produce moderate-priced touring cars—four-cylinder engine of about 16 horsepower, with high-tension magneto, selective transmission and shaft drive, selling complete with touring body for \$1,500. Luxuriousness in touring has reached a high stage, closed bodies having every comfort imaginable, and more cars than ever before being shown in which provision is made for protecting the driver from wind and rain, while remaining separate from the passengers.

Four-cylinder Castings in One Piece.

Four cylinder castings in one piece have gained a prominent position, such progress having been made in foundry methods that fours in one block are now produced with as much certainty as single cylinders were cast a few years ago. In the chassis intended for cab service and the numerous examples of town vehicles this method is especially advantageous, for it gives a smaller and more compact engine, diminishes weight, simplifies cooling and reduces the water pipe connections. The tendency towards a single casting is in line with the greater simplicity and accessibility of the leading makes. High-tension magneto as a source of electric supply is particularly pronounced. Two complete systems are not considered as necessary as formerly, and in only very rare exceptions—less than 1 per cent. of the whole—are storage batteries relied upon as the primary source of electric current.

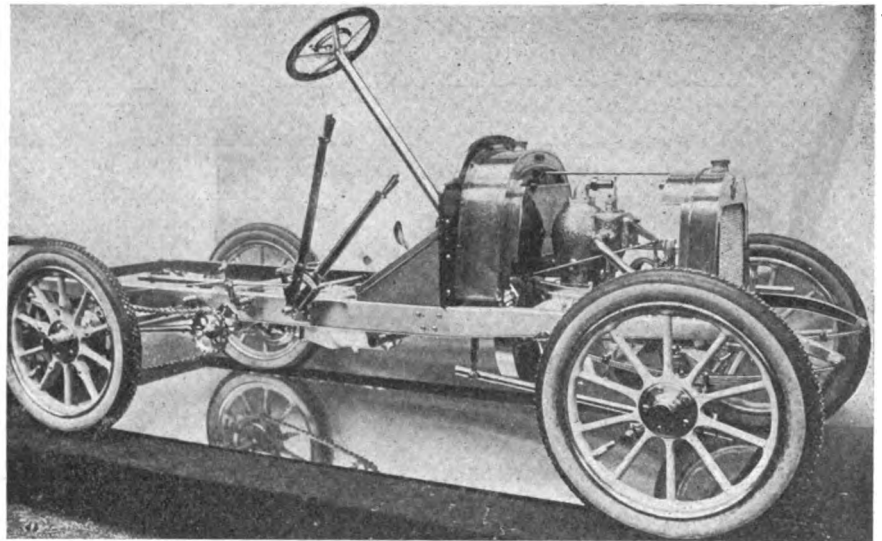
Attention has been given to the transmission, which in a very large majority of cases is of the selective type, a strong tendency also being towards two direct drives, as on the Berliet. Brakes have been given close attention, a number of interesting examples being shown of methods of braking by the engine. In



AT NIGHT THE GRAND-PALAIS PRESENTS A GORGEOUS SPECTACLE.

the matter of suspension three-quarter elliptic springs have strongly increased in favor for the more powerful cars, entirely driving before them the platform type. The transverse rear spring remains on the smaller models, where it gives good results without the prejudicial twisting movement noticeable on the large cars and especially those with chain drive. Multiple disk clutches are more in favor than ever, while final drive by side chains has gone out of fashion in equal proportion. Two of the latest and most important converts to shaft drive are Panhard and Dietrich. The Panhard case is especially noticeable, for though the pioneer firm has built small cars for years none of them have been fitted with live axle. A few years ago a couple of shaft-driven racers were produced, but the practice was not followed in touring cars. Both Dietrich and Panhard limit the shaft to their smaller models, equipping all the larger cars with side chains, as before.

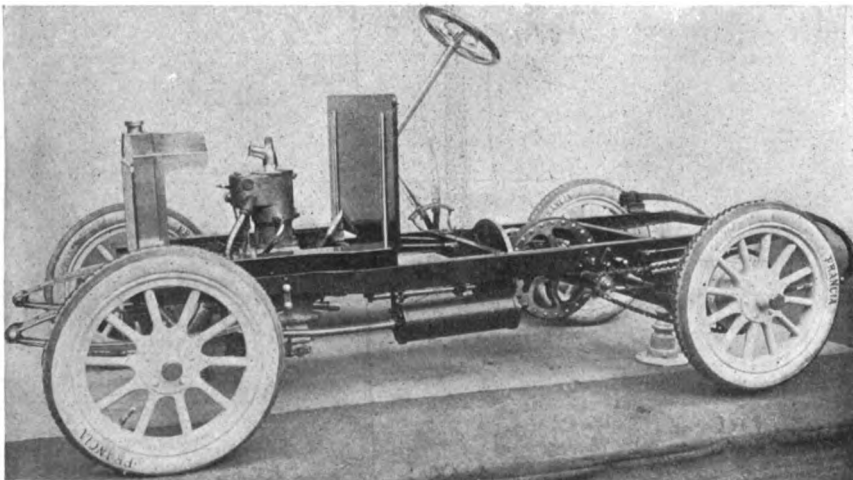
More important than the tendency towards shaft drive is that towards the inclusion of the gearbox with the differential on the rear axle. The practice is not new, but it is not until this year that it has been at all prominent. There is a



SINGLE-CYLINDER, SIDE-CHAIN DRIVEN PEUGEOT LIGHT CAR.

driven off an extension of the camshaft. From the pump the air is carried to a reservoir within the frame, where it is stored at a pressure of 60 pounds to the square inch. By means of a bypass the air is admitted to the cylinders on pressing a lever; in the same way it can be employed for inflating tires. Some attention has been paid to the lubricator and the radiator has been so modified that to dismount it is now a very simple matter. It is reported that next season Renault will produce another large series of popular two-cylinder cabs of an improved type. In the industrial section the firm showed a 35-horsepower air-cooled eight-cylinder engine with the cylinders placed in V, said to be designed specially for aeronautical work.

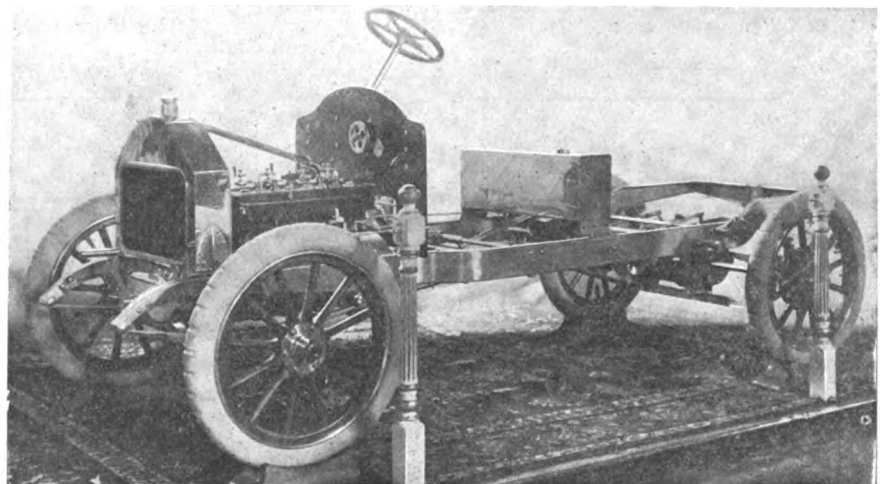
By abandoning both chain drive and armored wood frame, Panhard has produced a chassis departing considerably from those of previous years. Three-quarter elliptic springs are employed on the new 15-horsepower model, the tops of the springs being attached to the frame by means of brackets. Single cylinder casting is retained, but several new features are noticeable on the engine, most important being a sliding camshaft operating the exhaust valves, by means of which the engine can be used as a brake. The flywheel, instead of form-



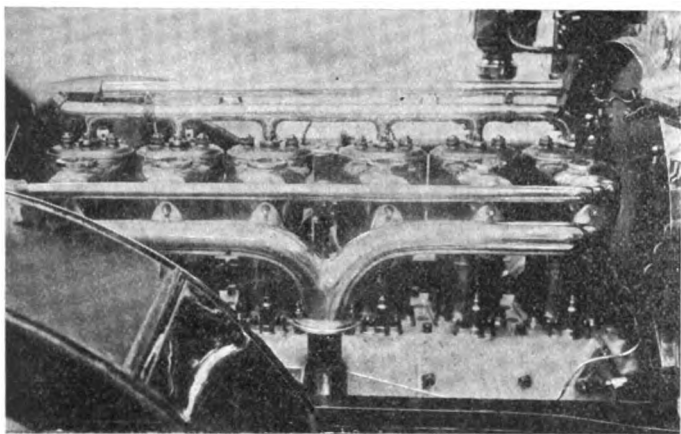
THE ONLY FRICTION-DRIVEN CAR MADE IN FRANCE.

good example in the new Darracq with a solid axle carrying the road wheels, deeply bowed to allow the oblong gearbox containing the change-speed gears, differential and driving bevels to be bolted on it. The driving shafts pass through the bored ends of the solid axle and drive the road wheels through the medium of a clutch. Other features of the new Darracq are four cylinders in a single casting, with the intake and exhaust piping embodied in the casting; piping is thus simplified to such an extent that all that is necessary is a short straight pipe from the carbureter and a single pipe from the manifold to the muffler.

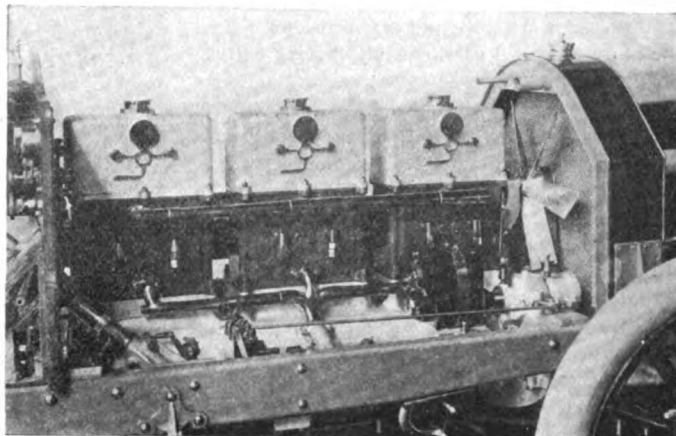
Renault has produced a new six-cylinder model of 50 horsepower, but has made but few changes in the four-cylinder models. A self-starter now forms part of the regular equipment; a device of this nature was shown last year, but does not appear to have been adopted on any other than the show model. This year's type is carried on the forward end of the engine, and consists of a small flanged air pumping cylinder, the piston of which is



NEW MODEL LIGHT DARRACQ WITH SINGLE PIECE CASTING.



INLET SIDE OF DELAUNAY-BELLEVILLE SIX-CYLINDER MODEL.



THE GOBRON-BRILLIE SIX MERELY MEANS AN ADDED UNIT.

ing part of the clutch, serves as a fan only, the ventilator behind the radiator being abandoned. The clutch is enclosed within a separate case behind the flywheel and immediately in front of the gearbox. The live axle is a particularly sturdy construction for a car of comparatively small power and should have none of the weaknesses sometimes attributed to this organ. On the larger chain-driven models a new self-starting device has been fitted, the arrangement consisting of an air pump working from the clutch shaft and compressing air into a tank from which it is admitted to the cylinders by means of a rotary valve.

An entirely new model has been produced by the Hotchkiss Company, designed specially for town use. The four cylinders are cast in one piece, with consequent simplification of piping and compactness of engine. A new carburetor has been produced, declared to give greater flexibility of the engine, and the now popular type of three-quarter elliptic springs has been adopted, other features being practically the same as on the firm's larger models of last year. Owing, it is declared, to the difficulty of obtaining ball bearings of uniformly good quality, the Hotchkiss Company has abandoned their use on the crankshaft of the new 20-horsepower town vehicle.

New six-cylinder cars have been produced by Delaunay-Belleville, the peculiarity of which is that the larger model, rated at 40 horsepower, has cylinders cast separately and a crankshaft with seven bearings. In the 15-horsepower six-cylinder model the cylinders are cast in two pairs of three, with valve chambers on one side and a single camshaft.

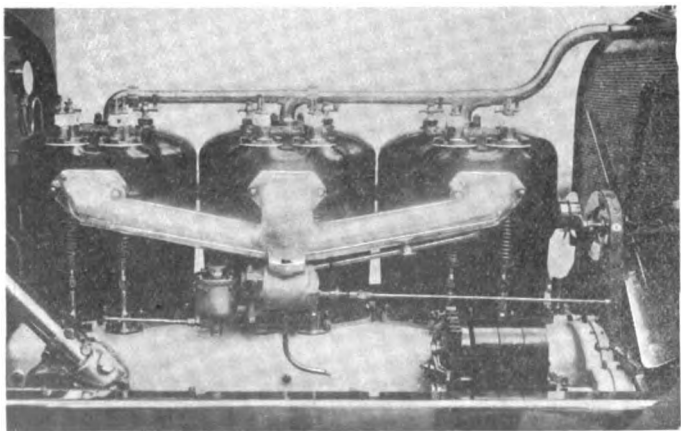
Prominent in the new Fiat model of six-cylinder engine is high-tension ignition by Simms-Bosch magneto in place of low tension. In this connection it is interesting to note that only six models of the seventy six-cylinder chassis at the show were fitted with low-tension magneto, among them being Brasier, Itala and Peugeot.

There are wide possibilities in the device to be found on the Berliet six for compressing air into a special tank at a pressure of 160 pounds, to be used in the cylinders whenever the motor has to be called upon to give extra power for a short period. The compression is done when the motor is running light, as when descending a hill, or when braking, and the compressed air can be communicated to the cylinders immediately on operating a small lever. There are several cases of gasoline electric cars for town service, having the advantage over those shown in previous years of a considerable saving in weight and size. One of the most interesting is the G. E. M., produced by a new company of which Girardot, formerly of the C. G. V. firm, is at the head. There appears to be a tendency towards the abolition of torque stays, utilizing instead a strong housing for the propeller shaft. There is an example of this in the new 12-16-horsepower four-cylinder Peugeot model. On this car also the side brakes are operated by the pedal and the brakes on the gearshaft by the side lever, thus relieving the bevels and differentials of many strains. To make the car suitable for drivers of different sizes, brake and clutch pedals are adjustable on the Peugeot.

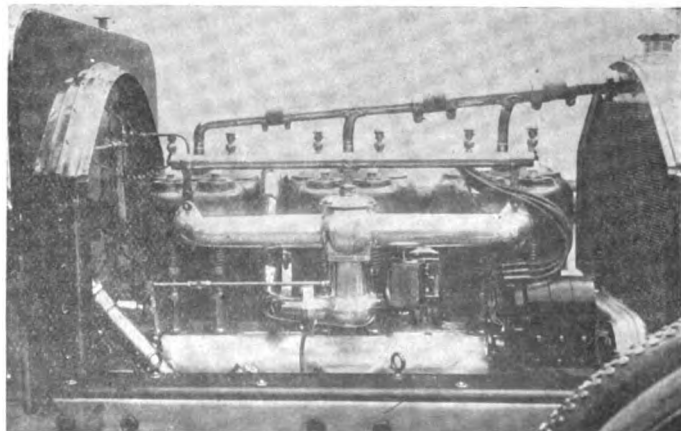
For originality in suspension the Stabilia chassis is in a class by itself. The entire chassis is underslung, both forward and at the rear, the rear suspension being of the platform type with the transverse spring at the forward end and not in the rear; it thus hangs above the frame members but below the propeller shaft and the rather original torsion rod.

Increased Attention in Commercial Vehicles.

Commercial vehicles shown in the industrial section show remarkable progress over the exhibits of last year, being more numerous in every class and generally a better set of vehicles. The older firms, having made a name for themselves in the



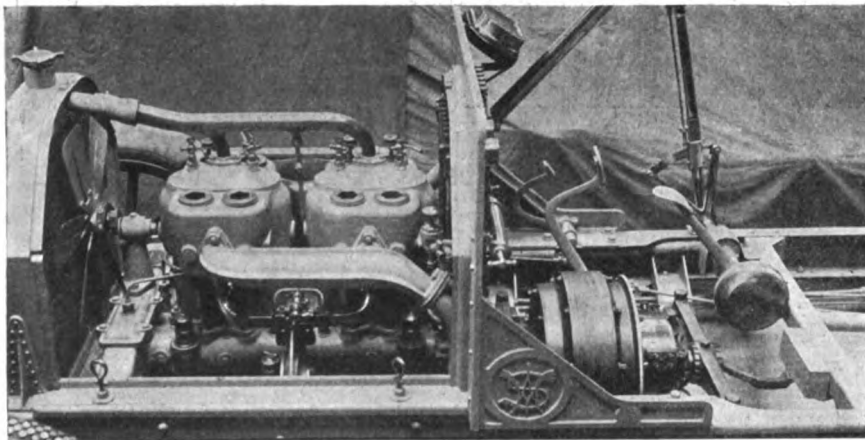
THE HISPANO-SUIZA, A SPANISH SIX-CYLINDER PRODUCTION.



CARBURETOR AND MAGNETO SIDE OF THE NEW FIAT SIX.

pleasure automobile, are turning seriously to the commercial section, evidently realizing that whereas the field for high priced pleasure chassis is likely to become more restricted, the possibilities of automobiles for commercial purposes is practically boundless. Dietrich is one of those quite recently devoting a large amount of attention to the production of heavy trucks; Darracq has adequate representation in the Darracq-Serpollet combination; Panhard appears to be developing this class of business, and Renault is also paying some attention to motors for other than pleasure vehicles. The exhibition of this latter firm in the industrial section consists of a 10-horsepower cab, a 50-horsepower marine engine, a model of compactness, and the special eight-cylinder engine for flying machines. Panhard-Levassor has four distinct chassis for commercial vehicles, two of which are identical with their ordinary touring car chassis, and the other shaft drive with differential and gearbox on the rear axle. A 24-horsepower motor was also shown in motion with alcohol as fuel, linked up to a dynamo and arranged to show the power developed at all speeds and with varying fuel.

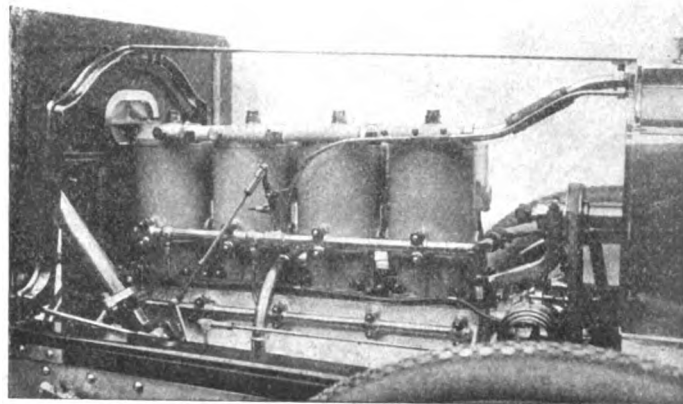
For the heaviest types of trucks there appears to be a tendency towards the use of six wheels, a solution of the heavy weight problem which has been before the public a long time but has never received full attention until now. Eugene Brillié has a vehicle of this type, as has also Dietrich, De Dion and Berliet.



MOTOR AND GENERATOR OF THE WESTINGHOUSE GASOLINE-ELECTRIC.

Effort is about equally divided towards the production of suburban 'buses carrying from six to thirty passengers, and the development of trucks and delivery vehicles. Trolley car services not being a very important feature in any part of Europe, there is a wide field open for reliable and economical 'bus services, similar to those at present in use in Normandy and other parts of France during the last two years. Gasoline omnibuses for city use also attract considerable attention, there being a big field for this class of vehicle in all the large cities of France, England and Germany. Steam does not find much favor here. One or two firms employ steamers for six to ten-ton trucks, but for all other purposes Darracq-Serpollet has the field practically to itself, from a mechanical standpoint, though in the business field pressed hard by the numerous powerful gasoline cars. Taximeter cabs, though certainly belonging to the commercial section, can be said to attach equally well to the pleasure field, for although the more important firms have designed special chassis for this work, as soon as they are found to be satisfactory they are adopted equally in the town pleasure carriages, the line of demarcation between the two sections being lost.

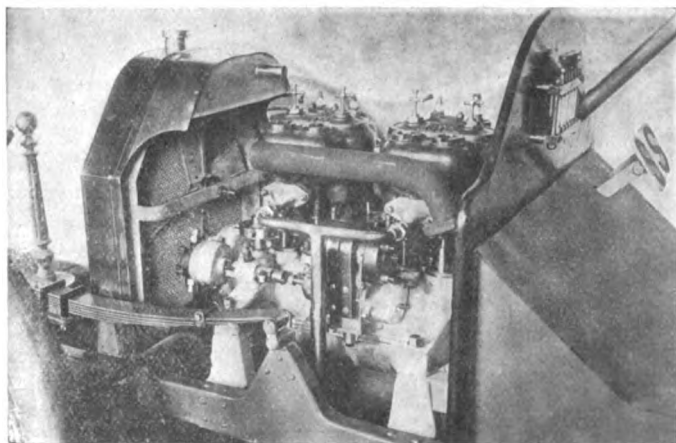
Standard lines of construction have been completely departed from in the Royal delivery vehicle, the peculiarity of which is that the entire motor group is carried slightly forward of the rear axle and transversely across the frame. It consists of a single-cylinder De Dion motor, a cone clutch, and selective transmission, drive being from the sprockets on the counter shaft to



OFF SIDE OF THE NEW DE DION FOUR-CYLINDER MODEL.

the rear road wheels. The power plant is exceedingly compact, one of the devices to save space being the cone spring within the hollowed shaft of the sliding gear shaft. With a wheel base of 96 inches, it has been possible to obtain a space of 71 inches for body between the axles, while leaving the power plant fully accessible. The driver's seat, which is raised to a considerable height, is at the rear of the chassis, but slightly ahead of the axle, the entire frame being suspended between the axles and not overhanging at either end. Below him, and on his left-hand side, is the engine, covered by a metal hood easily removable. Provision is made for easily removing the driver's seat, leaving the entire power plant as accessible as if it were on a shop bench. High-tension Bosch magneto is used on the engine, with fixed sparking point; engine speed can be varied from 500 to 1,500 revolutions a minute through variations of the exhaust lift by means of a foot pedal. Steering is through the front wheels, the connection being brought to the driver at the rear and operated by the usual inclined steering column and wheel.

It is perhaps only a small matter, but it is indicative of sound business policy, that automobile omnibuses should be employed very extensively in conveying visitors from all parts of the city to the show. By arrangements with the constructors a number of these vehicles have been placed at the disposition of practically all the newspapers and make journeys at regular intervals from the publishing offices or other central point to the Palais. The journeys are free for all and are appreciated by the public.



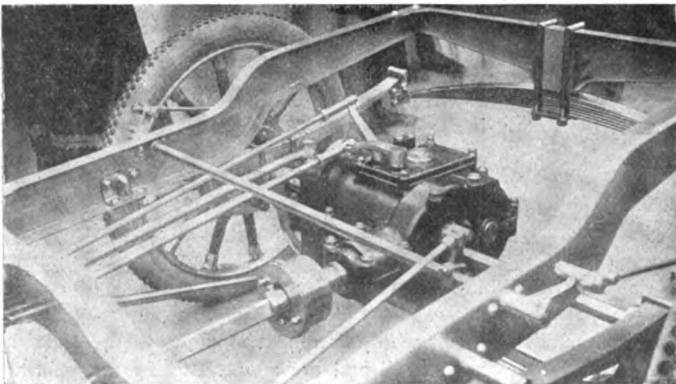
NOVEL FRONT SUSPENSION OF THE NEW STABILIA CAR.



CARS PARKED OUTSIDE THE GRAND PALAIS DURING THE COURSE OF THE SHOW.

EARLY PREPARATIONS FOR GRAND PRIX.

Rumors regarding next year's racing are plentiful in the salon, where all the most important drivers congregate, and where officials gather to talk over prospects for the coming season. According to the Fiat people, Nazzaro has already obtained the racer which he will drive in the Grand Prix of 1908 and is try-



DOUBLE AXLE CONSTRUCTION CHARACTERIZING THE DARRACQ.

ing it out on the road. Although of 155 millimeter bore, compared with 185 this year, the car is said to be even faster than the winner of the race on the Dieppe circuit. Last year fuel consumption was limited, while for the coming race there is no limit. It is not known what is the length of the stroke, though it is admitted that it is very long, there being no limit to the stroke under the new racing rules. Rumors that Lancia would not drive again are incorrect. The team will be Nazzaro, Lancia and Wagner.

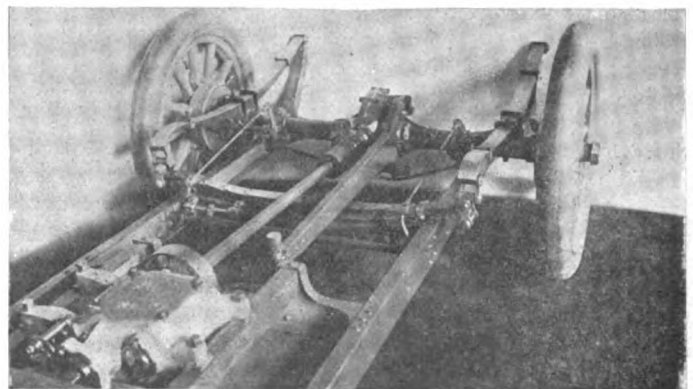
For next year Renault has secured the services of Gustave Caillois, who designed the Thomas cars for the last Vanderbilt race, and will entrust him with one of the Grand Prix racers. His companions will be Szisz and Dimitrievitch, the latter little known to the public, but thoroughly experienced in international races, having been the mechanic of Szisz for several years.

Théry, after two years of comparative idleness, has been induced to enter the Brasier team again and next year will have

the leading car from the Trefle à Quatre factory, his companions being Baras and Bablot, both of whom drove in the 1907 race. Benz is building three cars, one to be driven by Hemery, the second probably by Hanriot and the third by a German. Mercedes will again race with Willy Poege and Saizer as drivers, Jenatzy retiring in place of some one yet to be chosen. Henry Fournier announces three cars for Itala, one of them to be driven by Cagno. Pipe also declares that three racers are building.

The Mors firm, after abstaining from all races for several years, announces officially that next year it will return to the most important events with Gasté and Landon as drivers and one other yet to be chosen. Bayard-Clément has put all doubt at rest by a declaration that next year the firm will be ready with three cars for the Grand Prix. It is M. Adolphe Clément himself who has made the statement, with the additional information that the new racers are already under construction, so that it may be accepted as accurate. Other firms known to be busy on racing cars are Motobloc, Germain, Dietrich and Panhard.

Persistent rumors are abroad that the Dieppe circuit will again be the scene of the national race. No official decision has been arrived at and nothing definite will be known until about the middle of January, but it is so strongly felt that the Dieppe course is the only one on which the race can be a success that all are convinced the club will not search further.



UNDERHUNG REAR SUSPENSION AND TORSION ROD OF THE STABILIA.

WELLMAN CONFIDENT OF FLYING TO THE POLE



WELLMAN AND COMRADES'
Vaneman (on the left). Reisen-
berg (on the right).

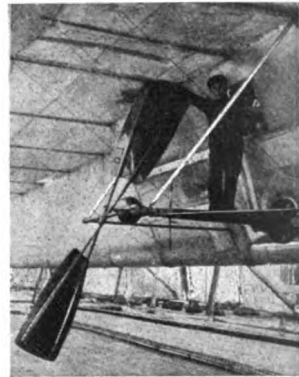
pense with a great deal of preliminary work that would otherwise be necessary before undertaking the polar voyage.

Speaking of his trials of the airship itself, Mr. Wellman was confident that his basic plans were correct and that only slight modifications in the mechanism of the dirigible balloon would be necessary. "The *America* proved strong and stable and her speed was much greater than we had counted upon," he said. "We had very little opportunity for trials, as the summer in Spitzbergen this year was the stormiest and most unfavorable for an expedition like mine that has been experienced in many years.

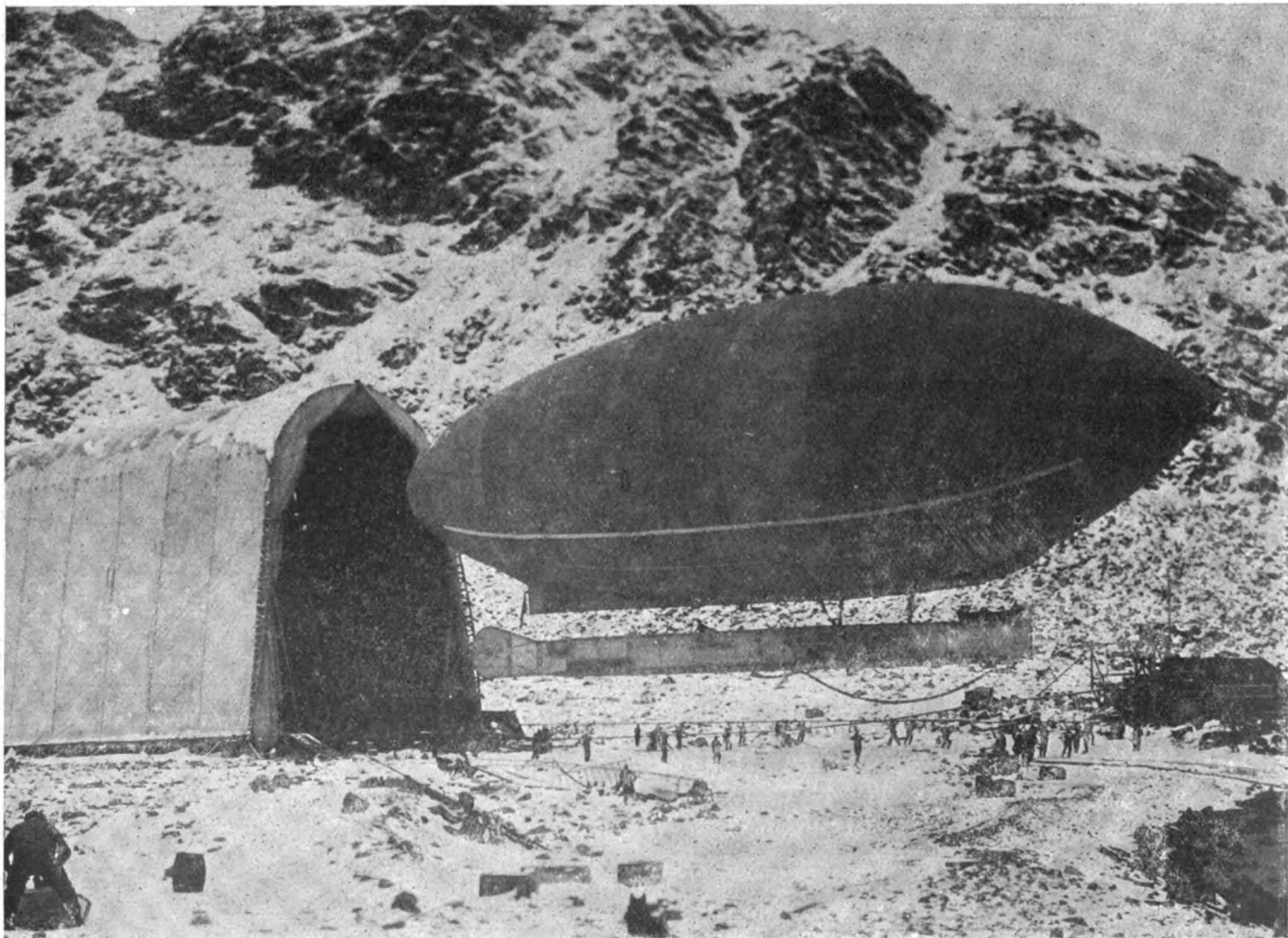
UNDETERRED by his failures of the past summer, and still optimistic of the possibilities of reaching the North Pole with the aid of a dirigible balloon, Walter Wellman has returned to this country, reaching here on the *Majestic* on Thursday last. Mr. Wellman was not of the opinion that the summer had been wasted by any means, as, in addition to having demonstrated what his airship, the *America*, can do, he has a well-established plant and ship ready for the renewal of the campaign next year or the year following, and will be able to dis-

The trial of September 2 was not a successful voyage in any sense of the word, but proved a successful test of the *America*. We had an opportunity to test our retarder as well as our guide rope of leather stuffed with food. Both proved efficient beyond our expectations. Granted the proper conditions, which means a southerly wind above all other things, we will no doubt have an opportunity to take advantage of these devices while over the pack ice and our chances of making a successful trip to the pole and back are more than good."

While sojourning in Spitzbergen, engrossed in the work of preparation for his trip, Mr. Wellman has found time to closely follow aeronautical developments in the interim, and was particularly enthusiastic over the possibilities of the balloon as a weapon of warfare. "It is gratifying to note that the American Government has at last come to a realization of the situation, as what has been accomplished in Europe plainly demonstrates that such an aerial ship could inflict millions of dollars' damage upon an enemy.

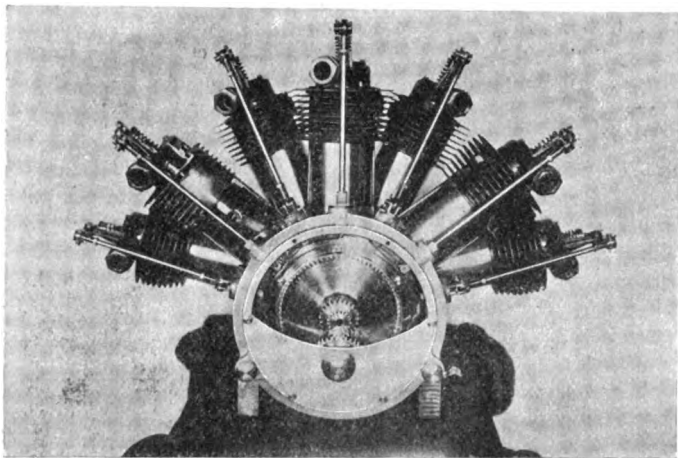


ONE OF THE PROPELLERS.
Vaneman standing alongside the
upper blade.

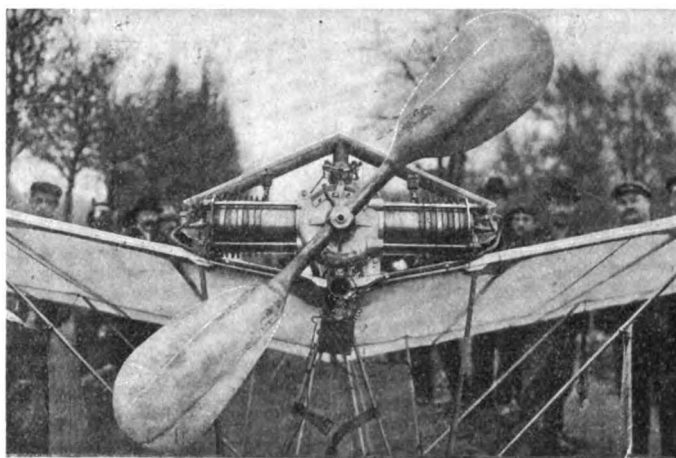


THE "AMERICA" LEAVING THE AERODROME ON THE DAY THE EFFORT WAS MADE TO REACH THE NORTH POLE.

Photographs by Underwood & Underwood, New York.



PELTERIE'S SEVEN-CYLINDER MOTOR, SHOWING CAM MECHANISM.



MOTOR AND PROPELLER FOR SANTOS-DUMONT'S FLYER.

NEW AEROPLANE FOR SANTOS-DUMONT.

PARIS, Nov. 19.—Instead of being wholly engrossed in experiments on the water with a view to obtaining a speed of 60 miles an hour, Santos-Dumont has surprised the public by producing an entirely new aeroplane and getting it rapidly into commission preparatory to a trial for the Deutsch Archdeacon prize.

No. 19, which has already been dubbed "*The Butterfly*," because of a slight resemblance to that insect, is smaller and lighter than any of its predecessors and constructed on entirely new lines. The main chassis is formed of steel tubes, mounted on three rubber-tired wheels, two forward and one in the rear. The main bearing surface, as will be seen from the illustration, consists of a couple of lateral wings, 17 feet from tip to tip and 7 feet from front to rear. These two wings are covered with varnished silk, their framework being of bamboo. The steering and stability organs are a couple of vertical rudders placed slightly forward and to the left and right of the wings, a horizontal elevating rudder in front of the machine and a rear rudder mounted with a universal joint and capable of being turned in any direction. The total weight of the apparatus is 128 pounds.

One of the most interesting exhibits in the aeronautical section of the Paris Salon is the seven-cylinder motor designed by Robert Esnault-Pelterie for use on his own flying machine and now offered to the public. With a total weight of 108 pounds, it has been possible to obtain 35 horsepower under French rating. The cylinders, which are air-cooled, are attached to a circular crankcase, the two at each extremity forming a group, and the exhaust valves in the cylinder heads are operated by an ingenious circular series of cams.

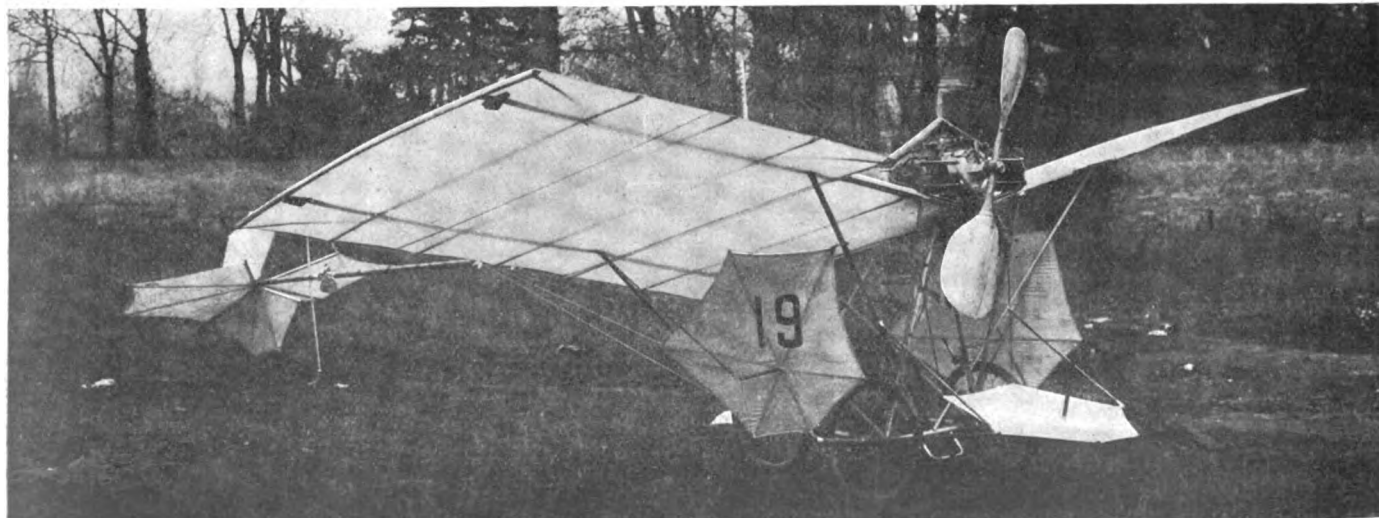
THE AERO CLUB OF NEW ENGLAND.

BOSTON, Nov. 25.—The Aero Club of New England, which was organized in a temporary way several years ago, and which has since lain dormant, was formally organized by the election of officers at a meeting held in this city last Thursday evening. The club also received a communication from the Massachusetts Automobile Club inviting it to make use of its clubhouse for meetings until it should have a clubhouse of its own. The announcement was also made of the offer of a silver trophy for a balloon competition; the finish of which shall be Boston Common. A. Lawrence Rotch, director of the Blue Hill Observatory, was elected president. The other officers are as follows:

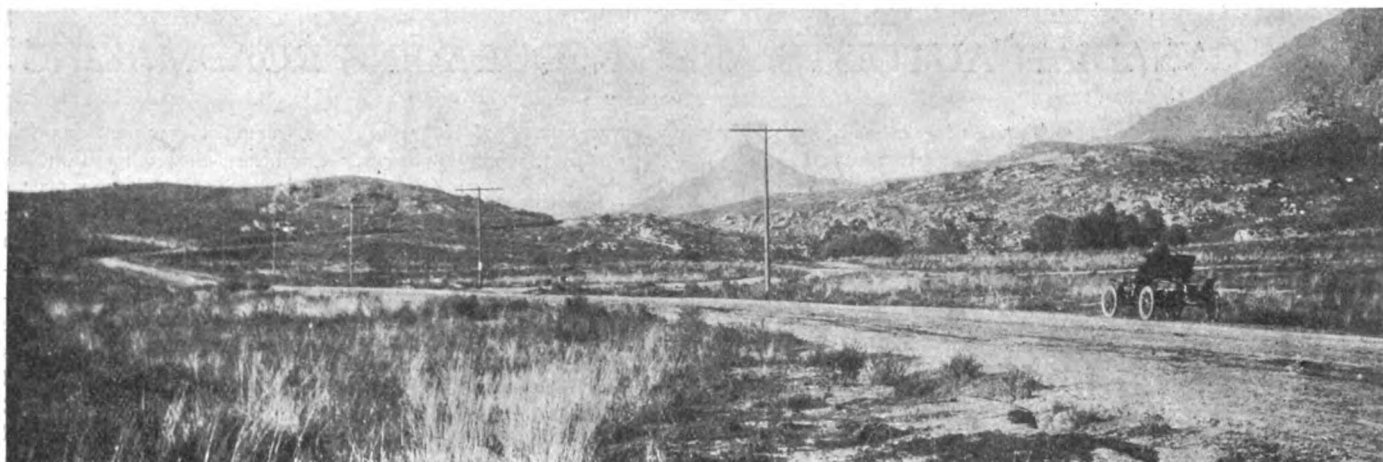
Vice-presidents, Charles J. Glidden and Frank E. Stanley; secretary, Alfred R. Shrigley; treasurer, Harry G. Pollard; directors, President Rotch, Charles J. Glidden, Henry Howard, George E. McQuesten and T. E. Byrnes. The incorporators are thirty-seven in number.

AERONAUTICAL CLUB FORMED IN CHICAGO.

CHICAGO, Nov. 25.—Incorporation papers for the Aeronautique Club of Chicago were taken out on Friday of last week. The new organization has the backing of several business men and will seek to promote the sport actively in this city. Contracts have been let by the club for the building of a \$1,500 balloon, and plans are under way for a series of races next spring, the first to be sailed on Memorial Day and the last July 4. A \$1,000 cup has been pledged to the club as a trophy. C. A. Coey is president of the club, Charles E. Gregory first vice-president, A. B. Perrigo secretary, and H. C. Foster treasurer.



"THE BUTTERFLY," NINETEENTH AEROPLANE CONSTRUCTED BY SANTOS-DUMONT SMALLER AND LIGHTER THAN PREDECESSORS.



BOX SPRINGS GRADE, RIVERSIDE, CALIFORNIA, WHERE THE ANNUAL THANKSGIVING DAY HILL CLIMB WILL BE HELD.

SOUTHERN CALIFORNIA'S ANNUAL CLIMB.

LOS ANGELES, CAL., Nov. 22.—Southern California's annual Thanksgiving Day hill-climb over the Box Springs grade, Riverside, will be a bigger event this year than ever before. The list of entries exceeds all former records, and they are still coming in. The course has been put in first-class shape, and with a few of the sharper turns cut down the record of 4:53 for the three miles is certain to be lowered.

Riverside is sixty miles from Los Angeles, but a majority of the entries come from this city, the autoists running up the evening before. The road between the two cities is one of the most beautiful in the southland, and hundreds of machines line the course to see the cars make the climb. Last year the honors were won by a Tourist, Cadillac, Stevens-Duryea, and Maxwell.

The hill is such as only some of the far Western States can provide for such an event and to the cars of but a few years ago would have been next to impossible at anything that could be termed speed. With the experience of last year's climb fresh in mind, the course has been improved in a number of ways, promises being bright for the most successful event held in California.

ORMOND-DAYTONA LAST WEEK IN MARCH.

The Florida East Coast Automobile Association, through its New York representative, W. J. Morgan, has made arrangements for co-operation with the Automobile Club of America in connection with the conduct of the annual Ormond-Daytona meet, which will probably take place the last week in March. The A. C. A. Contests Committee, of which Robert Lee Morrell is chairman, will make up the list of events, to include three principal races, one for strictly racing cars, another for stock cars, and a third for amateur drivers. The mile race for the Sir Thomas Dewar trophy will also take place, the entrants being confined to cars which will be required to qualify by going at least twenty miles at a minimum speed of 45 seconds to the mile. Mr. Morgan and a member of the A. C. A. committee will leave for Florida this week to complete final arrangements for the meet.

Mr. Morgan, who is the originator of the "Climb to the Clouds" up Mount Washington, announces a series of trials to take place in the White Mountains during the last week in June, the sixth day to be devoted to the eight-mile climb of Mount Washington.

FUTURE EVENTS SCHEDULED ON THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 9-14.—Detroit, Riverview Park Auditorium, Detroit Automobile Dealers' Association. LeRoy Pelletier, manager.
- Dec. 14-21.—St. Louis, Mo., Jal Alai Building, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association. D. M. Strauss, manager.
- Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, manager.
- Jan. 14-18.—Hartford, Conn., Foot Guard Hall, Hartford Automobile Dealers' Association.
- Feb. 1-8.—Providence, State Armory, Automobile Show. Frank M. Prescott, manager.
- Feb. 10-15.—Detroit, Light Guard Armory, Tri-State Automobile and Sporting Goods Association, Seventh Annual Show.
- Feb. 17-22.—Cleveland, Central Armory, Annual Show, Cleveland Automobile Dealers' Association. George Collister, manager.
- Mar. 7-14.—Boston, Mechanics' Building and Horticultural Hall, Boston Automobile Dealers' Association. Chester I. Campbell, manager, 5 Park Square.
- Mar. 9-14.—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dal H. Lewis, manager.

- Mar. 21-28.—Toronto, Canada, St. Lawrence Arena, Automobile Show. R. M. Jaffray, manager.
- Apr. 5-12.—Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Motor Boat Shows.

- Dec. 7-14.—New York City, Grand Central Palace, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 1-8.—Chicago, Coliseum, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 25-Feb. 1.—Boston, Mechanics' Building, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Feb. 3-8.—Buffalo, Convention Hall, First Annual Power Boat and Sportsman's Show, auspices of Buffalo Launch Club. Dal H. Lewis, manager.
- Feb. 20-Mar. 7.—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsman's Show.

FOREIGN.

Shows.

- Nov. 22-30.—London, Agricultural Hall, Stanley Show.
- Dec. 5-22.—Berlin, Germany, Automobile Show.
- Dec. 21-Jan. 2.—Brussels, Show, Palace of the Cinquantenaire.
- Jan. 18-Feb. 2, '08.—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.
- Mar. 21-28.—London, Agricultural Hall, Cordingley's Show.

HOW CANADIAN AUTOISTS ARE ENCOURAGING ROADMAKING

TORONTO, ONT., Nov. 25.—A prize of \$500 has been awarded by the board of directors of the Ontario Motor League to the township of Etobicoke for the improvement made on a mile of the Lake Shore road extending west from the Humber river to Mimico creek. Another prize of \$100 was awarded to the township of Markham for improvement made on a mile of the main road running north from the village of Markham. Further prizes of \$50 and \$25 respectively were awarded to the supervisors in charge of the work on these roads.

The awards were made on the recommendation of A. W. Campbell, Ontario good roads commissioner, and the chairman of the committee of judges for the good roads competition, which was inaugurated by the Ontario Motor League last spring, and the funds for which were subscribed by Toronto members of the League. The other judges were William Dobie, of Toronto, on behalf of the League, and William Pugsley, representing the county of York.

In an exhaustive report to the League, Mr. Campbell commended very highly the work that had been done by the Etobicoke township on the Lake Shore road. It is understood that the total sum of \$4,000 was expended. The improvement included the laying of a foundation twelve feet in width throughout the length of the road, consisting of eight inches of flat rock over which another foot of broken stone was laid, and the whole covered and rolled with road rollers.

In all, eleven miles of road were entered in the competition by six municipalities. While all of these were not finished in time, the directors are well satisfied with the results of the competition. One of the sections entered was Dundas street.

The section of the road which earned the first prize was the worst piece of road between Toronto and Hamilton. The directors consider that the stimulus given to Etobicoke township has been an important step in securing a good road along the Lake Shore to Hamilton and the Falls.

In the course of his report Mr. Campbell comments as follows: "In the opinion of your committee, the competition has done much to awaken a more intelligent interest in the matter of road-making and road-expenditure. In nearly every section where entries were made keen interest was manifested and much attention directed to the subject, which will be of lasting benefit. During the carrying out of the work the fundamental principles of road-making, heretofore largely lost sight of, were closely observed and their benefits appreciated. Implements were used in forming the roads, preparing the material and applying it to the work which have been read about but not used by rural municipalities. The necessity for such implements and the importance of observing the principles laid down in the rules of your competition have been so forcibly impressed upon those in charge of the work as to have formed a text-book for their guidance, and have so impressed these axioms upon them that we have no hesitation in saying that as object lessons to guide the work of the future in these localities a valuable service has been performed.

"Good roads are largely a question of cost. The greater the expenditure the more rapidly can the highways be improved. By adopting the best and more efficient methods the cost can be reduced. Proper principles of construction, the preparation of suitable materials and the knowledge of the quantity required and its proper application to the road surface, and the formulating of the system for the care, protection and maintenance of roads, once properly made, form the text which your committee feel should be urged upon the attention of all those in charge of our road management."

The only other highway outlet from Toronto in need of improvement is the Kingston road, and it is probable that the Ontario Motor League will take steps next year to have the Norway hill, which has been in a very bad state for a number of years, put in good condition.

PROMISING CONDITION OF AUTO INDUSTRY IN CANADA

TORONTO, ONT., Nov. 25.—Present conditions in the automobile trade in Canada seem to indicate a favorable amount of business for the coming year, considerable in excess of that done during the past year. All of the cars represented in Canada this year, most of them American makes, will be represented next year, while there are a number of additions to the field. New manufacturers are also springing up.

One of the most notable additions to the automobile manufacturers in Canada is the McLaughlin Carriage Company, the largest carriage concern in Canada, which has been in business for upwards of fifty years. This concern is capitalized at \$1,500,000, and has just completed arrangements to manufacture an American make of cars in Canada. The company began experimenting in the automobile business a couple of years ago, the intention at first being to produce a new type of car. Large additions to the plant have already been erected and the necessary machinery installed.

The Canada Cycle & Motor Company, manufacturers of the Russell car, are turning out 400 cars for the coming season. The Russell is well known in Canada and has an established sale. It is purely a Canadian car and has been on the market some years.

The Chatham Motor Co., of Chatham, which began business this year, state that they will produce 125 cars next year. The Chatham is also a Canadian type of car.

The Comet Motor Company will next year considerably increase its output. The company makes a car of European de-

sign called the Comet. This car ranks with the high-class cars made in Europe and retails in this country at \$5,000.

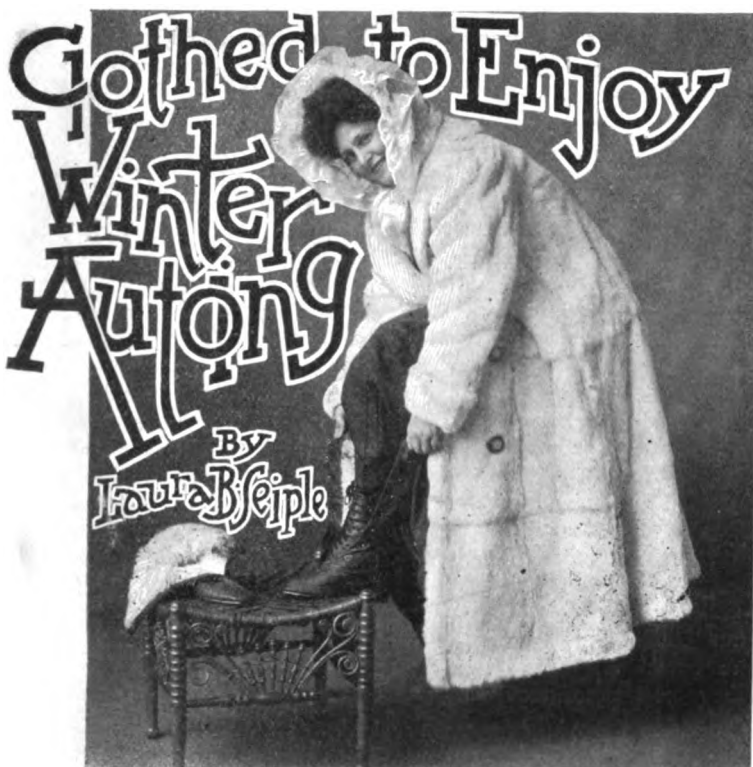
The Ford Motor Co. of Canada, Walkerville, Ont., is specializing on the Ford four-cylinder runabout, which it will produce in considerable quantities. This company has opened a selling branch in Toronto, where they have a garage 60x120 feet.

The Olds Motor Works of Canada has moved its sales headquarters, in charge of Frederick Sager, to Toronto, where it occupies large new quarters.

A new manufacturers' concern just incorporated is the Toronto Automobile Co., which intends to build a plant at Port Arthur. It is capitalized at \$100,000.

Among dealers the Dominion Automobile Company, of Toronto, Montreal and Winnipeg, will specialize on the Packard, Maxwell, Stevens-Duryea lines. The Automobile & Supply Company will handle, among other lines, the Pierce, Stoddard-Dayton, and Royal cars. Hyslop Bros., who have erected a new garage, will continue to handle the Darracq and the Cadillac. The Standard Automobile Company is a new concern which will handle the Peerless and Chatham cars.

In Montreal the Eastern Automobile Company will handle the same lines as the Dominion Automobile Company in Toronto. W. P. Kearney will sell Darracq and Olds cars. The Wilson Automobile Co. will sell Pierce, Franklin, Buick and Humber cars, and the Automobile & Import Co. the Reo. Other agencies are now being arranged for the coming year.



READY FOR THE OPERA, WITH COAT OF WHITE CONEY.

HAPPILY automobile fashions for cold weather have reached saner proportions than autumn styles boasted. All the superfluous furbishings that a short time ago were high in vogue have disappeared from garments designed for the woman of discriminating taste. Such details as were found a hindrance rather than comfort have been eliminated, and apparel for use in the automobile has assumed practical styles in general. Fashion autocrats are directing more attention to lines than to ornamentation; as a result the fur or leather garment that once was heavy and awkward is now transformed into a fashionable outer wrap; so perfect in style and finish that it may be worn on almost any functional occasion where such demands are made. Furs, leather, and cloths of lighter weight but of no less warmth have supplanted heavy materials that made the motor coat a clumsy burden.

The well dressed woman who rides in an automobile chooses her apparel for the pleasure with as much care as she exercises over her handsomest evening raiment. She never loses sight of the fact that she must be warmly as well as becomingly clad. And with the great diversity of fascinating styles at her disposal she may own an outfit becoming to her particular style, and not depart so very far from what her personal fancy dictates. Capricious styles in coats and head coverings are many and varied. And one may wear just about what she prefers so long as she keeps within certain bounds of conventionality. On the other hand, if one desires extreme simplicity in the matter of dress there is also a wide range of attractive styles from which to make choice.

Furs of Every Description for Automobiling.

Furs of almost every description are now being employed in the making of automobile wear. Of the new pelts initiated for the purpose during the past year, Russian pony is perhaps highest in favor. A successful process in treating the skin renders it soft and glossy, resembling, as it does, broad-tail or baby lamb. When finest selected skins are used the appearance is so deceptive that often the garment is admired under the name of baby lamb, the observer not appreciating

the difference even at close range. The accompanying illustrations include a long coat of choice skins of which only the small moiré markings are used. The luxurious black lynx shawl collar and sleeve garnishments add much to the attractiveness of this sumptuous garment. Fancy metal buttons decorate the double-breasted front. A full satin lining finishes the inside.

Very stunning is the natural seal coat, with Gibson effect shoulders and picturesque hood lined with soft gray leather, which same material again appears on the sleeves. The hood may or may not be used, but for stormy weather it makes a capital head covering, protecting the face, as shown in the reproduction. The same style coat may also be had in sable marmot at lower cost than this superb garment commands. Going from one extreme to the other in the realm of fur coats, let me inform my readers that there is a splendid example of what can be done with inexpensive furs in a full length coat of wombat, and, cheaper still, is a black dog skin coat. These garments receive the same amount of workmanship in the cut and finish as do those many times exceeding their cost. A very comfortable one may be had as low as \$35.

Leather Has Lost None of Its Prestige.

Leather has lost none of its former prestige. Many of the season's smartest coats are fashioned of Scandinavian leather lined with light weight fur of one kind or another. If there is any preference given to color it extends towards olive green, although one sees leather coats in nearly all the fashionable dark tones. The Empire back is liked for this particular garment, the probable reason being that the weight then swings from the lower part of the yoke or baby waist, and not from the shoulders, as is the case in wraps cut on long, unbroken lines. The photograph pictorially describes the style referred to. This particular model is lined with marmot. Other leather coats in tan, red, gray, black, and blue-gray are attractively lined with genetete, which reduces the cost somewhat.

Automobile coats in cloth present many models for purchasers to select from continually, as this class garment is in demand the year through. Of these a number of stunning coats have appeared in two-inch block checks of tan and brown. Running down the back is a bias seam, the shoulders well fitted and flaring, and from a few inches below the shoulder line is an outward spring, which affords ample roominess below the waist-line, continuing to the bottom of the hem. Stitching is the simple finish on the edges of the two-inch strap of cloth that covers the back seam. Tailor stitching also finishes the sleeves, and often the two open fronts. From six to nine buttons, according to size, are required for the front fastening, and these are either of metal or leather covered. Any light weight fur may be employed for

NATURAL SEAL, WITH HOOD
Courtesy Scandinavian Fur & Leather Company



RUSSIAN PONY, BLACK LYNX TRIMMINGS.

turned back into two small triangles finished with a cloth button on the extreme points of each. A wide turn-down collar of green cloth lined with satin finishes the high neck where it closes with a stitched tab. Two-sided cloths of unusual thickness enter largely into the making of simple automobile coats. They come in a large variety of charming color combinations. One of the favored is in tan with a green stripe about three inches apart. Fur collar and cuffs

lining, but the same color scheme must be faithfully carried out to keep the tout ensemble intact.

On a wonderfully stylish coat of blue and green plaid cloth the seams are finished with a strip of green broadcloth stitched twice on the edges and ending in points covered with crow's feet embroidered with heavy silk. A single box plait laid in the middle of the back and stitched on the sides gives a swagger finish to the bias cut. From the upper side seams spring two circular sleeves or deep caps lined with green satin corresponding with the green inner lining of the coat. The corners, both back and front, of this cape-like sleeve are



SCANDINAVIAN LEATHER, FUR LINED.

complete cloth garments of this character, raccoon being much used. One of the most recent creations introduced by representative makers of smart apparel for motoring is a fifty-four inch white Coney coat lined with white satin and ornamented down the double breasted fronts with fancy metal buttons. Such a garment may be worn to the opera or any other functionary gathering, and is one of the most sensible investments found in dressy wraps for every occasion. Accompanying this simple but elegant coat is a voluminous head covering made of chiffon and mousseline and having the attributes of the most exaggerated French hood, so far as be-

comingness is concerned. Besides it is wonderfully comfortable in extremely cold weather. The same model is made with fur lining, which will render it sufficient protection in severest weather. Long leather boots lined with genetie or muskrat cover the evening slipper and close with patent clasps, making them easy of access and most comfortable over sheer silk hose and low-cut shoes.

Accessories of all kinds were never more varied. The average woman considers her hat, veil, gloves, and bag as much a part of her outfit as she does her coat. To own the most attractive details in dress for the use, one must examine all the new accessories that are brought out from time to time, and there are many. If you would save much time, it is advisable to patronize a reputable importer and manufacturer, where you may have your clothing matched up with the small fixings he will show you. There are numerous small dealers who fancy there are endless amounts to be realized in automobile apparel, and he will offer you all sorts of ridiculous articles, telling you at the same time they are imported from foreign marts, when in truth he has been sitting up nights trying to perfect something different. Very ridiculous are many so-called novelties that he exhibits. Any number of milliners have brought out absurd styles in headwear for which they ask enormous prices, and once you wear them you find their service lacking in almost every necessary essential for which they are intended.

If you do not feel that you care to purchase a handsome fur coat or leather dress, you can ride in bitterest weather in your street costume and furs with a chamois skin jacket under your coat and a leather bag lined with fur covering your limbs and hips. The particular bag that seems to meet all requirements is of black Scandinavian leather lined with opossum. This style opens at the side and may be released by pulling the clasps.

Hats vary in style and price, just the same as picture hats do. One may admire a blended muskrat cap with coquettish little brim and find it vastly becoming, while, on the other hand, one might see a sealskin hat of more attractive lines and find it impossible for the desired use. A shape with slightly full crown and visor front and back in blended muskrat is only \$10, while the same style in seal is \$35.

A vastly becoming little creation from Paris is in golden brown pony skin, and is featured among the newest innovations on account of the detachable hood that accompanies it. The model is fashioned after the shape of a close-fitting toque that may or may not be trimmed with aigrettes or quills or even velvet rosettes. When a touch of contrasting color is desired a bright wing adds just enough life to the soft brown fur to make it attractive.

Many persons suffer from dust and cold air penetrating the throat and lungs through the mouth. To overcome this unpleasant feature of automobiling there is a clever little silver wire screen mounted on an oval frame and attached to elastic cords which hold the protector in place. The illustration will give an idea of the position the mouthpiece takes when adjusted. Another innovation recently brought to light is the mica window with wire attachments for clasping to the hat or cap.



SILVER WIRE SHIELD FOR LIPS.

LETTERS INTERESTING AND INSTRUCTIVE

DID FREEZING CAUSE THIS JACKET LEAK?

Editor THE AUTOMOBILE:

[982.]—Our first freeze of the winter caught me with my radiator and all pipes full of water. The result, a cracked cylinder. I have examined it, and find that the crack is in the outer jacket only, and does not affect the compression. It, therefore, allows the water to spurt out, and I cannot use the car. I have a two-cylinder car, and the crack is near the end of the cylinder at the valve. Now, is there a fireproof cement that I could use to stop up the crack and make it water-tight? I might cover it with a metal paste were it not for the curved surface, which would make it pretty hard to completely cover. Kindly enlighten me. I have made the statement above that freezing is responsible for the crack. It may be that I am mistaken in this. My car was stuck fast for three days after the hard freeze, and it was impossible for me to turn the engine over. Finally it thawed out and I then drained all the water out and started the engine, and it ran for a very few minutes, not long enough for it to heat. Satisfied with things, and without making a thorough investigation, I left the car for the day, returning the next day and filling the radiator, cranked her up, and got a shower bath. Did the freeze crack the cylinder, or did my starting it up and causing the explosion in the chilled cylinder cause the crack? I don't believe this caused it, or it would have cracked the cylinder through and through, would it not?

Ft. Smith, Ark.

IGNORANCE.

There appears to be little doubt but that the freezing was responsible for the cracked water jacket, the difficulty in turning the engine over probably being due to the fact that the lubricating oil bound it at the low temperature. It is a peculiarity of breaks in wrought iron pipes caused by freezing that they do not always make themselves visible the moment water is sent through the pipe, so that a superficial examination would fail to reveal them; in fact, we have seen a case where the pipe stood a pressure of 10 to 15 pounds for almost half an hour before giving way, though when it did, the pipe opened more than 1-16 inch for fully three feet. This may be true of castings also.

Take a file and clean the metal round the break for 1-4 inch or so, and then apply a paste composed of one part sal ammoniac in powdered form; two parts flowers of sulphur, also powdered, and eight parts of fine iron filings. Mix with water into a paste thin enough to work into the crack easily, but still with sufficient body to stay where placed. This paste should be worked into the opening very thoroughly, and if it be possible to reach it from the inside so much the better; after filling the break, spread the paste over the cleaned outer surface about 1-8 inch thick. As this depends for its efficacy on rust binding the mass of filings and the broken surfaces, it must be allowed to stand for two or three days before using.

REGARDING SECONDARY CONNECTIONS.

Editor THE AUTOMOBILE:

[983.]—Being a subscriber of "The Automobile," I take the liberty of asking you the following questions: There being two terminals to every secondary winding of a spark coil, one leads to plug and what becomes of the other? Is it grounded on the primary circuit? If not a trade secret, what is the composition of the friction surfaces of such cars as the Cartercar and Lambert? Is there a car made that has friction transmission with direct (no friction) shaft drive on high speed?

W. C. BALL.

Kalamazoo, Mich.

One side of the primary and one side of the secondary of all high-tension wiring systems as employed on the automobile are grounded, or, to put it in another way, have a ground return in order to save wiring. To simplify the coil connections the secondary and primary are often connected, making a common ground wire for both.

We believe such cars as you mention employ an aluminum facing on the stationary friction disk and a special paper composition on the sliding friction wheel. The latter is probably a trade secret. The Gearless car, which employs what is virtually a friction planetary gear, has a direct drive on the high speed.

WHAT IS WRONG WITH THIS WIRING PLAN?

Editor THE AUTOMOBILE:

[984.]—I have a two-cylinder car. I have just bought a new coil (Pittsfield) for it. I enclose a diagram of the way I have wired it; have I got it right? I have only one battery wire running back to the coil. The other one goes to the transmission gear box for a ground wire, two wires to the plugs, and two to the timer, and it doesn't seem to work just right. Can you let me know through "The Automobile" if I am right? If I am wrong, could you give a small diagram in "The Automobile" of the correct way?

New York.

C. W. B.

You do not state whether you have made a ground connection from the coil or not, as one side of both the primaries and secondaries of both coils should be grounded to form a return path for the current. This ground connection is usually combined in one wire, the necessary interconnections being made on the interior of the coil box by the makers. Otherwise your diagram is correct, on which account we have hardly thought it necessary to reproduce it here. However, we think you could find a better ground connection for the battery than the gear-set housing; we should take this wire to some point on the frame or motor as near the timer as possible, as poor ground connections are often responsible for much ignition trouble.

DIMENSIONS FOR A FOUR-CYLINDER MOTOR.

Editor THE AUTOMOBILE:

[985.]—I am going to build a new engine for my car and would like to learn through the columns of your paper if I am on the right track before going ahead. I have taken your paper, and I think it is the best automobile paper that I have ever read. If there is anything wrong with the measurements given below, I would be very much pleased to have you correct them.

Four-cylinder, 4 x 4 inches.

Connecting rod, 8 inches.

Valves.—Exhaust, 1 5-16 inch. Intake, 1 1-4 inch. Lift, 5-16 inch.

Crankshaft, 1 3-8 inch. Two-inch bearing between each cylinder and 4-inch bearings at ends.

Piston, 5 inches long. Three rings 5-16-inch wide. Wrist-pin set 2 27-32 inches from top of piston.

Copper water jackets. What should the water space be around the cylinder? Would 1-inch space over top of cylinder and around valves be too much? What should the thickness of the cylinder wall be? What should the volume of the compression be? What should the weight and diameter of the flywheel be?

Woodstock, Ill.

A READER.

We think the design of your motor could be considerably improved by making the valves both 1 1-2 inches in diameter, and 1 5-8 would be better, with a corresponding decrease in the lift, which could be reduced to 7-32, or at most 1-4 inch. We should increase the crankshaft to 1 1-2 inches, and here again a still further increase to 1 5-8 inches for this essential would provide a much higher factor of safety and make a better motor. The bearings are also too small; we should use a 5-inch bearing at the flywheel end, with a 3 1-2-inch bearing at the opposite end and 3-inch intermediate bearings. We hardly think the dimensions you give for these would prove at all satisfactory in practice, as is evident from the liberal bearing dimensions given by a number of prominent motor builders. With a copper water-jacket less water would be required than with the usual cast-iron integral jacket and a 5-16-inch space should be sufficient, with a 3-4-inch space about the valves and over the head. One inch would doubtless prove excessive for this, assuming, of course, a normally efficient circulating system. The cylinder walls should be 5-16 inch and doubtless the average foundryman would not care to undertake to make them any thinner than this and guarantee the result. Making the compression space 30 per cent. of the total volume displaced by the piston would be approximating standard practice in this respect. A 16-inch flywheel, weighing 100 pounds, the greater proportion of this weight being in the rim, would give a very steady running engine; if

necessary to give greater clearance or for other reasons, the diameter could be reduced somewhat, keeping the weight the same. None of these dimensions is arbitrary or absolute and doubtless nine out of ten designers would modify them in some way or other, but the uniformly excellent results obtained from standard motors of the foregoing proportions, as well as from dozens of others which differ in various ways, shows that success in motor building is not merely a matter of following hard and fast rules.

AN ACCIDENT THAT WAS UNAVOIDABLE.

Editor THE AUTOMOBILE:

[986.]—I am enclosing you a rough diagram of what well may be termed an "unavoidable accident" that I witnessed on Broadway this morning. An untoward combination of circumstances made all ordinary precautions on the part of the drivers useless. The inci-

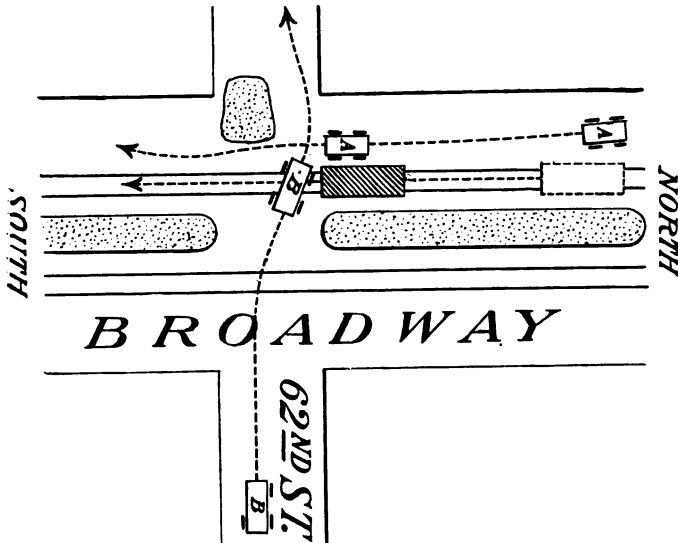


DIAGRAM SHOWING SITUATION OF CARS THAT COLLIDED.

dent is of interest as illustrating the multitudinous dangers of city traffic. When first observed, A was running south on Broadway alongside the street car indicated, also proceeding in the same direction. At that time B was half a block or more east on Sixty-second street, coming toward Broadway. An excavation in the center of the street is indicated by the irregularly shaped, shaded portion. The driver of A could not see anything issuing from Sixty-second street as the parallel-moving street car obscured his vision in that direction for an entire block. B could not see A for the same reason. Just as B reached the crossing, the street car came to a sudden stop and B, seeing his opportunity, passed in front of it, only to collide with A. The damage was confined to smashed lamps owing to the low speed at which both cars were traveling, and B was the one that suffered.

A. L. WESTGARD.

New York City.

WHAT ONE AUTOIST WANTS TO HAVE PRINTED.

Editor THE AUTOMOBILE:

[987.]—I want to thank you for your "1,000 Miles of New England," published November 7, in "The Automobile." It is this kind of articles that appeal to the practical autoist. I have taken for four years eight different automobile publications, and, if my memory serves me right, this is the second or third American article published. We have had trips through Italy, touring through France, autoling in England, etc., etc., finely illustrated and descriptive in character. We are told how to build cars, and the science of automobile construction has been detailed ad nauseam. Every automobile race and hill-climbing contest has been given in detail, but nothing practical for the everyday motorist. We live in foreign lands and all of our manufacturers are trying to see how near they can copy foreign cars. But the American spirit lies dormant.

Do not our publishers and manufacturers realize that some of our craft are "stay at homes" and are pining for domestic food? Less than 5 per cent. of autoists go abroad with their cars for summer vacations, and so are little interested in foreign auto trips. But we would like to know of and see in some of our auto publications illustrated articles, descriptive of routes, grades, and road conditions in such places as, viz.: To and from the White

Mountains by different routes; through the Catskills by different routes; through the Berkshires, by the several routes; Hudson river district; Connecticut Valley from Springfield to the Canadian line; and the forty other scenic routes. But up to date no publication or guide book gives the slightest clue, only thus saith the book: "From Smith's to Brown's, 41-2 miles, take left fork at Meeting house and follow telegraph poles," etc., etc., but nothing of road conditions or grades. I followed one guide book descriptive of routes, and while no mention of a hill was made, I found one one-half mile long with a grade from 12 to 18 per cent.

Now, what the practical autoist wants are illustrated articles telling him how and where to go. If to the Berkshires, how to start out; there are four ways, and all somewhat bad, one or two very bad, the worst, perhaps, over "Jacob's Ladder," where a farmer does or did do a thriving summer business pulling stalled cars up the hill. And yet, never to my knowledge, has any publication described it in any way or done anything to enlighten the autoist of the difficulty in negotiating it. The same is true of Crawford Notch, one entrance to the White Mountains, or Profile Hill, one outlet. There are lots of snares and pitfalls in the route of the autoist not warned against—hence articles like that just published by you are so welcome. Let's have more of the same.

Meriden, Conn.

GEORGE A. FAY.

WHY SWINEHART TIRE PRICES ARE REDUCED.

Editor THE AUTOMOBILE:

[988.]—It may be of interest to your readers to know that crude rubber to-day is selling at 35 cents per pound less than one year ago to-day. This is the lowest price which rubber has been sold at since November and December, 1903. The reduction in the price of crude rubber (we speak only of the best grades of Up-river fine Para) will undoubtedly cause a reduction of price of automobile tires and all other rubber goods in which large quantities of fine Para are used in their manufacture.

Owing to this reduction, the Swinehart Clincher Tire & Rubber Company has already announced a reduction in the price of its tires, to take immediate effect.

THE SWINEHART CLINCHER TIRE & RUBBER CO.,

Akron, Ohio.

B. C. Swinehart, Vice-President.

WIDE-TREAD CARS FOR SOUTHERN ROADS.

Editor THE AUTOMOBILE:

[989.]—Answering the inquiry of T. A. Ansley, regarding run-abouts for Florida roads we would say that the Premier Company has built cars with wide tread for Southern roads for the past three years. If the gentleman inquiring will call on, or address, the Owen Typewriter Company, Tampa, Fla., he will be able to get more information regarding a car such as he desires.

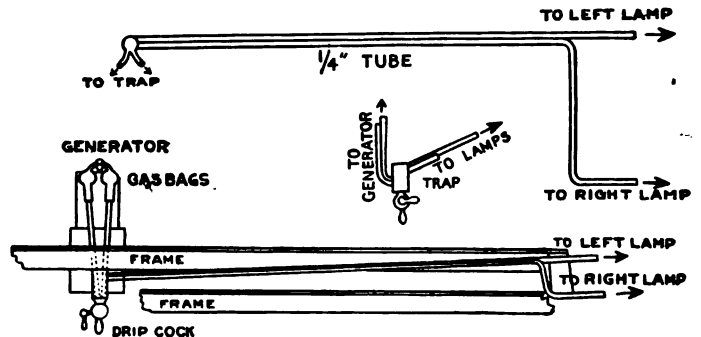
Indianapolis, Ind.

PREMIER MOTOR MFG. CO.

LAMP TROUBLES DUE TO DEFECTIVE PIPING.

Editor THE AUTOMOBILE:

[990.]—It is our practice to fully investigate thoroughly every complaint that comes to us, and in the past several years fully half of the gas lamp troubles are traced to defective piping. We are giving you herewith, for the benefit of your readers, a diagram of a correct system of piping, and it would pay all users of gas lamps to install the connections in this manner.



CORRECT SYSTEM OF PIPING FROM GENERATOR TO LAMPS.

Note that all pipes pitch down to drip cock. Pipes to each lamp should be independent, coming together at trap. Gas from generator, or tank, should enter trap below piping to lamps. Open drip cock at least once a week. Any repair shop can make and install the above, care being taken to fasten pipes securely so that there will be no chafing.

Amesbury, Mass.

GRAY & DAVIS.

THE BALTIMORE SHOW WAS MOST SUCCESSFUL

BALTIMORE, Md., Nov. 25.—Despite the gloomy weather and the financial stringency, the third annual automobile show, which closed last Saturday night in this city, was the most successful of the three. The class of people who attended were just the class the trade was desirous of coming in contact with, and many sales were reported by the local dealers. Several New York and Philadelphia capitalists were so encouraged with what they saw at the local show that they intend to do business in this town during the coming year. Many new agencies have also been secured. R. F. Kaehler and A. M. Eastwick, of Philadelphia, have formed a partnership to handle the Ford car in this city. The firm will be called the Ford Automobile Company, and has a capital of \$25,000. Mr. Kaehler believes that with a little hustling over \$200,000 worth of business can be done.

The Mar-Del Company has taken the local agency for the Buick. The Lambert Automobile Company has taken the agency for the Maxwell cars, and the Rice Auto Company has secured the representation for the Crawford line.

Among the out-of-town visitors were William H. Kirkpatrick, sales manager of the Peerless Motor Car Company; William T. Saylor, district sales manager for the Olds Motor Works; H. M. Cole, sales manager of the Autocar Company, of Philadelphia, and J. E. Duff and J. A. Lutz, of Washington, who arrived in the Oldsmobile roadster that made the 1,100 non-stop run in Washington, and which has traveled over 14,000 miles.

Owing to the fact that the door leading to the tea room of the Hotel Belvedere was too small to admit the Matheson chassis, the exhibit was taken to the show building and was the center of attraction. It was called the model for 1912. The Matheson Company has established an agency for their car at 1002 Morton street, and has secured the services of J. J. Mason.

The success of the show was something of an argument for the holding of shows early in the winter, and against those who contend for a later date. It has been decided to regulate the shows in this city by the dates selected for New York, Philadelphia and Chicago.

ECONOMY OF GASOLINE COMMERCIAL VEHICLES.

Demonstrations of commercial vehicles are far different things from the trials of the same name that pass current when the sale of a pleasure car is in question. The business man wants to be shown in no uncertain manner, and a good instance of how this is done is to be found in a recent four-day test made for Gimbel Brothers, a Milwaukee department store, by the Commercial Auto Company, representing the makers of the Logan trucks—the Logan Construction Company, Chillicothe, O., in Wisconsin. The tabulated results of the tests are given below and the table speaks for itself better than any description of the trials possibly could. As will be noted from this, nearly 1,000 packages were delivered in less than twenty-one hours' actual running time, with a consumption of 20 gallons of gasoline and 7 1-2 pints of lubricating oil. The car displaced three to four wagons with their corresponding drivers and helpers. The table follows:

Date	Routes	Wagons Dis- placed	Stops	Time	Gasoline	Oil
10/23 A.M.	East, Erie to North	3	100	1 hr., 20 m.	3 gal.	1 1/2 pt.
P.M.	East, Brady to City Limit	2	110	1 hr., 40 m.		
10/24 A.M.	South Side, inc. Bay View	3	80	2 hr., 30 m.	3 1/2 gal.	2 pt.
P.M.		3	75	1 hr., 15 m.		
10/25 A.M.	West Side to City Limit	4	160	2 hr., 30 m.	4 1/2 gal.	2 pt.
P.M.		4	186	2 hr., 15 m.		
10/26 A.M.	North Side to City Limit	4	150	4 hr., 45 m.	9 gal.	2 pt.
P.M.		4	120	4 hr., 30 m.		
		27	981	20 hr., 45 m.	20 gal.	7 1/2 pt.

NOW THREATEN TACKS AND GLASS.

ROCKVILLE, Md., Nov. 25.—Angered at the decision of Judge Henderson in the now celebrated Conduit road case, the farmers of the Potomac and Bethesda districts have made threats against the successful automobilists to the effect that they will

resort to scattering tacks and broken glass and stretch wires across the Conduit road, if it should become necessary, in order to prevent automobiles from running at dangerous speed thereon.

Marshall Collins, of Glen Echo, who had such a fine time in collecting money from the automobile owners, stated that since the case had been pending the autoists have been speeding at pleasure through Glen Echo, and that he has been recording their numbers. Now he threatens that, should an appeal be taken, and they win their case, he will haul the past offenders before his court and compel them to pay heavy fines.

ONCE MORE THE STATUS OF THE AUTO.

BOSTON, Nov. 25.—The town of Ayer in this State has appealed to the full bench of the Supreme Court for a decision which involves the question whether automobiles have the same rights on the highways as horse-drawn vehicles. The question came before the court on an appeal from a decision against the town in a suit brought by William C. Doherty, an automobile owner who was awarded a verdict in the lower court for injuries to his automobile, which sank ten inches into the sand on one of the town's roads and became stuck. Work was being done on the road at the time and the accident happened at night.

The town claims that it is not liable to a traveler in an automobile, as the highway statute, which provides for liability, only makes it necessary that a town keep its roads in a safe condition for travelers with horses, teams and carriages. The town further contends that the Legislature did not intend that municipalities should keep their roads up to the smooth condition required by automobiles. Doherty claims that an automobile traveler comes within the statute, and that the town is liable at any rate because of the defective condition of the highway.

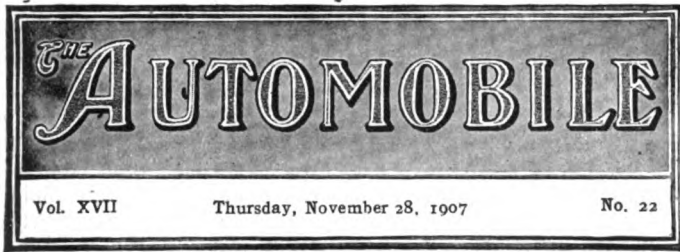
EXPERIMENTING WITH ROAD BUILDING MATERIALS

YORK, Pa., Nov. 25.—With a view to securing the very best limestone for the State highways—which means so much of an improvement for the autoists—the State authorities are conducting a series of tests of the York county limestones and other rocks and it has been found that they are almost perfect for the construction of good roads.

As far as the investigations have extended, limestones, as a rule, are too soft, and most of the twenty-eight varieties have too small binding or cementing value to be used alone. The ad-

dition of harder stone in equal proportions to the limestone, some of this stone of local origin, has led to very gratifying results. A number of experiments are now under way to prevent any mud or dust on improved State roads, and several of the recently completed sections have been treated with surface applications and with marvelous success.

The Postdam sandstone of the ridge north of Hellam was found to have even less binding or cementing value, though two-thirds harder than material required for durable highways.



THE CLASS JOURNAL COMPANY

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
LOUIS R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES:

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hilffe & Sons, Limited, 20 Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903, and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905	- - - - -	730,000
“ “ in 1906	- - - - -	791,000
“ “ this issue	- - - - -	18,000
“ “ since January 1	- - - - -	798,900

National Character of the Chicago Show. Ever since there have been two rival organizations in the field they have seen fit to bury their differences on at least one point, and that has been the matter of exhibiting under the same roof at Chicago, whence comes the claim of the latter city to house the only national show of the year held in this country. When first made three years ago this was looked upon merely as characteristic of the Windy City, and not as implying a great deal, but in the interim it has come to mean all that the word signifies, for in no other gathering of automobile and accessory makers of the year is there brought together such an imposing aggregation of manufacturers, nor one so truly representative of the American industry as a whole. The imported car was always a weakly exotic that found it hard to flourish so far from the Atlantic, and never cut much of a figure at the Chicago show; now it is practically a minus quantity, and in this respect Chicago's gathering has always had more of an American flavor than any of the Eastern functions.

In presenting the largest collection of automobiles and automobile accessories ever brought together at one time, to the public, Chicago does so imbued with that spirit of enthusiasm which is characteristic of the manner in which she undertakes anything, and which shows that a thousand miles, more or less, is almost sufficient to insulate her from the influence of Wall street. There is no cloud of depression overhanging the Coliseum and its numerous annexes such as cast a pall over the in-

itial Eastern event, and makers and dealers are arriving by the hundred, eager to do the business that they know awaits them, and confident that the outcome of next season will more than justify their plans. Chicago's show, as a whole, is the greatest achievement of the kind ever carried out in the shape of a purely industrial exhibition, and there is no doubt that the largest business ever done at an automobile show will be transacted during its week of strenuous activity.

Realizing that the two New York shows will be rolled into one at Chicago, many have waited for the Western exhibition rather than journey to the metropolis and spend double time. Here's to the hustling city on Michigan's shores!



Improving the Automobile Steering Gear.

Just as a chain cannot be any stronger than its weakest link, so the strength and reliability in action of the highest development in automobile design and construction has, as a limiting factor, some one part of the car, the failure of which means disaster to its occupants. It is generally conceded that this part is the steering gear, and, judging from the overlong list of fatalities attributed to it, the type of construction favored by current practice would appear to be lamentably deficient in more than one respect. Doubtless the chief of these is the fact that the weight of the car is, perforce, borne on an accessory construction, so to speak, rather than directly on the axle, as has been the custom with horse-drawn vehicles from time immemorial. In other words, the inherent weakness of the present-day automobile steering gear would appear to be centered in the use of steering knuckles. Theoretically speaking, this may be true, and the fact that two inventors have evolved devices in which the load is borne directly by the axle, demonstrates the fact that the steering knuckle is not an unavoidable evil.

However, the frequency with which other and equally essential parts of the steering gear are found to be at fault, while these reputedly weak members remain intact, amply indicates that improvement is not a matter of reforming practice in one respect alone. Starting at either end, whether at the steering knuckle or the steering mechanism itself, there appears to be no doubt that considerable refinement in detail must be brought about before the high speeds of which the automobile is capable can be characterized as safe. High speed in itself is naturally an element of danger, and many of the casualties hastily attributed to "a defective steering gear" have been due rather to the car's speed than to any failure of its parts. Nevertheless, that there is a great deal of room for improvement is strikingly illustrated by the many casualties in which the steering gear really proved to be at fault.



The Need of a Strong National Organization.

If the automobilists of this country desire to bring about uniform laws governing the use of motor-driven vehicles and the building of good roads over which to drive them, they must realize the absolute need and great influence in these directions which can be secured through the strengthening of the American Automobile Association by the formation of clubs wherever possible and the addition of these clubs to the various State bodies, either formed or now in process of formation. The club wields a powerful local influence, the State association holds sway in State matters, and the national organization, while continuing the pioneer work of establishing new State bodies, finds time to assist, within its powers and scope, the State associations already at work. No administration of the A. A. A. ever deserved so well the support of automobilists generally, including the manufacturers, as the present continued régime headed by William H. Hotchkiss. Only by local, State and national organizations can things be accomplished, and this is exactly the plan of A. A. A. work, and its efficacy is plainly illustrated by an increase of over 11,000 in membership in less than a year.

A. A. A. CHAIRMEN AND EXECUTIVE COMMITTEE.

President William H. Hotchkiss of the American Automobile Association has announced the appointments of the chairmen of the following boards for the fiscal year beginning December 1, 1907:

Legislative Board—Charles Thaddeus Terry, New York.
 Good Roads Board—Robert P. Hooper, Philadelphia.
 Touring Board—Frank B. Hower, Buffalo.
 Racing Board—Jefferson DeMont Thompson, New York.
 Technical Board—N. H. Van Sicklen, Chicago.
 Publications Board—A. G. Batchelder, New York.

The selection of chairmen for the Legislative, Good Roads, Touring, and Racing boards are reappointments, while the Technical and Publications boards are new, having only recently been authorized by the Board of Directors.

The Technical Board will conduct during the next year several contests of a technical nature, and as soon as organized will frame rules and plans accordingly.

The duties of the Publications Board will rest chiefly in the preparation of the A. A. A. Year Book for 1908.

The chairmen of the boards are now selecting the committee members to be nominated to the president for appointment and approval by the Board of Directors.

President Hotchkiss has also announced the new Executive Committee of the association, which will have charge of the association's affairs for the fiscal year beginning December 1, 1907, subject to approval at the regular quarterly meetings of the entire Board of Directors. This committee comprises seventeen members, or ten more in number than its predecessor, this increase having been authorized at the recent annual meeting. The membership now consists of four officers, six chairmen of boards, and seven directors at large, as follows:

William H. Hotchkiss, Buffalo; Lewis R. Speare, Boston; George E. Farrington, East Orange, N. J.; Charles T. Terry, New York; Asa Paine, Minneapolis, Minn.; N. H. Van Sicklen, Chicago; Jefferson DeMont Thompson, New York; Frank B. Hower, Buffalo; Robert P. Hooper, Philadelphia; A. G. Batchelder, New York; Stanford L. Haynes, Springfield, Mass.; F. T. Sholes, Cleveland; Paul C. Wolff, Pittsburgh; Harry M. Rubey, Macon, Mo.; L. E. Myers, Chicago; James T. Drought, Milwaukee, Wis.; Frederick H. Elliott, New York.

The geographical distribution of the committee covers ten States, of which there are six in the Middle West. The first meeting will be held in the First Regiment Armory, Chicago, Friday, December 6, at which time the policies of the association for the ensuing year will be discussed.

The plan of government of the American Automobile Association provides for the election by the local club of its directors in the State body, with the State boards of directors naming representatives on the national board. The clubs are supreme locally, looking after affairs in their respective territories, the State associations attending to State matters, with additional help supplied by the national board.

About four-fifths of the membership of the national board is nominated directly by the State bodies, the others representing unfederated clubs in States wherein organization is yet to be effected. The plan has proven its feasibility during the past year, the A. A. A. having more than doubled its membership, with the number of State bodies more than trebled.

ENGLAND ABANDONS LIMITED FUEL RACES.

LONDON, Nov. 19.—Announcement is made by the Royal Automobile Club that no further Tourist Trophy races will be held on the Isle of Man on a limited fuel basis. Next year an endeavor will be made to conduct a speed event of about 350 miles, providing the permission of the authorities of the island can be obtained. The race will be based on maximum bore and minimum weight, rating not to exceed 64, with the formula $D2n$ (D the diameter of cylinder in inches and n the number). Minimum weight will be 1,800 pounds, exclusive of driver, spare parts and tools. The event has been dubbed the "four-inch race," for that will be the bore obtainable under the rules.

SUDDEN DEATH OF GEORGE H. DAY.

George H. Day, who had recently resumed his active connection with the automobile industry by again becoming a member of the executive committee of the Association of Licensed Automobile Manufacturers, died suddenly of heart disease at Daytona, Fla., on Thursday, November 21.

Mr. Day was a prominent figure in the American automobile industry from its inception, as it was he who brought the A. L. A. M. into being, and it was his executive ability, as manager of the association, that developed its possibilities and influence to the present state of efficiency. He served in this capacity up to the winter of 1906, when he retired on account of ill-health, going to Florida to recuperate, but at the request of a number of his confrères in the association again became a member of the executive committee last summer.



GEORGE H. DAY.
 Photo taken at Daytona,
 Fla., January, 1907.

Mr. Day was born in Brooklyn in 1848 and was a graduate of Hobart College. He was appointed vice-president and general manager of the Pope Bicycle Company by Colonel Albert A. Pope when the latter acquired the old Weed Sewing Machine Company, and later became president of the Electric Vehicle Company, from which he resigned to guide the destinies of the licensed association. Mr. Day was a director of the Ætna Life and the Phoenix Mutual Life Insurance companies, the American National Bank, the Fidelity Trust Company, and the Society for Savings. He was a trustee under the will of Mrs. Elizabeth Colt, and secretary and treasurer of the Colt Bequests Board of Trustees.

He was a member of the Aldine, the Engineers', the Lawyers', the Alpha Delta Phi, and the New York Athletic clubs, and the Automobile Club of America. His wife, who was Miss Katherine Beach, daughter of J. Watson Beach, and four children survive him. The funeral services were held at his late home in Hartford.

EVENTS DURING THE CHICAGO SHOW.

Wednesday, December 4, 10 A.M., Meeting Executive Committee of N. A. A. M., First Regiment Armory.
 Wednesday, December 4, 11 A.M., Meeting Committee of Management American Motor Car Manufacturers' Association, New Southern Hotel.
 Thursday, December 5, 10:30 A.M., Meeting Mechanical Branch A. L. A. M., Chicago Athletic Club.
 Thursday, December 5, 11 A.M., Meeting of Executive Committee American Automobile Association, First Regiment Armory.
 Thursday, December 5, 2:30 P.M., Meeting Illinois State Automobile Association of A. A. A., Chicago Automobile Club.
 Thursday, December 5, 8 P.M., Meeting Chauffeurs' International League of America, Auditorium Annex.

The Paris Prefecture of Police has recently enforced the law against smoking exhausts on automobiles with severity. Several drivers have been fined heavily and have in one or two instances been sentenced to prison for short terms. To use search lights within the city limits or to operate a siren, except in the open country, are two other offenses never overlooked by the bicycle "cops." This has, however, so long been recognized that only foreign visitors are now caught.

A NEW VOCABULARY FOR A NEW INDUSTRY

"BY what authority came the word chauffeur to be foisted on an English-speaking public?" The question is often asked privately and from time to time some indignant pure-speech-loving enthusiast echoes the same query through the columns of the daily press, with an appeal to the potentate of the blue pencil to use all his power and influence to exterminate the foreign intruder.

There are about a dozen other words, as foreign to the average man ten years ago as ancient Greek, which have gradually slipped into everyday use until to-day they pass unquestioned, and have, by their mere persistence, earned a place for themselves in the latest editions of national dictionaries.

It is one of the rules of life that a nation which has the honor of introducing anything new in any department of activity should impose its own nomenclature. There are sufficient examples in our own products adopted by speakers of other tongues and allowed to retain their native names to warrant accepting a few from outside. Because France got a few years' advance on the world in the introduction of the automobile she had to supply a new set of terms to cover the nakedness of her new creation. "Automobile" suggested itself, nothing being simpler than the combination of *auto*—self and *mobile*—moving. But before automobile was allowed to pass as a substantive it was used in connection with carriage, the new vehicle being a *voiture automobile*, or automobile carriage. As every noun in French must be of either masculine or feminine gender it had to be decided which class automobile should go into. As *voiture* is feminine some declared that automobile should be of the gentle sex, too; others took up the opposite side, and an academic division was produced. Even now it is not certain in the land of its creation, whether an automobile is a "she" or a "he."

"Chauffeur" is an interloper—an interloper who cannot give one solid reason why he should have been allowed to creep into the automobile language. Before self-moving road vehicles came into being chauffeurs were found only on railroad engines, steamships and stationary steam engines, their duties being to feed their charges with coal. Why the driver of an automobile should have been called a chauffeur it is difficult to understand, for his prototype on steam engines had nothing whatever to do with driving, that task being left to the *mécanicien*, and even the first automobiles, crude as they were, had little in common with a stokehole.

The further one goes back the less glorious is the ancestry of the chauffeur. In the dark days of the French revolution armed bands took advantage of the weakened executive power to roam through the land and rob all and sundry. A favorite method of persuasion when the terrified natives refused to reveal the spot in which their treasure was hidden, was to *chauffe* or burn the feet of the unfortunates. Frequently, in those cold winter nights the *chaufferette* or bed warmer, was seized upon as the convenient instrument of torture. So extensive were the depredations of these bands that for a time chauffeur and brigand were synonymous terms.

A garage is merely a shelter, with nothing in its make-up to indicate that it has any connection with automobiles. The connection is easy to see between *garage* and *gare*, a railroad station. A garage line on the railroad is merely a siding; when it was necessary to christen the home of the automobile, it was more natural that the locomotive should be godfather and not the horse stable.

As at present applied, chassis is just a little younger than the automobile industry. In earlier days it designated any kind of wood or metal frame, from a wooden cucumber frame to the metal framework of a railroad coach. It is only by common consent that chassis has obtained its present-day significance; originally it meant the side members and cross sections, nothing more in fact than the framework on which the mechanical organs

are attached. Little by little its field of influence was enlarged, until now it is generally understood to mean the entire mechanical part of the automobile. Whether used in the singular or the plural, its termination is the same, *chasses*, which occasionally finds its way into print, being altogether incorrect.

Georges Huillier, one of the directors of the Mors factory in Paris, is responsible for elevating the tonneau from a humble field of usefulness as a wooden cylindrical chamber for containing wine or beer, into a dignified position as part of the automobile. At a time when automobile carriage work was without form and void, Huillier produced a new design of body with rear entrance and rounded ends, to be fitted on the chassis in the rear of the driver's seat. Roughly it resembled a barrel cut across the middle; as no more suitable term could be discovered, it was called a barrel—for tonneau is merely the French for barrel—and has remained a tonneau, in the English language, despite radical changes in its design. In French modern side entrance touring cars have ceased to be known as tonneaux, the type developed from the rear-entrance barrel-shaped body being a double phaeton.

Down in the old-world Department of Correze, in France, known under the old régime as Bas-Limousin, the peasants wear a heavy full footed wooden sabot, known locally as a limousine. The district has also a particular type of closed carriage a sort of small stage coach, the design of which, in this unchanging country, has probably not been modified in ages. A coachbuilder from Limoges established himself in Paris, produced a new type of open vehicle and named it limousine in honor of his homeland. From an open vehicle the name began to mean a completely closed carriage and with the automobile its importance has grown until now it designates the most luxurious type of touring body; the peasant's wooden shoe, however, has not renounced its right to the title.

Bavaria appears to have given birth to the landaulet, with a type of vehicle fitted with a folding top, and known as a Landau, after the town of Landau, in which it originated. It was modified, slightly reduced in size, and a few more letters added to its title. Taximeter had to be created to meet a modern need for a handy term to designate a vehicle that will doubtless play an important part in every-day life. Some advertising agents appear to have assumed that a taximeter is a special type of automobile, forgetting that the box of clockwork in itself no more modifies the vehicle on which it is placed than the gas meter changes the nature of the gas. It is merely a combination of *taxi*, a tax and *metre*, a measure of distance, designating the instrument which taxes according to distance. On its introduction it occasioned a little trouble, some users being in favor of *taxametre* and others claiming *taximetre*; after some discussion etymologists declared the latter form the only correct one, and it has remained.

Jerome Cardan has long laid in his unknown resting place, and his mathematical researches have so passed into the sea of knowledge as to be almost forgotten as individual efforts. The universal joint which his fertile brain created, and which was first known as Cardan's joint or joint à la Cardan, was never in danger of dying out, but its application was somewhat limited and its admirers were few until the automobile came along and brought it into public favor, four centuries after the death of its inventor.

ARRANGEMENTS FOR THE CLEVELAND SHOW.

CLEVELAND, Nov. 25.—Although the date of the Cleveland show has been definitely set for the week of February 17, the Cleveland Automobile Dealers' Association held a meeting recently in order to decide upon some of the preliminary arrangements. George Collister, who has had charge of most of the Cleveland shows held in the past, will also have the management.

INCREASED ACTIVITIES OF LEADING A. A. A. CLUBS

PHILADELPHIA'S FORCEFUL A. A. A. CLUB.

PHILADELPHIA, Nov. 25.—Having just reached the goal set less than a year ago—the 500 membership mark—the Automobile Club of Philadelphia has decided to go ahead and endeavor to double this figure. Conservative to a degree, the Automobile Club of Philadelphia officials, while little heard of in the promotion of track and road events, is yet a powerful factor in the defense of autoists' road rights hereabouts and in the State at large, in route-making and the other details which add to the comfort of the tourist.

In this latter respect the club has done a grand work. Quietly and without the "press work" which has been such a marked help to the lesser local clubs, the Automobile Club of Philadelphia has gone quietly about its work of sign-boarding the main routes leading from Philadelphia to the neighboring large cities and resorts. At its own expense the Philadelphia-Trenton and Philadelphia-Reading routes have been thus marked, every point where a possibility of the tourist taking a wrong road exists having been decorated with a large signboard setting forth the distances to the nearest large towns and the directions. The roads to Gettysburg and Harrisburg, to the Delaware Water Gap, and to Baltimore are being carefully gone over by the club's agents, with a view of not only discovering the best and most direct routes, but of avoiding as far as possible the ubiquitous toll-gate, which makes touring to and from the Quaker City one continuous process of "digging down into one's jeans." As a result the club's committee having charge of this work has definitely abandoned the much-traveled route to the north via Easton and decided on that via Bethlehem as not only shorter but equally good and much less expensive. On this route, therefore, the club will set its markers.

The direct route to Baltimore via Wilmington being at present almost impracticable for comfortable touring, and that via Hanover and York much too long, the club's agents are at work on a compromise route which will be announced, when a short connecting link, now in poor condition, is put in proper shape.

The club's law committee, under the chairmanship of S. Boyer Davis, is also doing excellent work, having just issued a compact digest of the automobile laws of Pennsylvania and all adjacent States for the benefit of tourists. Besides this, the committee has done effective work in protecting the interests of those of its members whose rights have been endangered through the overzealousness of borough, township and county officials.

It is along these lines that the club's officers believe that the club's energies may be most effectively directed, and the result in the increase of membership gives evidence of the wisdom of their course. Without endeavoring to detract in any manner from the policies of other local automobile organizations, it cannot be denied that in the long run the benefits to automobilists generally—not excluding the trade—resulting from the efforts of the Quaker City's oldest automobile club, are becoming more and more apparent to the great army of "unattached" automobilists hereabouts. Therefore it can hardly be said that the 1,000 membership mark which the Automobile Club of Philadelphia officials have set as a goal, and which they expect to reach by the close of the year 1909, is not too ambitious.

Long before that time, in all likelihood, the club will have built its own home. Indeed, the demand for a central headquarters such as the big New York organization now boasts is becoming insistent and the first steps toward that much-to-be-desired consummation have already been taken. Several of the club's more prominent members have for the past year been quietly looking over the ground, and it is quite possible that an official announcement along these lines will be made public early in the coming year.

COMPEL TOWNS TO PROVIDE SIGNBOARDS.

ALBANY, N. Y., Nov. 25.—President Oliver A. Quayle, of the New York State Automobile Association, has been on a legal hunt in the archives of New York's forgotten legislation, and as a result of the successful outcome of his quiet investigation he is now sending out notices to New York State clubs which will come as considerable of a surprise to the majority of their members—even those who follow the law. The act he ferreted out was evidently passed at the instance of cycling interests, and constitutes Chapter 330 of the Laws of 1895, being an amendment to the highway law relating to the erection of guide boards and posts upon highway intersections. It makes the erection of such signs a part of the duty of highway commissioners generally, and, what is far more important, provides that, upon the written application of any five resident taxpayers of any town, or twenty resident taxpayers of any county, the highway commissioners shall have such signs erected as are requested in the petition, their further cost and maintenance being a town charge. Neglect or refusal to comply with such requests is punishable by a fine of \$25. That probably not one person in a thousand was aware of the existence of such a law is evident from the fact that so many clubs have been doing this work at their own expense. The law is as follows:

AN ACT to amend the highway law relating to the erection of guideboards and posts upon highway intersections.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Sec. 1. Section five of the highway law is hereby amended to read as follows:

Sec. 5. Milestones and guideboards. Commissioners of highways may cause mileboards or stones to be erected upon the highways in their town as they think proper; they shall also cause guideposts, with proper inscriptions and devices, to be erected at the intersections of such highways therein, as they may deem necessary, which shall be kept in repair at the expense of the town, by the overseers of the highways of the districts in which they are respectively located. Upon the written application of five resident taxpayers of any town, or twenty resident taxpayers of any county in which the town is located, to the commissioner of highways, requesting the erection of one or more guideboards at the intersection of highways in such town, the commissioner of highways shall cause to be erected at the intersections mentioned in such application, such guideboards, indicating the direction, distances and names of towns, villages or cities to or through which such intersecting highways run. Such application shall designate the highway intersections at which such guideboards are requested to be erected and may contain suggestions as to the inscriptions and devices to be placed upon such boards. The cost of the erection and maintenance of such boards shall be a town charge. If the commissioner of highways refuses or neglects, for a period of sixty days after receiving written application, to comply with the request contained in such application, he shall for such neglect or refusal forfeit to the town the sum of twenty-five dollars, to be received by the supervisor in the name of the town, and the amount so recovered shall be set apart for the erection of such guideboards.

WORCESTER CLUB'S ANNUAL BANQUET.

WORCESTER, MASS., Nov. 25.—The Worcester Automobile Club had its fifth annual banquet last Thursday night, and the members who have been at most of the annual affairs of the club say it was the best in the history of the club.

"Modes of Travel and Transportation" was the theme on which the after-dinner speaking was based. Frank Roe Batchelder was toastmaster. No speaker was obtained for the aerial topic, but a letter from Dr. Julian P. Thomas of the Aero Club of America was read, and this was a good substitute for an address. Secretary Frederick H. Elliott of the American Automobile Association spoke for the autoists. He devoted his address to the A. A. A., what it has been doing and what it intends to do in the future. He gave the members of the club and their

friends the clearest idea of the work of the A. A. A. they have received in a long time.

Speakers on other lines were: Steam railroads, Charles A. Waite, general agent for the Boston & Maine Railroad; electric railways, Edward G. Connette, general manager of the Worcester Consolidated Street Railway Company and of the New Haven trolleys in this section of the country; John F. Kyes spoke for the bicycle and told stories of the precursor of the automobile; Attorney Webster Thayer spoke for the horse and his drivers; and Representative Robert M. Washburn spoke for the people who walk.

A feature of the banquet was a string of parodies on popular songs, with grinds on the officers and members of the club. Dr. A. J. Harpin led in the singing and the company was strong on the chorus of each.

President W. H. Chase of the Wachusett Automobile Club of Leominster, Attorney Francis Hurtubis, Jr., of Boston, counsel for the Massachusetts State Automobile Association; Mayor John T. Duggan, who responded for the city of Worcester, and Chief David A. Matthews of the Worcester Police Department were guests of honor at the banquet.

BAY STATERS TO DISCUSS PERTINENT SUBJECT.

BOSTON, Nov. 25.—The Bay State Automobile Association will open its winter social season next Saturday evening with the first of a series of smoke-talks, open to members and their friends. As there is no apartment in the clubhouse on Dartmouth street capable of holding a large assemblage, the meeting will be held in the Hotel Oxford nearby. The subject selected for discussion at the opening gathering is "The Co-operation of automobile clubs in the enforcement of the automobile law." This is a subject of great interest to all automobilists, and the association has secured as leaders in the discussion Chairman W. E. McClintock of the Massachusetts Highway Commission, which administers the automobile law in this State; Lewis R. Speare, vice-president of the American Automobile Association and chairman of the legislative committee of the Massachusetts State A. A., and Mr. Crowley, a young Boston attorney who has made a special study of the automobile law.

The association is also making preparations for its annual banquet, which will be held on the evening of December 10 at the Hotel Somerset. The committee in charge of the arrangements is assured of a good attendance and is planning to invite some prominent men in the automobile world to make the after-dinner speeches.

MASSACHUSETTS BODY CHANGES FISCAL YEAR.

BOSTON, Nov. 23.—At a meeting of the board of directors of the Massachusetts State Automobile Association, held in this city last Thursday, it was decided to change the date of the annual meeting from April to October, thus giving new officers all winter to prepare for their duties, instead of entering upon them at the beginning of the outdoor season. The directors also voted to adopt a new set of by-laws for the association. A general meeting of representatives of the various clubs which are members of the State association will be held next month, for the purpose of discussing the attitude which the association shall take in the subject of legislative matters at the next session of the General Court. Several important laws affecting automobilists will be proposed, and the association is thus early getting ready to look out for the rights of its members and all other automobilists.

ANNUAL DINNER OF LONG ISLANDERS, DEC. 6.

BROOKLYN, N. Y., Nov. 25.—The annual meeting of the Long Island Automobile Club will be held Wednesday, December 4, at 8:30 P.M., at which time annual reports will be read and officers elected for the ensuing year. The seventh annual banquet will be held Friday evening, December 6.

The Runs and Tours Committee announce that the touring season will close November 30. Odometers which were registered at the clubhouse at the beginning of the touring season, in connection with the mileage trophy, must be registered with the club's manager, Mr. Creighton, on or before that date. The committee suggests that members who have good mileage scores shall not overlook this requisite. The mileage trophy, offered by James Edward Bristol, will be presented at the annual dinner to the member whose odometer shows the highest registration. The touring trophy, offered by Willard P. Reid, will be presented on the same occasion to the member who has toured in the greatest number of States and provinces during this season.

SECRETARY BONNELL OUT OF DANGER.

NEWARK, N. J., Nov. 25.—H. A. Bonnell, the hard-working secretary of the New Jersey Automobile and Motor Club, who was recently operated upon at St. Luke's Hospital for appendicitis, is out of danger, and it is expected that he will be able to go to his home in East Orange in another week. It will be remembered that Mr. Bonnell was taken ill during the recent 24-hour endurance run of his club, but he insisted upon remaining on duty until the completion of the event.

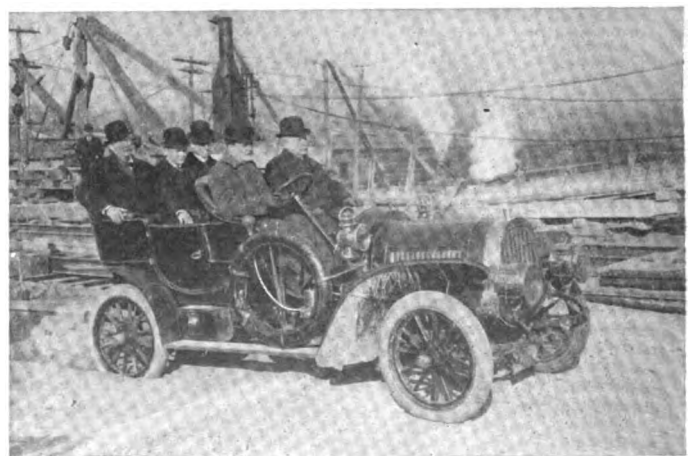
The club committee this week will decide on a design for the silver cups which will go to the eight winners, the Oldsmobile entered by R. A. Greene having been added to the list of clean-score cars. It was found that the observer noted the slipping of a clutch and charged the driver with the time he spent in putting chalk on the clutch to avert a repetition of the slipping. The motor of the car was not stopped.

A. C. OF BUFFALO ANNUAL MEETING.

BUFFALO, N. Y., Nov. 25.—The board of directors of the Automobile Club of Buffalo has amended the by-laws so that hereafter the board will consist of five members, instead of three members, and the officers, as has been the custom ever since the organization of the club. This action was deemed advisable on account of the big increase in the membership during the last two years. The annual meeting of the club will be held in the clubrooms the evening of December 16. Nominations will be announced December 1. The second entertainment to be given this winter will take place on the night of election.

FIRST TO NAVIGATE NEW HARTFORD BRIDGE.

HARTFORD, CONN., Nov. 25.—With Ralph Barkman, city sales manager of the Pope Motor Car Company, at the wheel, a new 1908 Model M Pope-Hartford car earned the distinction of being the first to essay crossing the new but yet incomplete bridge across the Connecticut river to East Hartford to-day, the photo showing the car and its occupants on the trip.



POPE-HARTFORD CROSSING NEW BRIDGE AT HARTFORD.



VICE-PRESIDENT FAIRBANKS, GOVERNOR GILLETT, AND SENATOR FLINT OF CALIFORNIA, AT STANFORD UNIVERSITY, PALO ALTO, CAL.

THE CHAUFFEUR'S MORAL CODE.

Realizing the fact that dissatisfaction over the service rendered by a commercial vehicle is due far more often to the driver than to any other cause, the Firestone Tire and Rubber Company, Akron, O., have prepared a code for the conscientious driver to follow. It is made in the shape of a large and very ornate certificate embellished with the usual seal and ribbon and is intended to be hung on the wall. Its preamble is as follows:

This certifies, that the Commercial Motor Vehicle Chauffeur possessing this document, has the interests of his vehicle at heart, and, unmindful of the yearnings of the Repairman and Junk Dealer, hereby adopts the following:

(1) I will not overload or overspeed my vehicle because this will be harmful to the mechanism and tires. I realize that a good rubber tire has a certain amount of "life," and if persistently over-worked it cannot recover.

(2) I will always keep the brakes working evenly and the axles and wheels "trued up." I can thereby save rack and wear on my vehicle and prevent unnecessary strain on any one of its tires.

(3) I will not allow oil or grease to accumulate on my rubber tires, as this will eventually cause decay.

(4) I will never expose my tires to burning heat, as the wear-resisting properties of the rubber would thus be destroyed.

(5) I will always remember to start my vehicle in a straight line before turning the steering wheel; because by turning front wheels when vehicle is standing still a heavy and unnecessary strain would be placed upon the tires.

(6) I will start and stop my vehicle gradually and avoid jerky motions under all circumstances.

(7) I will not persist in running my vehicle along street car rails, as that would grind down the edges of the tires.

(8) I will always, when possible, choose a smooth pathway, avoiding obstacles and road irregularities; and will cross car tracks preferably at an angle.

(9) As merely resetting or repairing a tire will, in many cases, double its life, I will have my tires attended to promptly when damaged, in order to secure the greatest amount of service from them.

(10) And above all things, I will use my influence to have my vehicle equipped with the best tires that are made—Firestone Side-Wire motor tires.

THE GERMAN EMPEROR'S NEW CARS.

Three new Mercedes cars have been recently supplied to the German Emperor, two for his own personal use and one for the Empress. Her Majesty's car is a 45-horsepower landaulet, while the Emperor has kept pace with the times by purchasing a very handsome six-cylinder of 75-horsepower, a huge touring car, able to fulfill his love for speed. The other vehicle is a 60-horsepower four-cylinder phaeton. The garage staff consists of three head drivers, seven ordinary chauffeurs, and ten servants, who accompany the drivers. All of these wear buff uniforms and the chief chauffeurs carry an armshield. The whole is under the management of Lieutenant Zeys, with Baron von Reischach, chief of the Imperial stables, at its head and Werner as chief chauffeur.

DENVER FRANKLINITES MADE MERRY.

DENVER, Nov. 25.—"Bilz" is not simplified spelling for those unwelcome visitors that Uncle Sam delivers around the first of the month—it's part of the cognomen of Charles Bilz, who is the Denver distributor of the Franklin cars, and whose garage is at 1432-38 Court place. A few nights ago he entertained Denver Franklin owners—gave them a right royal time, and he paid the Bilz. This took the form of a dinner and vaudeville show at the Albany and proved a most enjoyable affair. The menu card was novel and characteristic, the fun fast and furious, and according to all present everything was "all right." Denver owners are certain that Bilz is as good as the car he handles.



HOW IS THIS FOR FAST TRAVELING?

Autoist to Saint Peter: One and $\frac{1}{20}$ seconds from the earth! Isn't that a record.—*Blätter für Sport-Humor.*

AN IMPROVED FORM OF STEERING GEAR.

Quite a radical departure from current practice in steering-gear construction is represented by the Murray steering mechanism, here illustrated, and in which the load is designed to be borne entirely by the wheel and axle, so that shocks are not transmitted to the steering-gear. The wheel is pivoted on a trunnion placed in the hub and the axle terminates exactly in the plane of the spokes, the steering connections being made in the usual manner. The axle itself may be of any type, provided with a forked end to carry the trunnions. The latter are fixed to a journal with two bearing surfaces, a large one in the plane of the spokes and a smaller one, outside this plane. A spindle revolves axially inside this journal and is fixed in the hub of the wheel by a bolt.

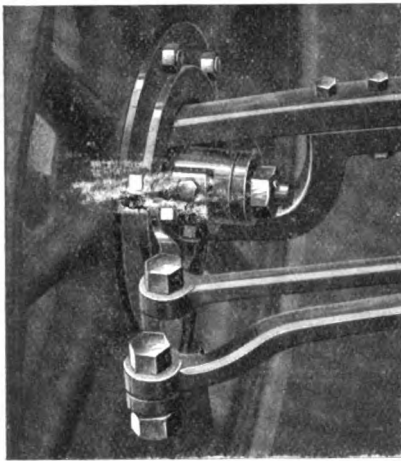


FIG. 1.—Illustrating the steering connections.

The wheel proper is made with a large recess to admit the larger diameter of the journal with its roller bearings, and a second recess for the other set of bearings. Forming part of the journal bearing is an arm engaging the reach rod of the steering system, by means of which the wheels are moved. Most of the weight of the car thus falls on the larger bearings, and these are reinforced by a second set in another plane.

The axle is rigid to the end and the latter point is brought within the plane of the wheel, carrying the load as if it formed a direct bearing for the hub, from which it will be apparent that it has been the aim of the designer to evolve a steering mechanism which shall combine all the manifest advantages of a simple wheel and axle, at the same time producing a method of steering that shall be more positive as well as more reliable than present practice permits. James E. Murray of McKeesport, Pa., is the inventor, and patents have been granted in the United States, as well as several foreign countries.

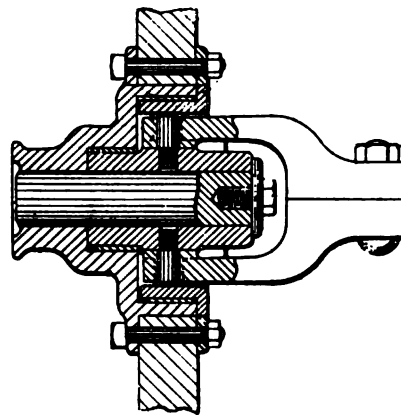


FIG. 2.—Details of wheel and axle assembly.

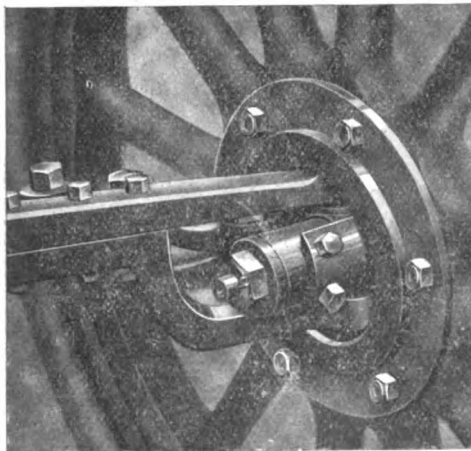
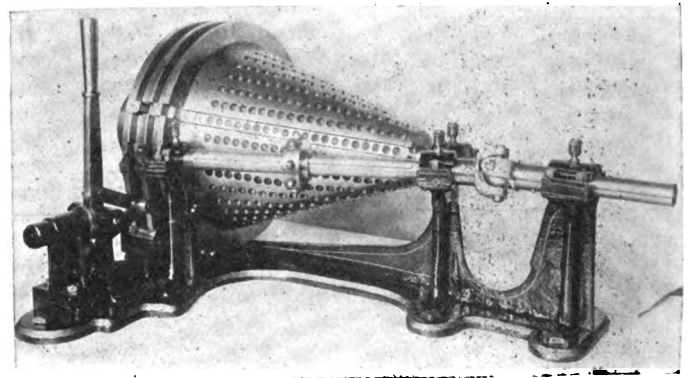


FIG. 3.—Method of mounting the wheel on the axle.

CHANGE-SPEED GEAR ON NOVEL PRINCIPLE.

The use of a cone has long been common in connection with belt-driven machinery for speed-changing, but the "R-W Speed Variator," which is illustrated by the accompanying photograph, is a novel departure from previous practice in this respect, in that it combines the principle of both the cone and gearing, thus insuring a positive drive. The method of effecting the speed changes is of considerable interest, having been very ingeniously worked out. The "gear-cone" is provided with a number of circumferential rows of "gear pits," while parallel with the slant of the cone is a shaft on which is feathered a spur pinion having pin teeth of a general conoidal form. This gear is movable longitudinally on its shaft, so as to bring it into mesh with any desired row of pits on the cone, thus causing the driven element, which may be either the gear or the cone, to rotate at a corresponding speed. The circular rows of pits are so arranged that one of each row is exactly in line with the correspondingly located pits in all the other rows. This straight or longitudinal series of pits is formed on a sliding bar capable of movement in either direction, a distance equal to the space between successive circular rows of pits. Consequently, if at the moment in the



NOVEL MECHANISM OF THE R-W SPEED VARIATOR

cone's rotation when the slide is parallel with the gear shaft the slide be shifted, it will carry the gear to the next row of pits. At the base of the cone are two grooves, which the slide crosses, while projecting from the slide into the grooves are two studs, the arrangement being such that when the slide is in its normal position these studs are spaced slightly from the rib between the grooves. Adjacent to the grooves are two oppositely inclined cams, each equal in width to the distance the slide must move to transfer the gear from one row of pits to the next, so that the cams engaging the stud on the slide will shift the slide the proper distance. These cams are mounted on the upper ends of two arms pivoted at their lower ends, the arms being connected by links to a controlling lever on opposite sides of the pivot of the latter, this method of connection making it impossible to throw both cams into the inoperative position, and to produce the necessary rotation the moment the operator releases the controller a spring-controlled plunger is provided. This has a flat face bearing against the controller on both sides of the pivot, so that oscillating the controller in either direction compresses the spring, and this, upon releasing the lever, immediately throws the lever to the inoperative position with both cams retracted. To restore the slide to the normal position after each actuation, an inclined member is provided at each side of the flanges at the base of the cone, against one or the other of which one of the side lugs strikes after passing the gear. As long as one of the cams is held in its groove each revolution of the cam will produce a movement of the slide and a corresponding shifting of the gear, so that the latter moves, step by step, up or down the cone, according to which cam is in operation. To prevent damage from failure to retract the cam when the last step is reached, this is withdrawn automatically by mechanism placed in the cone itself.

DEMONSTRATING A 14-H. P. WALTHAM.

Few better illustrations of what the modern light commercial vehicle of the gasoline-driven type can accomplish in the way of economy and reliability have ever been afforded prospective purchasers of such cars than the recent round trip of the 14-horsepower, water-cooled Waltham "Parcel Car," from the home factory to New York and return. On the run to the metropolis, the distance of 244 miles was made in 12 hours and 40 minutes on a fuel consumption of 15 gallons and one gallon of lubricating oil. Three passengers and a load aggregating 875 pounds were carried, in spite of which it was only necessary to drop to a lower speed on but four occasions throughout the trip, in order to mount particularly bad grades or overcome poor going.

The car was run to New York just prior to the opening of the Garden show and was run around the city throughout the week of the latter for demonstrating purposes. The car is friction-driven, and one of the favorite tests for showing its ability was to bring it to a standstill on the steepest part of the Fourth avenue hill, starting again on the high gear without first speeding the motor. Following the show, the car was taken to Newark, N. J., for the purpose of making demonstrations for the Newark agents, the H. J. Koehler Sporting Goods Company, one of its feats consisting of taking a hill that is said to be the favorite stamping ground of demonstrators in showing high-powered pleasure cars. The car was stopped and started again on the worst part of the hill.

On the return trip demonstrations were made at New Rochelle, N. Y., Waterbury and Hartford, Conn. On arriving at the factory the car was weighed and found to tip the scales at 1,600 pounds, and, with the load it had carried, 2,475 pounds. The car was dismantled and all its working parts examined. It was found that the 900-mile trip had not been sufficient to cause the slightest amount of wear on any of the parts, the high-speed bevel friction surfaces in particular not showing any perceptible evidences of the hard service. The car was immediately reassembled and a much more ambitious trip undertaken, as it was started on its way to Chicago, the plan being to use it for demonstration purposes during the show week there, November 30-December 7. Although the roads between New York and Chicago are in a most unfavorable condition at this time no doubt is felt as to the ability of the Waltham to accomplish the journey.

RECENT INCORPORATIONS IN NEW YORK.

Incorporation has recently been effected at Albany of the Recometer Company of America, with a capital of \$300,000, for the production and marketing of speed indicating devices. Directors are Frank W. Waggoner and Frank E. Carstarphen, 253 Broadway, New York; Daniel M. Miers, Hasbrouck Heights, N. J. The Fleur de Lys Automobile Company of New York has been incorporated with a capital of \$25,000, directors being F. Knowlton, 638 East 139th street; E. A. Monfort, 1350 St. Nicholas avenue, New York; E. D. Cronin, 277 Vanderbilt avenue, Brooklyn.



E. R. THOMAS ARRIVING AT HIS BUFFALO FACTORY IN A THOMAS TOWN-CAR.

THOMAS TO BUILD A THOUSAND TAXICABS.

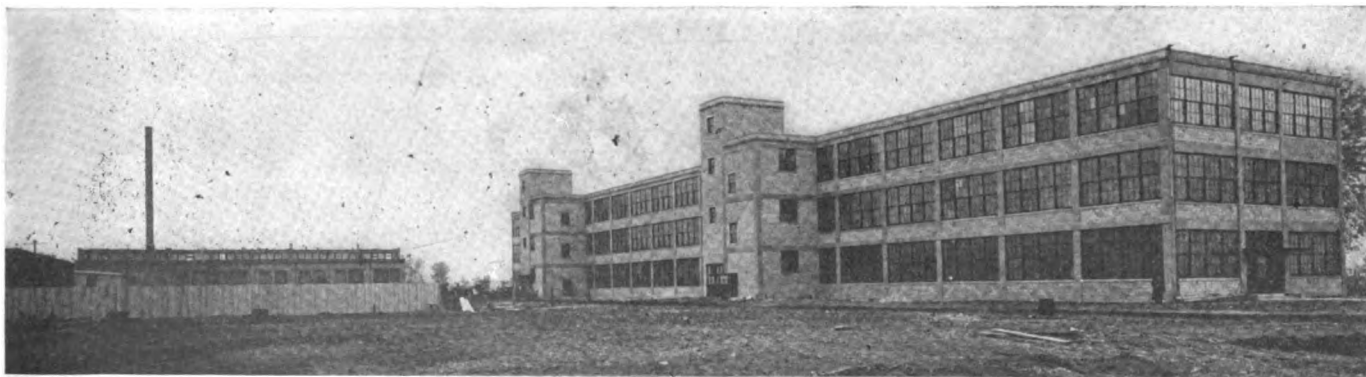
BUFFALO, N. Y., Nov. 25.—Announcement is made that the E. R. Thomas Motor Company has an order to build 1,000 taxicabs. It is reported here that two of the largest New York hotels will replace their hansom cabs with these cabs. Much new machinery is to be installed by the Thomas company in order to meet the sudden demand for this class of conveyance.

The Thomas Motor Cab Company has been incorporated to operate taxicabs. The certificate was filed in the County Clerk's office last week. It is capitalized at \$50,000. Directors are E. R. Thomas, E. L. Thomas, and Arthur Z. Mitchell, all of Buffalo.

E. R. THOMAS DETROIT CO. IN NEW PLANT.

DETROIT, MICH., Nov. 25.—The E. R. Thomas Detroit company is now operating in its new reinforced concrete factory out Jefferson avenue. The machinery has been turning for three weeks past and every department is now in full operation. Notwithstanding the delay incidental to moving from the old factory, production of the 1908 cars was carried on continuously, and deliveries have been going out to the agents ever since the first of October.

The rapidity of construction of this large plant is astonishing, as the contract was let May 15 and the plant was opened the latter part of September, fully equipped.



NEW REINFORCED CONCRETE FIREPROOF FACTORY OF THE E. R. THOMAS DETROIT COMPANY, ON JEFFERSON AVE., DETROIT.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

The Algonquin Motor Car Company, of Boston, succeeds the Henshaw Motor Car Company and will retain the same salesroom at 97 Massachusetts avenue, representing the Oldsmobile and Columbus Electric in New England.

One of Philadelphia's latest industries is that of tire-making, the product of the firm of Jas. L. Gibney & Brother attracting considerable attention at the recent show in the Quaker City. They are turning out side-wire types in singles and "twins" as well as the internally wired type in all sizes.

The Longacre Motor Company has succeeded the Manufacturers' Motor Car Company, at 54 West Forty-third street, New York City. H. Homey Hill is president of the new company, which has taken a lease of the adjoining buildings, at 44-52 Forty-third street, and will move as soon as alterations are completed.

The co-partnership heretofore existing between Harry M. Eastman and Ernest F. McCarthy, doing business under the firm name of H. M. Eastman & Company, Melrose, Mass., has been dissolved. Mr. Eastman will continue in the business, maintaining a garage and selling Cadillacs and Buicks.

The Northern Motor Car Company is also getting its selling force out on the road early, the following representatives already reporting a good business with excellent prospects. The territory is divided as follows: John W. Swan, Pacific Coast; L. E. Wood, Middle West; James H. Foster, Ohio and Indiana; A. G. Williams, East, including New England; J. L. Sternberg, West.

The progressiveness of the Continental Caoutchouc Company's manager, Joseph N. Gilbert, was in evidence at the recent Yale-Princeton football game, in the shape of a special Continental tire depot, temporarily established in Reichert's Palace garage, New Haven. Few events of any kind bring forth so many automobiles as came to the college city on that day, so that the foresightedness of the Continental manager in providing a stock of all sizes ready at hand to meet the emergency was apparent.

In chronicling the incorporation of the Regal Motor Car Company, Detroit, Mich., in THE AUTOMOBILE, November 14, the name was inadvertently put as "Royal" instead of "Regal," and while there is considerable similarity in the significance of the two words, the incorporators would naturally prefer to see the proper adjective employed. The company has been organized by Paul Arthur, trustee, and Robert Webster, with \$100,000 capital, \$51,000 of which has been paid in. Runabouts, touring cars, light delivery cars and town cars will be built.

The value of the automobile as a means of doing business is best realized by those connected with the industry, and while the ordinary salesman makes his rural rounds in an antiquated buggy with a "hay motor," or depends upon trolleys and accommodation trains, the up-to-date salesman gets over three times the territory in his car. This is the way in which E. M. McGookin, sales manager for the Stewart & Clark Manufacturing Company, gets over his territory in his Marion roadster, on which he has mounted an attractive polished metal sign bearing the words "Stewart Speedometer," so that all who run may read.

It sounds a bit paradoxical to say that insufficient inflation is sometimes the cause of tires "blowing out," but this comes from such an excellent authority as E. H. Broadwell, of the Fisk Rubber Company, who explains it this way: "When a tire is not pumped up sufficiently, the pressure of the ground on the under side has a tendency to loosen the several plies of fabric in the envelope of the tire, so that they rub together, or shuffle, as tire makers say. In this fabric, or friction cloth, is where quality and good work count tremendously for tire economy, and this is the reason Fisk tires are more expensively made and have one more ply of friction fabric than others of the same diameter. The rubbing together, or shuffling, of two plies causes the threads to break and so weakens the casing that the inner tube, with its high pressure, bursts through, or blows out. Old tires, therefore, more than new ones, should be properly inflated; not too hard, nor yet slack."

Figures recently compiled from the State automobile registration lists in Illinois and Wisconsin, show that the Rambler, made by Thomas B. Jeffery & Company, Kenosha, Wis., leads all other makes in numbers in those commonwealths. There are perhaps 13,000 cars registered in Illinois, but available lists show only 9,799, and of this number 738 are Ramblers. In Wisconsin the full registration, not including transfers, was, on August 1 of this year, 3,852. The Rambler leads in that State with 477. In Illinois complete figures have been difficult to get. Yet the total given covers the registration on practically all cars now in service. Next after the Rambler in Illinois in point of numbers comes the Cadillac with 658, while the Ford is third with 599. Illinois has 115 foreign cars and 369 electrics. Just 223 different makes are registered. Wisconsin official lists give the Rambler supremacy over all with a registration of 477. The others rank below the Rambler, as follows: Cadillac, 454; Oldsmobile, 232; Buick, 222; Ford, 221.

NEW AGENCIES ESTABLISHED.

The Commercial Auto Company, of Milwaukee, and of which O. A. Eskuche and Mitchell Mackie are the principals, has taken on the line of the Logan Construction Company, Chillicothe, O., for the State of Wisconsin for the season of 1908. The concern has secured temporary quarters at 1103 Grand avenue and already have a full line of the Logan cars on the road demonstrating.

That agencies for the "Silent Northern" are rapidly being closed up for the coming season is evident from the appended list of those who signed within the last week or two: Copeland & Taylor, Pontiac, Ill.; C. W. Evans, Dixon, Ill.; Noah Keeler, Wallace, N. Y.; A. H. Ritter, Iola, Kan.; Enid Automobile Company, Enid, Okla.; Wilson Automobile Co., Wichita, Kan.; Huron Automobile & Electric Company, Port Huron, Mich.

PERSONAL TRADE MENTION.

James R. Gilbert, formerly of the B. F. Goodrich Company, has entered the service of the Michelin Tire Company as assistant to C. C. Harbridge, manager of the Chicago branch.

Albert C. Galbraith has just entered the service of the Fisk Rubber Company and will travel from the latter concern's Philadelphia branch house, his territory consisting of Eastern Pennsylvania and Virginia.

Percy Owen, president of the New York Automobile Trade Association, has appointed Sidney B. Bowman a member of the committee on storage rates, the other members of this committee being W. H. Haradon, of the Victor Auto Storage Company, chairman, and G. A. Knowles, of the Locomobile Company.

J. Elmer Pratt has severed his connection with the sales department of the Cadillac Motor Car Company, where he has been for a long period as the general assistant of W. E. Metzger. Mr. Pratt, who has been a conscientious and hard worker, now intends to indulge himself in an innings of the open-air living, after which he will again get into harness.

T. F. Byrne, formerly manager of the Franklin Automobile Company, Chicago, has severed his connection with that concern to assume the management of the Eastern Automobile Company, Montreal. The latter company represent the Packard, Maxwell, Clément-Bayard and Napier cars and are also distributors of Diamond tires in that part of the Dominion.

PRES. OF THOMAS DETROIT CO.

Hugh Chalmers, formerly vice-president and general manager of the National Cash Register Company, is one of the most notable newcomers to the ranks of the automobile industry. He has acquired a heavy interest in the E. R. Thomas Detroit Company and becomes president of that concern, though Mr. Thomas still remains a dominant figure in the organization. The product will also continue to be marketed by the Buffalo house, which has already con-



HUGH CHALMERS

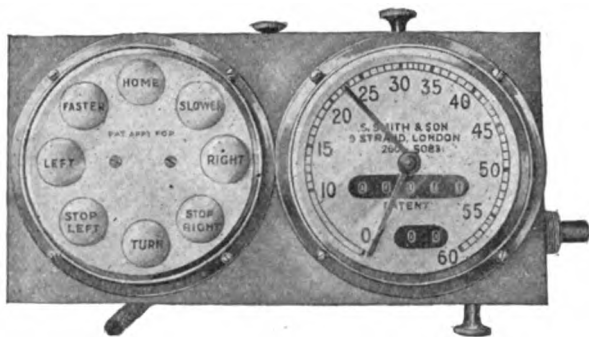
Newly Elected President of the
E. R. Thomas Detroit Co.

tracted for the entire season's output of the Detroit factory. In taking active hold in his new connection on December 1, Mr. Chalmers will bring to bear his wide knowledge of manufacturing and selling methods which he was instrumental in developing while with the Dayton concern, which is generally conceded to have the best selling force in the world. The other officers of the Thomas Detroit Company are H. E. Coffin, who is at present in Europe attending the London and Paris shows, F. O. Bezner, J. J. Brady, and R. D. Chapin. The output is to be greatly increased over that of the past season.

INFORMATION FOR AUTO USERS

Smith Speed Indicators.—For a number of years S. Smith & Son, Ltd., London, have devoted considerable attention to the development of speed and distance recording instruments, as well as electric communicators and auto clocks. The leader of their line is the Smith Speed Indicator, which has been for the past several years

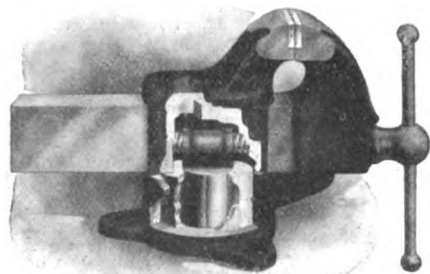
find their way into every repair shop. On this wise there are no levers, pins or wheels and no complicated mechanism—in fact, no more parts than the ordinary stationary vise. The material employed consists of a blending of the best iron and steel, this mixture making very tough castings and adding materially to the life of the vise—



SMITH SPEED INDICATOR AND ITS CONVENIENT DIALS.

the leading article of its kind in Europe, as is evidenced by the fact that practically every crowned head on the Continent, as well as the king of England, are users of these instruments. In design the Smith Speed Indicator differs radically from the usual American device. It operates on the principle of centrifugal force, a horizontal governor being rotated against a spring, three springs in all being employed—a weak one for low speeds and two heavier ones which come into action successively as the speed increases, thus making the instrument very accurate, as well as avoiding the necessity of cramping the dial at one side. The marking of the dials is done by hand, according to the indication of the pointer at known speeds, and the dial of each instrument differs slightly to compensate for the variation of the springs. The length of the dial circle is 8 1-2 inches, as compared with the usual semicircular marking, so that the reading is very clear.

Rock Island Vises.—The art of doing one thing well aptly describes the achievement represented by the line of vises turned out by the Rock Island Tool Company, Rock Island, Ill. They are made in a great variety of patterns, including several especially adapted to the needs of the au-



SELF-LOCKING ROCK ISLAND VISE.

tomobile repair shop. An automatic self-locking swivel type is specialized by these makers, and its unique feature of locking in any position set, by merely tightening the jaws, is something that will commend it highly to mechanics who have to contend with the numerous unusual jobs that

in fact, the makers are so confident of the high grade of the Rock Island vises that they will immediately replace any defective parts gratis, also paying return charges. A New York office, in charge of Wm. N. Briggs, has been opened in the Electrical Exchange building, 136 Liberty street.

Marvel Carbureter.—Being unable to secure ample space at the Coliseum, the Marvel Manufacturing Company, Indianapolis, Ind., makers of the Marvel carbureter, will hold an exhibition of their own at the Southern hotel during the course of the Chicago show. In the construction of the Marvel carbureters, a sectional elevation of one of the float types being shown by the accompanying sketch, the makers have given careful consideration to the matter of materials. In the body only the best grade of red brass is used, while the gasoline needle and float valve bearings are made of the finest rolled Tobin bronze. In its construction the Marvel embodies many exclusive features, such as the universal gasoline connection, which facilitates its mounting on any car without the necessity of making alterations; ease of adjusting the float or float valve, removing the bowl or draining the residue from it, all of which can be done without changing the adjustment of the carbureter in any way. An annular type of float is employed and by combining the short neck of the carbureter and the inside union connection, the designer has gained a powerful leverage with a very short fulcrum, thus preventing flooding and bounding. An equalizing spring has also been added to the float needle, which gives a floating balance and an ease of movement which prevents any jar arising from sudden movements of the float. For cleaning, it is only necessary to remove the bowl and loosen one adjusting screw to release the entire float valve, needle and its accessories without disturbing their adjustment.

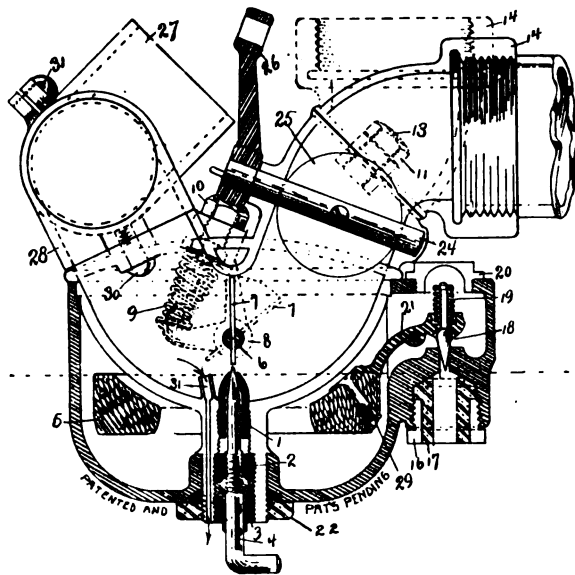
Sireno.—This is the title of a new siren signalling device which is being placed on the market by the Sireno Company, 39-41 Cortlandt street, New York. The external appearance of the instrument is shown by the accompanying illustration. The sound is produced by the familiar principle of centrifugal force, air being drawn through the front casing and expelled at the side openings, the current being generated by a rapidly revolving turbine driven by an electric motor. To operate, it is only necessary to push a button, the tone being regulated by the length of time the contact is made. It can be easily installed on a car, as it is only necessary to attach the instrument and connect it with the ignition battery. It



SIRENO (ELECTRIC) SIREN.

operates on a current consumption of three amperes and may be used in connection with a battery of six dry cells. It is made of polished brass, but can be supplied in any finish or plating to correspond with the other fittings of a car.

Beach Auto Vest.—This is a garment new to the automobile trade which is just being placed on the market by William W. Brown, Worcester, Mass., who is the sole owner of all machinery, patents and rights for the manufacture of the well-known "Beach" cloth, jackets and vests. The cloth is knit by a peculiar stitch that does not ravel or rip, and the vests are made with a heavy wool fleece lining. The cloth is elastic without being stretchy and in wear the garment conforms closely to the shape of the body. If soiled, the Beach



CROSS-SECTION ELEVATION OF THE MARVEL CARBURETER.

vests can be washed as often as desired without shrinking, something that can be said of very few knitted garments. The material is a hard-twisted double yarn, which gives long wear, and it is so closely



THE BEACH WARM-BACK VEST.

knitted as to be absolutely wind-proof. It is made with large pockets, the lower ones being lined with canvas, buttoning at the top with a snap, and adapting them for carrying spark plugs, coppers, or other small articles. It is made in both sleeve and sleeveless styles.

Reversible Auto Tags.—Owing to the perversity of some legislatures, State lines have become *real lines* to the autoist, who must see that his credentials are in the proper shape before driving his car over



REVERSIBLE AUTOMOBILE TAG.

the imaginary boundaries that mark the limits of jurisdiction of the different State authorities. To make the lot of the autoist easy where markers are concerned, H. E.

Asbury, Oak Lane, Philadelphia, is placing on the market the Asbury reversible tag, made to carry two different State numbers. In place of the usual flimsy fastenings, the holder is a permanent fixture solidly bolted to the car. The tag itself swings in brass bearings on a japanned steel back rod, to which are riveted two brass arms. After passing through two States it is only necessary to take out a single cotter pin with the fingers, swing open the top lever and put in a new tag, good for two more States, thus obviating the necessity of having the car plastered with hangers, or fastening them on temporarily as a makeshift, which not infrequently leads to a fine due to the loss of the tag.

Crown Soft Oil Soap.—The Crown Soap Company, Syracuse, N. Y., make a specialty of the production of genuine English oil soap, which is manufactured after a secret process known to but few. This company employs chemists who have been engaged in making this soap for more than thirty years past in England, where the secret of the process has been handed down from father to son in succeeding generations. Its chief use is as a preservative of highly finished surfaces and it has the quality of preserving varnish as long as it is used. It is equally valuable for removing grease from any surface and makes an excellent household and garage soap as well. It is an absolutely neutral soap of purely vegetable origin and thus contains no free alkali, which adapts its use on any highly polished surface, even such as that of a piano. Crown Metal Polish, made by the same firm, is an effective cleaner adapted for use on all metals, and which the makers claim does the work better and quicker, in addition to going further than any other compound of the kind on the market.

The American Speedometer.—One of the leading models included in the line of the Stewart & Clark Manufacturing Company, 502 Diversey Boulevard, Chicago, for the season of 1908, will be the American speedometer, which is the lowest-priced instrument of this kind ever turned out. There has long been a demand for a high-grade speedometer and mileage recorder at a popular price and there is little doubt that the makers are

justified in believing that the American at \$25 will fill all requirements. In bringing out this instrument, it has not been found necessary to curtail its size, the quality of the material entering into it, or the grade of workmanship employed on it. It has a full four-inch dial and is equipped with the same style of 10,000-mile odometer, barring the trip recorder, that forms a part of the Stewart speedometer. According to the manufacturers, the use of a simpler mechanism than that employed in the high-speed instruments, yet one which is positively accurate at all speeds up to 50 miles an hour, together with a new di-



THE NEW AMERICAN SPEEDOMETER.

rect flexible shaft attachment, makes it possible to supply this instrument at the very low price mentioned. Both the Stewart and the American speedometers are exclusively equipped with the patent Stewart swivel joint, the use of which permits of making the flexible shaft 18 inches shorter, and also allows it to be carried straight back along the frame to the dash without passing under or through springs without the right-angled bend usually necessary.

INDEX TO ADVERTISERS

Table listing various companies and their page numbers, including Acetylene Gas Illuminating Co., Beaver Mfg. Co., and The American Speedometer.

(Continued on page 54.)

THE AUTOMOBILE

VOL. XVII

NEW YORK—THURSDAY, DECEMBER 5, 1907—CHICAGO

No. 23

CHICAGO'S SHOW TELLS A SUBSTANTIAL STORY

Supplies a Sum Total of Present Growth of a Great Industry and Gives to the Commercial Vehicle Its Distinct Place

By A. G. BATCHELDER.

CHICAGO, Dec. 5.—In a city where standards in great degree are measured by bigness, it seems perfectly logical that the most extensive and thoroughly comprehensive exhibition of automobiles ever held in this country—or abroad—should have a Middle West setting. There is no Grand Palais, nor an Olympia, in the vast overgrown town on Lake Michigan's shore, but in utilizing the Coliseum, filling the First Regiment Armory, and, finally, locating the commercial vehicles blocks away in the Seventh Regiment Armory, the idea of hugeness is accentuated and brought home with added force. Chicago may glory in the fact that it has the biggest display of automobiles ever assembled in a show, and, therefore, the National Association of Automobile Manufacturers may take pride in the housing of the Licensed and the Independent, and those who keep aloof from association connections, either of their own free will and accord or because they are not yet wanted. All that is allied to automobile construction, mostly those concerns belonging to the Motor and Accessory Manufacturers, Inc., swell appreciably and necessarily the sum total of a substantial, great and permanent industry.

Plainly apparent is the tone of renewed optimism and unquestionably missing is that atmosphere of gloom which permeated the first New York show, unfortunate enough to come during the low-water mark of the Wall Street disturbance and continuing in lesser form during the Garden event. Out here there is a natural desire to be free from "Eastern domination"—as it is designated—and while the money mart of the metropolis has its weight throughout the entire country, its influence weakens perceptibly as it travels west; and just now there is a feeling of resentment in antagonizing it from this bustling and self-conscious town. Here the banks are known to have on hand untold millions in gold and silver and greenbacks, but they intend to have little of it go eastward until the money kings of New York loosen up, which, is the belief, will come with very little delay.

There is, however, hunks of optimism at the morning after-breakfast assembling in the lobby of the capacious Auditorium Annex, and, let it be told also, there is less of that

epidemic of late wine-buying in the flashy Pompeian room which has characterized previous shows. As the automobile "game" resolves itself into the automobile industry, there disappears and fades away, one after another, that class of salesmen who are addicted to lengthy expense accounts for "entertaining" of a recklessly generous nature.

Automobiles, with a few decreasing exceptions, are now being sold on merit alone, which brings us to remark that the weaklings are going to be weeded out somewhat precipitately during the next few months. Some good concerns with reliable products are being caught in the financial squeeze, but it is reasonable to prophesy that their affairs will be readjusted when the present temporary transition period has had its innings.

One keynote of the situation was struck by Thomas B. Jeffery when he said to a Chicago reporter, insistent upon getting something from the hard-headed, discerning, veteran manufacturer: "There is not sufficient question about the future of the automobile to warrant discussion. The

automobile is just as much indicative of the progress of the present age as the trolley car, and is bound to be just as permanent. Our staple demand is for autos for utility purposes."

As the week wears on the commanding figures in the industry are appearing. Charles Clifton, the keen-sighted president of the Association of Licensed Automobile Manufacturers, reached the scene Tuesday morning, preceded the day before by Milton J. Budlong, the new general manager, whose recent accession to office has met with much approval from the Seldenites. Thomas Henderson, president of the N. A. A. M., was early in evidence; Benjamin Briscoe, chairman of the committee on management of the American Motor Car Manufacturers' Association, appeared without Alfred Reeves, the general manager, who is looking at the European shows. A roll-call now would bring a response of "Here!" from representatives of nearly every concern identified in one way or another with the industry; and many are in Chicago for the purpose of attending various sorts of conferences and meetings, the results of which may have great import and change the complexion of matters somewhat chaotic at this writing.



GODDESS OF SPEED.



PLEASING TRIPLE EFFECT IN THE COLISEUM.

After the autos are sold there follow some problems for the owners, and that is why a national association of users, subdivided into State bodies and local clubs, is a valuable adjunct, not only for the owner but for the maker, who must realize that if automobiling is not made agreeable and convenient there will be less demand for his product. This is where the American Automobile Association fits into the grand scheme, to work for a national registration measure and uniform State laws, urge the improvement of the roads, supply touring information, and control racing. In William H. Hotchkiss, of Buffalo, the A. A. A. has a worthy leader, through whose efforts the membership has been increased from 8,000 to nearly 20,000 in the past nine months. The greater the number the greater will be the power of the A. A. A. and its ability to accomplish things. President Hotchkiss arrived this morning, to be present at several sessions, the news of which when announced may be worth the attention of all.

Ornamental Effects Much Admired.

Appreciation of the show decorations is outspoken on the part of the visitors, even where the latter had the advantage of being in a position to make comparisons with previous efforts in this direction. But these decorations were the despair of photographers, who were, accordingly, not enthusiastic over the extra efforts that Manager Miles had put forth to make the present show surpass anything of the kind he has done before, and that is saying a great deal, as the Chicago show has become famous for the completeness of its preparations. The most noticeable fact about the decorations, however, is that everything is in keeping—every part of the decorative scheme blends harmoniously into one attractive whole, and this, moreover, forms a most appropriate setting for the cars without in any way detracting the visitor's attention from the chief object in view: the automobile and its numerous accessories. One does not become lost in admiration of the gorgeous setting, and in doing so miss the purpose for which it is intended.

Figures fail to adequately express the extent of the task of installing such a great amount of material, and the fact that so many thousand pounds of stuff and so many thousand yards of carpet are necessary to its completion means but little to the average man, but when he has made the rounds of the three buildings he begins to have some idea of the vastness of the undertaking. Praise was forthcoming from every quarter, so that in addition to the satisfaction which accrues from the successful completion of such an achievement, Manager Miles and assistants were not long left in doubt as to the reception their work received. This was particularly the case where the oil paintings by Maratta were concerned—a feat in the decoration of a purely industrial exhibition never before attempted. In addition to the huge canvases that were suspended from the gallery railings, and which served to hide the ugliness of that part of the Coliseum's dingy ironwork in a more effective manner than was hitherto thought possible, every exhibit had its own individual background.

Three Separate Shows in All.

"Let's go over and see the other show" is the way the average visitor to the Coliseum expresses himself regarding a visit to the First Regiment Armory, which is not considered in any way as an annex, or an overflow from the main body of the show, but as a complete exhibition in itself. And such it is, for with its dozens of exhibits of complete cars and scores of accessory booths encircling the surrounding gallery, it is a complete show in itself of a size that many a large American city, outside of New York or Chicago, would be proud to boast. But the famous "pneumonia alley" of the past two years is no more. Instead of building a wooden chute through which the attendance at one building could shunt itself to the other, the wide alley itself has been roofed over with canvas and lighted, separate entrances and exits being

provided at each building for the incoming and outgoing crowds. This expedient eliminated much of the confusion attendant upon the two colliding streams of humanity that characterized the wooden chute, but the practice of requiring tickets at the entrance to each occasionally brought about more or less delay and annoyance. But more than ever before is it really a case of seeing two shows for one admission, for the First Regiment Armory exhibits are fully as complete in themselves, and quite as distinctive in a way for that matter, as those at the Seventh Regiment Armory.

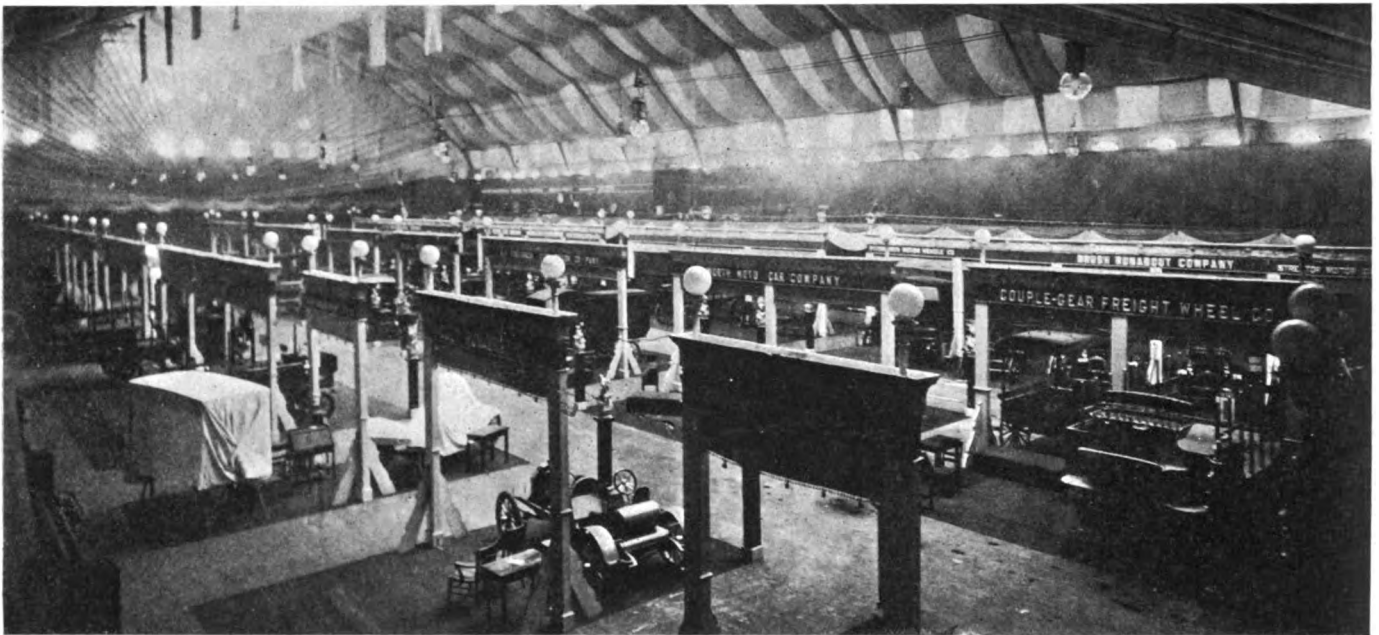
This, despite the fact that the Coliseum's available floor space has been stretched to the extent of accommodating fifteen additional exhibits of cars and twenty-five additional exhibits of accessories, over and above what it has been considered capable of housing in former years. This has been accomplished by utilizing a portion of the building that, under ordinary circumstances, would never have been considered as fit for the purpose, but which under the high-pressure demand for space has been converted into as attractive a part of the show as any other. This is the basement of the Coliseum annex, and, in striking contrast with the conditions prevailing below stairs in other years, the visitor does not find it essential to his comfort to get back to the main floor again as quickly as he can. In a measure, this basement overflow is also somewhat of a show in itself, for ranged down the center of the several thousand square feet of floor space thus made available is a showing of complete cars, many of them of ambitious size and attainments, and as most of them are new, well worth a little study where design and construction are concerned. Flanking them on every side, in the manner inseparably associated with all automobile shows, are the accessory exhibits ranged about the wall booths, and here again there are quite a number of new things to take the attention.

Trucks Are Thoroughly Businesslike.

It seems quite fitting and appropriate that the first thing to greet one on entering the Seventh Regiment Armory is a strong flavor reminiscent of the horse. It strikes the nostrils immediately on opening the single heavy door which bears no invitation to enter, and it is so all-pervading that it immediately gives the impression of the horse just having been led out of one door of his life-long abode to make room for the power-driven truck to come in at the other. There is another air about the Seventh Regiment Armory, once the visitor finds himself fairly inside of it, and it is one that does not strike him in the least unpleasantly. It is the quiet, businesslike air that is over everything. In fostering this first annual show for the commercial vehicle alone, the management fully realized that the man who is interested in automobile transportation wishes to learn all he can about it with the least outlay of time, or necessity for running around, and they have accordingly provided the opportunity. Tickets have only been issued upon request, apart from those special invitations sent out by exhibitors and the management to interested parties, so that while there is always an interested audience in the old horse-mart, but a sprinkling of the crowd that fills the aisles and the galleries of the Coliseum and the First Regiment Armory finds its way over to the commercial show.

But once inside he is amply repaid for the trouble, for the result of this first attempt at bringing together those makers who are now bending their efforts toward the production of what is destined to form a great part of all the automobiles turned out has more than exceeded the fondest anticipations of the promoters. One hears nothing but talk of ton-miles, overload capacities, fuel and oil consumption, cost of tire maintenance, and reliability percentage. "Investing" is the keynote of all conversation between sellers and prospective buyers.

An outbreak of fire in the Seventh Regiment Armory caused temporary excitement Tuesday, but the flames were extinguished with damage to decorations only.



IN THE SEVENTH REGIMENT ARMORY THE COMMERCIAL VEHICLE HELD ITS INITIAL EXCLUSIVE EXPOSITION.

THE FIRST AMERICAN COMMERCIAL VEHICLE EXHIBITION

By HARRY W. PERRY.

NEVER before has there been such a good opportunity to display motor trucks and delivery wagons as is offered by the first annual exhibition of Commercial Motor Vehicles that opened this afternoon at 2 o'clock in the old Tattersall's building, famous in Chicago history for its horse shows, prize fights and bicycle races but now occupied as an armory and drill hall by the Seventh Illinois Regiment. In exchange for the low, narrow subterranean passages of the basement of Madison Square Garden and the incongruous setting of Grand Central Palace and the Coliseum Annex, the builders of business wagons have this winter in Chicago been given advantages for displaying their products that are fully equal to the best that the pleasure car makers enjoy.

In spaciousness Tattersall's compares very favorably with Madison Square Garden, having a high arched roof and open floor only a little smaller in dimensions than New York's

famous show place. The decorations, although less elaborate than those in the Coliseum, are more complete than could reasonably be expected and are in good keeping with the character of the event. Broad strips of alternating yellow and blue cloth are draped under the roof to conceal the steel arches and hung along the balustrade of the gallery. The floor of each exhibition space is covered with a green rug having a red border, and a band does its best to dispel the quiet that reigns while the exhibits and exhibitors await the coming of visitors. Certainly the show management has done its part toward providing a good commercial vehicle show—if the event is not the success that it should be the fact will have to be ascribed to failure of the manufacturers to make the most of the first real good chance they have ever had properly to show their vehicles under cover, or to lack of interest on the part of possible purchasers.

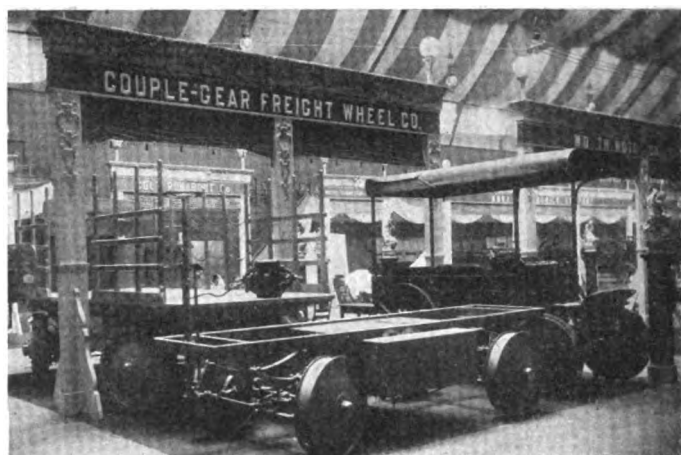
Several large empty spaces due to withdrawals at the last



WHERE THE RAPID AND POPE COMMERCIAL VEHICLES ARE DISPLAYED, WITH TASTE, AND IN PROFUSION.



THE ONE-TON AIR-COOLED FRANKLIN WITH STAKE BODY.



HERE THE FREIGHT CARRIERS LOOK BIG AND POWERFUL

minute by exhibitors who had engaged space indicated on the opening day that the efforts of the management had not been met with the most generous reciprocal spirit. Present financial conditions are largely responsible for the withdrawals, while the delay of shipments by railroad account for some of the empty spaces. Despite the absentees, it is a good show and ought to go down in history as superior to the early automobile shows both in general tone and in sane practice in design and construction.

Although admission is free by card, the attendance on this first afternoon and night was almost nil, probably on account of bad weather and the attraction of the simultaneous show of pleasure cars and accessories in the Coliseum two blocks to the east on Wabash avenue. During the coming week there is little doubt that out-of-town agents will drift over to inspect the commercials with a view to adding some make of delivery wagons and trucks to their lines, while business men of the city and farmers in attendance at the live stock show, which will also open during the next two weeks, will visit the show in the daytime.

To summarize the show briefly, it may be stated that there are nineteen exhibitors of commercial vehicles whose displays were in place when the show opened, and of these four makes are electric vehicles and the rest gasoline. Eleven makes were not shown at either of the New York shows and at least two makes have never been exhibited in public anywhere before in America. One of these is the Weeks, just completed before the show by the newly organized Weeks Commercial Vehicle Company, of Chicago, and the other the Safir, just imported from Switzerland by the Commercial Motor Car Company of New York, after it had won a gold medal in the commercial vehicle trials in Berlin. Besides the displays of work vehicles, there

are several exhibits of pleasure cars that could not be accommodated in the Coliseum or the First Regiment Armory on Michigan avenue. These are the Halladay seven-passenger touring car built by the Streator Motor Car Company, of Streator, Ill.; the Colt runabout made by the Colt Runabout Company, of New York, and the Pontiac buggies, built by the Pontiac Spring and Wagon Works, of Pontiac, Mich. There are eight absentees, two of whom are new makers—the Worth Motor Vehicle Company and Gifford-Pettit Manufacturing Company—while the General Vehicle Company, the White Company, Logan Construction Company, and Alden Sampson Manufacturing Company are reported to have decided not to make displays. The Buckeye Manufacturing Company (Lambert) and the Continental Motor Car Company are also notably absent. The withdrawal of the Sampson train and the White cars is unfortunate, as their absence detracts from the representative character of the show, which now has no representative of the mixed gas-line-electric or the steam classes.

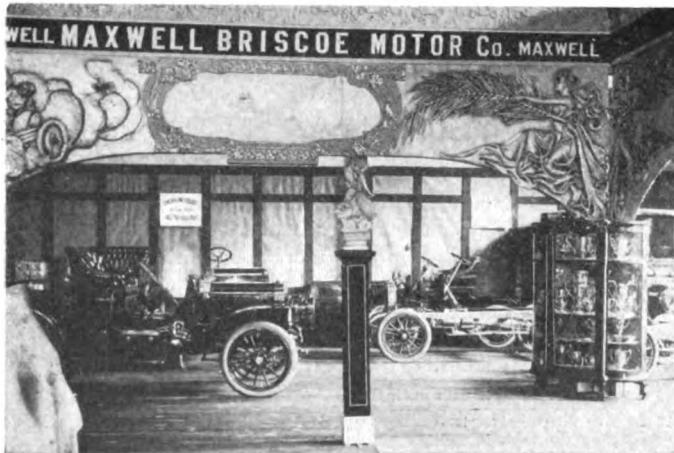
The predominance of gasoline vehicles is apparent, although the four exhibitors of electrics make a strong showing, the Studebaker Automobile Company showing the largest number of machines of any single exhibitor in the building—seven, as follows: An 800-pound laundry wagon in yellow, a 1,000-pound chassis in lead, a 2,500-pound express wagon with top and curtains, painted blue, a sixteen-passenger omnibus in dark green, a 4,000-pound stake truck in green, a 7,000-pound stake truck in bright red, and a 10,000-pound stake truck in blue. Of these the first four were at the Licensed Show in New York. The Studebaker company is bringing out two new trucks to be ready in February, one of three tons capacity and the other of four tons. The Pope Motor Car Company shows three Pope-Waverley electrics—an open body express wagon in dark green, a



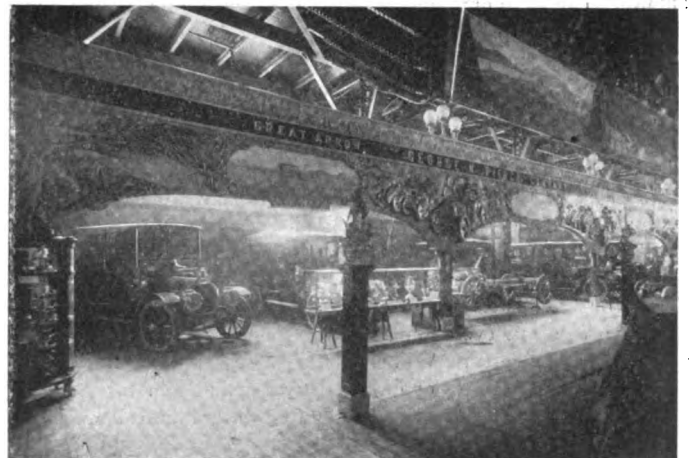
MITCHELL DISPLAY INCLUDED BOTH DELIVERY AND TRUCK.



COLT FOUND SPACE IN THE COMMERCIAL VEHICLE SHOW.



MAXWELL EXHIBIT INCLUDED A CASE OF VALUABLE TROPHIES WON.



QUIVER WHERE ALL OF THE GREAT ARROWS WERE HELD.

closed light delivery wagon, and a 1,500-pound express wagon with top and side curtains, the body painted bright green and the running gear red. Three electrics are also shown by the Pittsburg Motor Vehicle Company, which has not exhibited at shows during the last two years. Two of these are 750-pound closed delivery wagons and the other a 1,500-pound covered delivery wagon—one of a lot of nine that have just been completed by the factory.

All of the foregoing electric vehicles may be said to be of the conventional or standard type, the lighter wagons being driven by a single motor hung from the frame in front of the rear axle and the larger ones by double motors of General Electric, Westinghouse or Waverley manufacture, also hung from the frame and driving by double side chains to sprocket drums on the rear wheels. Batteries are underslung between the axles, and the front wheels only are employed for steering, while only the rear wheels drive. Except in the Pittsburg vehicles, the running gears are made with channel steel frames and bodies are interchangeable, so that any style desired can be fitted according to the requirements of the service. In the Pittsburg wagons the frames are made a part of the body, really constituting the sills, whereby it is claimed that a material reduction of weight in proportion to carrying capacity and mileage is secured.

Of an entirely different type are the vehicles of the Couple-Gear Freight Wheel Company, of Grand Rapids, Mich., which has never exhibited at Eastern shows. These have the motors inside the wheels, which are made of two disks of pressed steel. One five-ton truck is shown in which all four wheels are drivers and all four are used for steering. They are fitted with the only set of sectional wood tires in the show. It may also be observed that the Couple-Gear trucks are the only vehicles on exhibition regularly equipped with steel wheels, although pressed steel

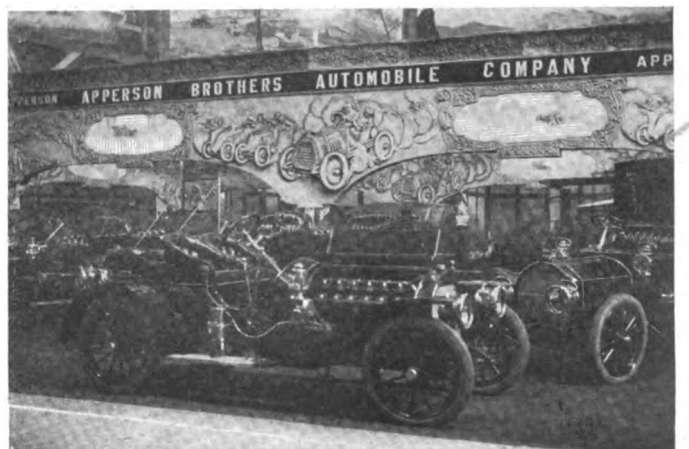
wheels are shown in the gallery by the Indestructible Steel Wheel Company.

In the gasoline vehicles there is wide diversity of practice. Extensive application has been made of double opposed engines, of two-cycle operation, air cooling, friction drive and planetary transmission with the object of making the vehicles as simple and "fool-proof" as possible, it being well understood that the great majority of delivery wagon and truck drivers in America are recruited from the ranks of horse drivers, who cannot be expected to have a special training in mechanics. Thus there are five air-cooled makes of trucks—the Knox, which is shown in two models, a 1 1-2-ton open express wagon with double opposed air-cooled engine placed lengthwise underneath and driving through planetary gears to differential countershaft and side chains, and the newest three-ton model, having a vertical four-cylinder engine in front under the seat, sliding gear transmission with shaft drive to countershaft; the Frayer-Miller, shown in 5,000-pound stake and 5,000-pound express models, fitted with four-cylinder vertical engine in front, whose special feature is cooling by means of a forced draft induced by a blower driven by the engine; the Sayers & Scovill, built in Cincinnati and having also a vertical four-cylinder engine under the driver's seat, transmitting through sliding gear change-speed to countershaft; the Franklin one-ton stake truck, with four-cylinder vertical engine, and finally the new Weeks 1,000-pound delivery wagon fitted with a double opposed motor placed crosswise above the front axle under the footboard.

The Weeks car also belongs in the class of friction-drive machines, of which the Meiselbach one-ton chassis and two-ton beer wagon built by the A. D. Meiselbach Motor Wagon Company, of North Milwaukee, and the Plymouth two-ton chassis shown by the Commercial Motor Truck Company, are also ex-



AN EFFECTIVE CORNER OF THE COLUMBIA EXHIBIT.



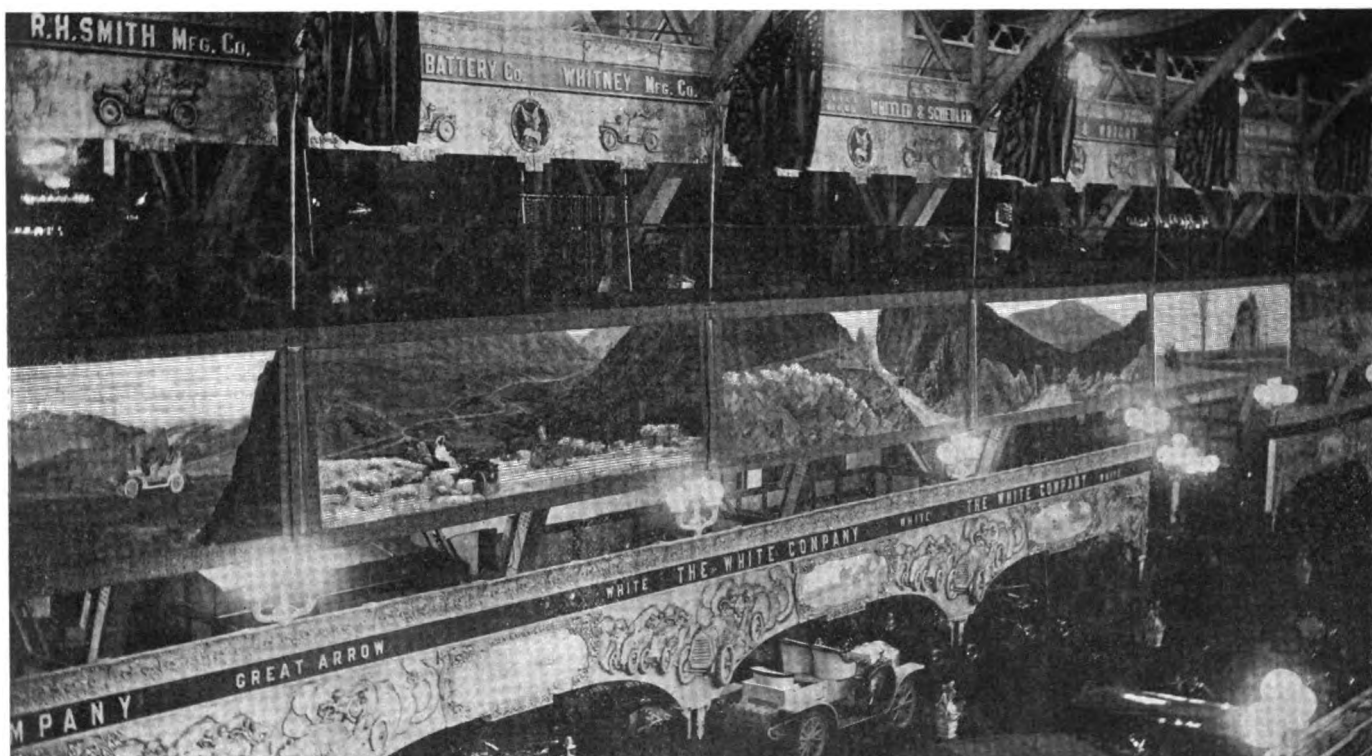
THE DISPLAY OF APPERSONS WAS PROFUSE AND ATTRACTIVE.

amples. The Plymouth and Weeks have transmissions quite similar in appearance, comprising two parallel friction disks driven by the engine and two friction wheels between them mounted slidably on a cross shaft, from the outer ends of which chains drive to the rear wheels. In the Meiselbach, however, the continuation of the engine shaft carries two fiber cones, either of which can be forced into simultaneous contact with the beveled faces of two heavy disks mounted on jack shafts, one cone when in contact giving forward speed and the other reverse. This transmission gives no speed variations, the engine being depended upon for this, but in the other makes the friction wheels can be shifted on their shafts across the disk faces to vary speed.

Examples of two-cycle engines are found in the Weeks, Coppock and Reliance cars. Whereas the Weeks is an opposed engine set crosswise, the Coppock is a twin cylinder motor set vertically in front under the seat and fitted with removable copper

Car Company of New York, which imported it from Switzerland just in time to reach the show. It recently competed in the commercial vehicle trials in Berlin and won a gold medal. It has a Saurer engine and is especially notable for two refinements that are rarely found upon even high-priced foreign touring cars. One is a self-starting device, which utilizes compressed air from a tank into which it is forced by a small compressor driven by the engine and admitted to the cylinders on the working stroke of each piston by a special distributor. The other is a device for utilizing the engine as a brake. By means of a small lever on the steering wheel the camshaft can be advanced 90 degrees in order to hold the exhaust valves closed on the scavenging stroke, thereby obtaining the resistance of compression on every up stroke of the pistons. These features are fitted to order.

The only one-cylinder engine is found in the smallest work car in the show—the Brush 500-pound delivery wagon. This has



A SAMPLE OF THE AUTOMOBILE ART WHICH DECORATES THE COLISEUM AND ADDS MUCH TO ITS EFFECTIVENESS.

water jackets, and the Reliance is of two, three and four cylinders, according to the capacity of the vehicle, and is also set vertically in front. The Reliance Motor Vehicle Company shows a two-ton express wagon with two-cylinder engine, a three-ton chassis with three-cylinder engine, and a four-ton stake truck with four-cylinder engine.

Double opposed water-cooled engines are employed in the Meiselbach and Rapid trucks, the former make having the engine set across the frame at the front and the latter having it placed lengthwise in the middle of the frame. Two machines are shown by the Rapid Motor Vehicle Company, of Pontiac, Mich. One is a truck chassis and the other a twelve-passenger stage that completed the 600-mile reliability test held this week by the Chicago Motor Club within the schedule time for touring cars.

The more conventional type of vertical four-cylinder water-cooled motor is seen in the American five-ton truck shown by the American Motor Truck Company of Lockport, N. Y.; the Plymouth, which is fitted with a Continental engine; the Mitchell, shown in express wagon and closed delivery types by the Mitchell Motor Car Company; in one model by the Reliance Company, and also in the Safr.

The Safr is the only foreign machine upon exhibition. It is shown in a four to five-ton model by the Commercial Motor

car Company of New York, which imported it from Switzerland just in time to reach the show. It recently competed in the commercial vehicle trials in Berlin and won a gold medal.

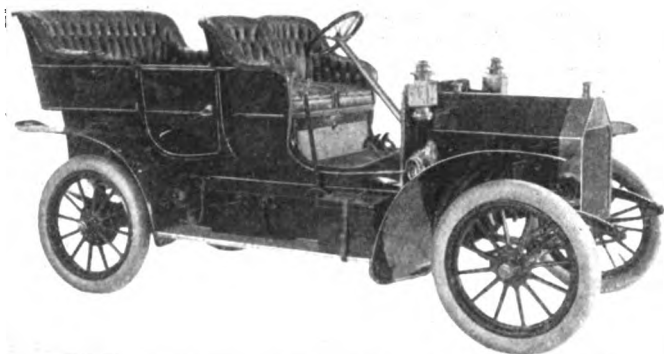
The Thomas taximeter cab, which is shown in the chassis and also complete with landaulet body equipped with a Kosmos taximeter, has a vertical four-cylinder water-cooled motor, but it departs from the conventional in having all the cylinders together with their jackets made in one casting, a further peculiarity being the enclosing of the exhaust and intake pipes in the jacket.

Very good displays of solid tires for all purposes are made in the gallery by the Diamond Rubber Company, Hartford Rubber Works Company, Morgan & Wright, Goodyear Tire & Rubber Company and Firestone Tire & Rubber Company. The Timken Roller Bearing Axle Company shows a line of massive hubs and front I beam and forged solid square rear axles, all equipped with its roller bearings. Pressed steel wheels for both light and heavy vehicles are exhibited by the Indestructible Steel Wheel Company. Exhibits of the Automobile Utilities Company, Carter Chapman & Co., Atlas Manufacturing Company and National Battery Company were not in place up to the close of the show on Saturday night. Shipments were probably delayed in other cases as well as in the case of the Automobile Utilities Company.

CARS FOR 1908 FIRST SHOWN IN A WESTERN SETTING

By CHARLES B. HAYWARD.

THOUGH it would appear at first sight that two such shows as the East fosters would be sufficient to bring out practically everything novel that the industry had to offer, and particularly this year, when Western makers were almost as a unit in taking space at New York, there has never been a time when Chicago's opening night failed to reveal a gathering of new claimants for attention, as well as a number of makers who confined their activities in this direction to the West. In previous years it was usually found to be the case that many of these of the former class



TWO-CYLINDER 24-HORSEPOWER AUBURN TOURING CAR.

were of the "here to-day and gone to-morrow" kind, and no one ever expected to hear anything further of them after the end of the show, in which they were seldom disappointed.

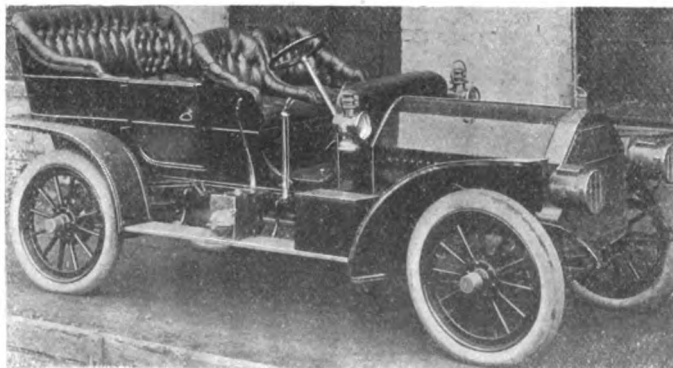
This is something in which the first-nighter at the Coliseum found a rather striking contrast to former years, for almost without exception, there is an air of substantial solidity about the new cars which shows that they are not in the experimental class and their makers are not here merely for this show alone. Another thing to strike the observer's attention is that the day when the Western maker has dropped the pastime of producing impossible freaks is likewise practically a thing of the past, although it must be added that this is something which has died hard and has hung on to a greater extent here in the Middle West than it did in New York. Naturally nothing of a revolutionary nature was to be looked for, and it is just in lacking objectionable features of this nature that most of the cars in question reveal their worth, as well as the standing of their makers.

Aerocar.—This is a line that scarcely needs any introduction to the automobile public, and if the work of reorganizing the company which is now known as the Aerocar Motor Company, Detroit, could have been expedited somewhat, the concern's new models for 1908 would have been exhibited at New York. Both air and water-cooled cars will be specialized as heretofore and practically all of the distinctive features which have become familiar on the Aerocar during the past two years or more have been retained intact. For instance, the 4x4-inch, valves-in-the-head air-cooled motor will still be a feature of the 20-horsepower car of that type, while the special design of water-cooled motor which was brought out for the first time by the Aerocar Company a year ago will be retained on the water-cooled car, which is an unusually attractive and serviceable looking machine. Both the air and water-cooled types will be almost entirely the exclusive product of the home factory, accessories and

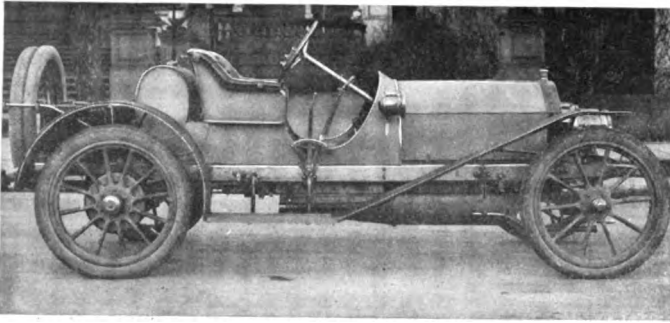
outside parts wherever used being of the highest grade throughout. In both cases, a standard pressed-steel frame, long semi-elliptic suspension, seamless steel tubular front and rear axle, ball-bearing steering knuckles, multiple-disk clutch and sliding change-speed gear with shaft drive, are familiar items of construction which will be retained as features of the 1908 model. Both touring cars and roadsters are listed in both the air and water types.

Auburn.—In bringing out their new models for the season of 1908, the Auburn Automobile Works, Auburn, Ind., who have been building popular-priced cars ever since 1902, have fully realized that even the man who buys a low-priced car wants it to look like the standard high-priced production, and he wants this just as much as he does good materials and reliability. In consequence, they have devoted their energies to the production of a car which is representative of the highest standards of its particular type of construction, beside being a machine of most attractive appearance. The double-opposed motor measures 5 1-4 by 5 inches and is rated at 24-horsepower. A planetary change-speed gear is employed with shaft drive, control being by means of pedals, except on the high speed. The foundation of the chassis consists of a standard type of pressed-steel frame, supported on full-elliptic springs on the rear and the half-elliptic type forward. The wheelbase is 100 inches, and the wheels are 32 by 3 1-2-inch, Goodrich quick detachable tires forming the standard equipment. In fact, throughout its entire makeup only the highest grade accessories, such as the Hill Precision oiler, Schebler carbureter, Raymond brakes and the like, have been employed. As a five-passenger touring car, the Model G Auburn lists at \$1,350, with full equipment, Model H being the same car with a special equipment of top, gas lamps, storage battery, four-inch Goodrich tires and other fittings, on which a special price is quoted. As a runabout, it is known as Model K, and lists at \$1,250.

Aurora.—Long experience in the building of automobiles of the popular-priced type has confirmed the makers of the Aurora, The Aurora Motor Works, Aurora, Ill., in the opinion that for the service of the average man there is nothing to exceed the two-cylinder, horizontal type of motor. Accordingly, they provide their 20-horsepower runabout with a 4 1-2 by 5-inch motor, but it is placed under the bonnet forward with the gear-set, particular pains having been taken to make every part of the mechanism perfectly accessible. A planetary type of change-speed gear is employed, the final drive being by shaft, everything about the car being of the strongest and most durable construction to fit it for the use of the man who expects his car to run 365 days in the year with a minimum amount of expense and trouble. The



LAUTH-JUERGENS 50-H.P. "STRAIGHT CYLINDER" TYPE.



LATEST DIAMOND T RUNABOUT, MADE IN CHICAGO.

frame is of angle steel, well braced, and is supported on long semi-elliptic springs forward, and a platform suspension in the rear, and these in turn are carried on a tubular front axle and an extremely simple and efficient rear axle driving-unit. The wheelbase is 80 inches and the tread standard, tire equipment consisting of 32 by 3-inch clincher or Goodyear quick detachable tires. In complete running order the car lists \$775.

Bugmobile.—Despite the title of this latest comer to the small car class, which is suggestive of a buggy type of automobile, this new car, which is the product of the Bugmobile Company, 208 Wabash avenue, Chicago, embodies many features of construction patterned after far higher-priced standards. For instance, it has an angle steel frame on which the entire power-plant and transmission are centrally located. A two-cylinder horizontal-opposed air-cooled motor of the four-cycle type is employed, in connection with a special chain type of change-speed gear, with final drive to the rear wheels from a countershaft by means of steel cables. In complete running order the car sells for \$750.

C-F.—This is the title of a new car which is the production of the Cornish-Friedberg Motor Car Company, 1233 Michigan avenue, Chicago. Though brought out during the past summer, this is the first time it makes its bow at a show stand and it does not require much study to come to the conclusion that its builders have not attempted anything radical or revolutionary, but have adhered closely to well recognized engineering practice, so that the new C-F car is really a standard production throughout. The idea of its builders has been to meet the requirements of that large class of buyers usually included under the generic title of the "average automobilist," and have accordingly concentrated far more in their 35-horsepower car at \$2,250, than would have been thought possible to offer at this figure but a year or two ago. Its 35-horsepower motor is of the standard four-cylinder, four-cycle, water-cooled type, developing more than its normal rating at a comparatively low speed. A multiple disk-clutch and selective type of change-speed



PUNGS-FINCH 45-HORSEPOWER 7-PASSENGER CAR.

gear, with final drive by shaft to a floating rear axle, constitute the essentials of the transmission. As a five-passenger touring car, it has a 14-inch wheelbase and tips the scales at 2,300 pounds.

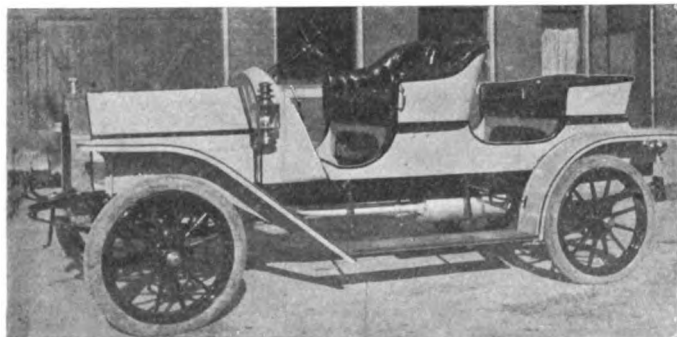
Chicago Motor Buggy.—As its name indicates, this is a machine of the now extremely popular high-wheeled type, which is the product of the Black Manufacturing Company, 124-128 East Ohio street, Chicago, but its makers have determined to bring a reliable car of this kind within the reach of a far greater number of possible users than has been the case up to the present time. It has a two-cylinder horizontal, 12-horsepower, air-cooled motor, planetary change-speed gear and double side-chain drive, Diamond block chains being used between the countershaft and the rear wheels; high-tension ignition, Kingston carbureter, wheel steer, rear-wheel brakes, angle steel frame, bevel-gear differential and many other features of much higher-priced cars of the touring type, despite which the Chicago Motor Buggy is offered in three models ranging from \$375 to \$575 in complete running order.

Duer.—That the high-wheeled and solid-tired automobile is destined to be the popular car of general utility, no one can doubt for a moment. It is durable, light, speedy, easy to repair and able to travel anywhere a horse-drawn vehicle can go. In bringing out their car, the makers of the Duer, The Chicago Coach & Carriage Co., 1223-31 Michigan avenue, Chicago, have kept all these requirements before them. In consequence, the Duer is neither a made-over buggy nor an assemblage of miscellaneous parts; in short, it combines all the good qualities of the high-wheeled type of machine with many of those of the standard automobile. For instance, its two-cylinder, air-cooled, 12-horsepower motor is mounted under a bonnet forward and every part of it, as well as that of the change-speed gear, which is of the selective type giving two speeds ahead and reverse, is accessible in every part. The wheels are 44-inch front and 48-inch rear, running on Timken roller-bearing axles. Semi-elliptic springs are employed forward and full-elliptic in the rear, the tire equipment being 1 1/4-inch solids. The car is capable of a speed up to thirty miles an hour, and with full equipment, including top and curtain, it lists at \$750.

Lauth-Juergens.—This is one of the most powerful of the new comers to be seen at the show. It is made in two types, one with a straight cylinder and valves in the head, and the other, of the "T" head type, by the Lauth-Juergens Motor Car Company, Chicago. The former measures 5 by 6 inches and is a most powerful motor of its size, while the smaller motor of the oppositely-disposed valve type, measures 5 by 5 1/2 inches, and is rated at 45-50 horsepower. In both cases, the makers have devoted great pains to perfecting the details of the power-plant, so that upon closer observation the car is found to embody a great many distinctive features. For instance, the valves with their springs are assembled and are seated separately on the cylinder head, so as to be removable for cleaning or grinding, without disturbing any adjustment. The change-speed gear is out of special type, as is also true of the clutch; the former is of the selective, three-speed forward pattern, with but one moving member, giving the slow forward and reverse speeds. The intermediate and direct-drive pinions do not slide, being locked with a patented sliding jaw clutch, all speeds not in use at the time being locked; and it is also possible to effectively lock the gear-set at neutral. The complete clutch is composed of three parts, two of them being metal disks between which is placed a special fibre disk, having a large friction surface. Both the gear-set and clutch are so mounted that they may be removed for inspection or repair in a very short time. In other respects, the car closely follows recognized standards throughout. Final drive is by shaft to a

live rear axle, while the forward axle is a 2 1-2-inch solid forging of the "I"-beam type. The straight type motor forms the power-plant of the 50-horsepower Lauth-Juergens Tourist, which lists at \$2,800 with the usual standard equipment. It has a 118-inch wheelbase, and 36 by 4 1-2-inch tires.

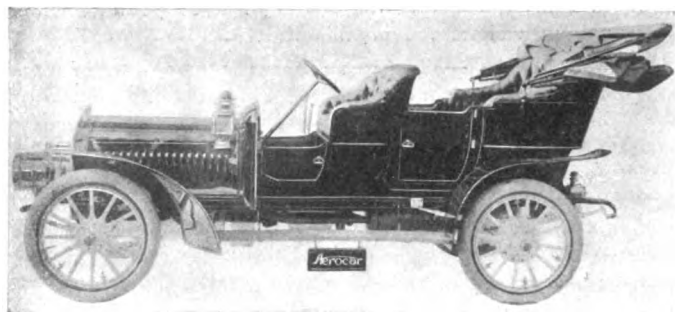
Lorraine.—This newcomer is a Chicago product that is characterized by numerous features of merit from an engineering point of view, in addition to which it embodies several points of exclusive design, and is manufactured by The Lorraine Automobile Manufacturing Company. The Model L is a 50-55-horsepower four-cylinder car with a standard four-cycle, water-cooled motor. The cylinders measure 5 by 5 inches and are offset 1 1-4 inches, beside being provided with unusually long connecting rods, the dimensions of the latter being 12 inches. The oiling system is of the simple and efficient self-contained type, the gear pump being fixed to the lower end of a vertical shaft clutched at its upper end to the lower end of the commutator shaft. The distinguishing feature of the power-plant is the Hobbs-Renault self-starter, which is of the compressed air type and is situated between the clutch and the gear-set, air being stored in a tank and maintained automatically at a pressure of 60-80 pounds, so that the apparatus is always capable of



A POPULAR PRICE WESTERN TWO-CYLINDER RUNABOUT.

starting the motor from sixteen to twenty times. The pressure pump of the starter is also used for inflating the tires. A standard conical clutch is employed in connection with a sliding gear, an option being given on the progressive or selective type of operation. Hess-Bright ball-bearings are used throughout this essential. Another distinctive and meritorious feature of the Lorraine is the Hobbs elastic shaft, consisting of a series of spring-steel rods, concentrically arranged, one end being rigidly connected to the driving element, and the other to the driven element with an intervening clutch to carry the load on a rigid shaft when the torsion of the rods reaches a fixed limit. The wheelbase is 124 inches, and Goodrich detachable tires are employed on the 36 by 4 1-2-inch running gear. In the Models M and N Lorraine cars the specifications are practically identical, with the exception of the smaller motor rated at 25-30 horsepower and smaller tires, measuring 34 by 4 inches.

Monarch.—Although the name has been a familiar one for several years past, the Monarch car for 1908 is something entirely new, and it is quite evident at a glance that its creators, the Monarch Motor Car Company, Chicago Heights, Ill., have made a close study of the best there is in automobile design, both here and abroad, and have adopted features that have stood the test of time in thousands of cars in addition to embodying numerous special exclusive points of their own. The power plant and transmission are of the integral unit type, supported on a three-point suspension. The four-cylinder, four-cycle, water-cooled motor is rated at 40 horsepower, while the selective gear-set pro-



WATER-COOLED 40-HORSEPOWER AEROCAR.

vides three speeds forward and the usual reverse. In every line the motor follows the highest standard practice, for which the designer has shown by the many distinctive points of construction it reveals that it is an exceedingly well thought out piece of mechanism, which is produced in its entirety at the home factory. For instance, a vanadium steel crankshaft is a feature, as is also the Bosch high-tension magneto employed for ignition, not often found on a car listing at \$2,500 in complete running order. The same standard chassis is equipped as a two-passenger runabout and known as Model F, while as a five-passenger touring car it is called Model G. The wheelbase is 112 inches, while the tires are 36 by 4-inch Goodyear quick-detachable type on universal rims, this also being a feature not frequently found on popular priced cars.

Oakland.—This a new car from the hands of Allanson P. Brush, who has designed it for the Oakland Motor Car Company, of Pontiac, Mich., Mr. Brush being the vice-president and consulting engineer of the company. The motor is a two-cylinder vertical water-cooled type, measuring 4 1-2 by 5 inches and is equipped with a special counter-balancing device which entirely overcomes the great disadvantage of excessive vibration, otherwise a drawback of this type of motor. It is distinguished by an exceedingly simple type of carbureter with but one moving part, the air valve, which is also simple and fool-proof. Cooling is by thermo-syphon circulation through a tubular radiator. The change-speed gear is quite novel in that it is patterned after the planetary type, the brake bands, however, being replaced by self-contained clutches which run in oil inside the housing. Another quite distinctive feature is the use of a white ash frame in place of the usual pressed-steel construction. The car is rated at 20 horsepower, and has a 96-inch wheelbase. Either 30 or 32 by 3 1-2-inch wheels will be fitted, an option being given on Diamond, Continental, Firestone or Goodrich tires. In complete running order the five-passenger



A NEW ONE OF THE BUGGY TYPE.—STAVER MODEL D.

Oakland touring car hits the scales at 1,700 pounds, while the runabout weighs 100 pounds less.

Pullman "Flyer."—This is an entirely new line of cars which is being built and marketed by the Pullman Motor Car Company, 131-133 La Salle street, Chicago. While new in a sense, the Pullman "Flyer" is a composite of the best to be found in the automobile world to-day, for, as its makers state, the meritorious features of fifty of the world's best cars have been combined in it. The motor dimensions are 5 1-4 by 5 1-2 inches and its rating is 45-50 horsepower. Any further description of the power plant would simply be a repetition of those features that are generally recognized as representing the highest standard of design. The change-speed gear gives four forward speeds with a direct drive on the third, all the pinions and shafts being made of chrome nickel steel in an extremely high tensile strength, while the shafts are supported on five F. & S. annular ball bearings. A Bosch magneto of the high-tension type is a feature, the motor ignition being of the dual order, each system being entirely independent. The clutch is of the compression band type, and no less than five brakes are provided, one of them being an extremely powerful air-cooled transmission brake, operated by an emergency pedal. The car has numerous other distinctive features which it is impossible to detail here. Five models are listed, including a touring type, a "Speed car," a limousine, a special six-cylinder touring car and a special six-cylinder "Speed car," ranging in price from \$3,800 to \$5,000.

Pungs-Finch.—For 1908 the line turned out by Pungs-Finch Auto and Gas Engine Company, Detroit, will comprise three distinct models, all being equipped with a standard type of four-cylinder, four-cycle, water-cooled vertical motor. The smallest member of the 1908 Pungs-Finch family will be model F, a 24-horsepower, two-passenger roadster, listing at \$2,000, and this is naturally a car to which the builders will devote a great deal of their attention during the coming year, owing to the extent of the demand for vehicles of this type. It has a cone clutch, selective type of sliding change-speed gear and final drive by shaft. With a 108-inch wheelbase, it tips the scales at 1,950 pounds. The model H is a 35-horsepower car which incorporates several features not found on its smaller brother. For example, it has a multiple disk type of clutch, and while most of its remaining features are similar in type to the smaller car, they naturally embody many detailed refinements. As a five-passenger touring car the wheelbase is 110 inches and the weight all on 2,300 pounds. With the usual standard

equipment of tools, lamps, and the like, this car lists at \$2,500 in complete running order. The largest member of the line is a 45-horsepower four-cylinder car, practically all of the essential features of which are duplicated in the machine just described, but like the last named the big car has a number of features, such as magneto ignition, not to be found on the one listing at a lower figure.

Shoemaker.—This is a car whose builders, the Shoemaker Automobile Company, Freeport, Ill., showed that they had every possible confidence in the merit of their construction by entering one of the first cars they ever built in the grueling 1,500-mile mud-plugging run of the three A tour last summer. Though its driver and designer traveled in the worst kind of hard luck throughout, he pluckily stuck at it, getting through in excellent shape, and a little study of the construction of the car as revealed at the show clearly tells the story of its enduring qualities. Two models are listed, the smaller or Model B being a 28-horsepower four-cylinder touring car, seating five passengers and listing at \$2,000. Some of its distinctive features are high-tension ignition with storage batteries, disk clutch, sliding change-speed gear of the selective type, final drive by shaft and a 102-inch wheelbase, giving it a weight of 2,100 pounds all told. The Model C Shoemaker is a 40-horsepower car, listing at \$2,500 in complete running order, and is intended to meet the requirements of the buyer who desires more speed, as in every other respect the same high grade material and workmanship is a feature of both.

Staver.—This new popular priced car forms an excellent example of the striking extent to which the influence of the desire of the high-priced cars has been felt by the builders of these handy vehicles. For instance, it has shackled full elliptic rear springs and half elliptic front. The 18-20-horsepower motor of the two-cylinder, horizontal, opposed type is supported on a three-point suspension and drives through a two-speed planetary change-speed gear to a countershaft, which, in turn, drives the rear wheels through half-inch Whitney roller chains of one-inch pitch. The engine bearings are Parson's white brass, with phosphor bronze in the gear-set, Timken roller bearings in the wheels and standard roller bearings on the countershaft. The engine is water-cooled by a gear-driven pump and honeycomb radiator, the fan being shaft driven. With a Stanhope body on a 78-inch wheelbase, the car lists at \$1,000, complete with top, curtains, storm apron, gas and oil headlights. The Staver is made by the Staver Carriage Company, Seventy-sixth and Wallace streets, Chicago.

NEW THINGS IN THE WIDE FIELD OF ACCESSORIES

INVENTIVE imagination has always appeared to run riot in the Middle West, for each succeeding show at the Coliseum and its numerous annexes brings forth an array of ingenious accessories that is little short of marvelous. Of course, it must be added that the Chicago accessories of this year are not always those of the year before or of its predecessor, such as it is customary to see in the slightly more settled Eastern shows. Many of those highly ingenious devices seem to go the way of the majority of revolutionary appliances, whose functions are such that if they worked according to the inventor's claims, the automobilist would have nothing whatever left to do. This, however, is but one aspect of the multitudinous array of small ware exhibits that the visitor finds stowed away in every possible nook and corner of the two big buildings devoted to the pleasure car end of the show. In their ranks are to be found all the old-line makers of standard accessories, such as tires, tops, ignition apparatus, tools, lubricants and lubri-

cating appliances, parts, clothing, and all the thousand and one things that are required by the autoist. The following are some of those whose show activities are confined to the Chicago end:

Duplex Coil Company.—For the past two or three years this concern, whose plant is located at Fond Du Lac, Wis., have been marketing a special type of induction coil for high-tension ignition. The chief feature of these coils, as their name indicates, lies in the use of a double core by means of which short primary and secondary windings are permissible. The magnetic force is correspondingly increased, allowing the use of a strong spring and light armature, which make adjustment easy, as well as eliminating much of the trouble ordinarily arising from this source. The duplex coils are built in the best possible manner throughout, and their record on the road during the time they have been on the market is a self-recommendation.

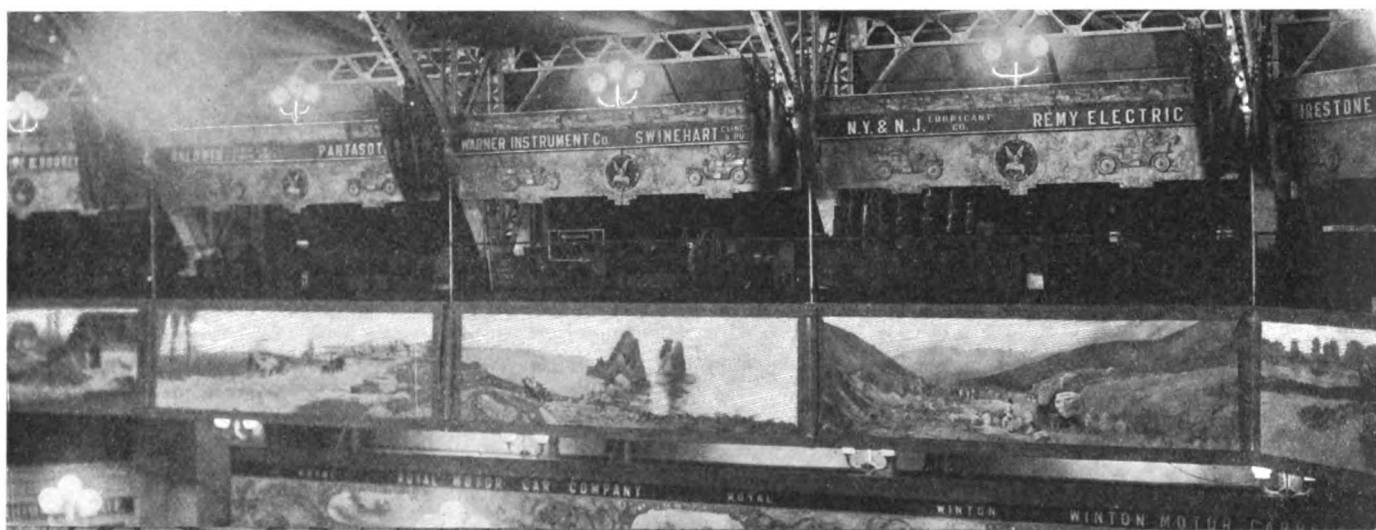
Echo Horns.—The Echo horn is a newcomer to the field

of signaling devices that is being shown for the first time in connection with the exhibit of the Excelsior Supply Company in the Armory. It is made by the Echo Horn Company, Teubusch Building, Cleveland, O., and its construction is such as to do away with the disadvantages hitherto inherent in exhaust-blown horns. It is of the three-tube type, no solder being employed and every joint being made mechanically rigid. The sounding device consists of a bronze casting, instantaneously attachable to the body of the horn, which is a second casting into the horns are tapped and screwed up tight.

Excelsior Supply Company.—There are so many things handled by such a concern as this that it is practically impossible to attempt to enumerate the many specialties they show, a large proportion of which are handled on exclusive representation in territory. A particularly novel specialty is the Mandeville steering wheel muff, made by a concern of the same name, located in Bluffton, Ind. Another is the "inner shoe," made by the Inner Shoe Tire Company, Grand Rapids, Mich., of specially stretched fabric. They also make "inner shoe patches" and "pinch-proof tube bands." In the

experimenting on the part of the manufacturers, so that they are confident that the Heitger carbureter will do all that they claim for it and a little more. It is light, compact, and very accessible in every part, while its construction is such that small moving parts or fittings have been reduced to the minimum point. One of its great advantages is the sensitive control it permits on the throttle, and the makers are so certain that in this, as well as in other respects, it will demonstrate superiority, that they invite manufacturers of cars and other responsible parties to try it out on their own machines, carbureters being submitted gratis for the purpose.

Long Distance Radiators.—According to the claim of the Long Manufacturing Company, 1430-34 Michigan avenue, Chicago, there are now upwards of 22,000 of the long spiral tubing radiators in service—a fact that speaks for itself where the efficiency and durability of the type of radiator turned out by this company is concerned. Their experience in the business of radiator manufacturing dates back several years, one of their patents having been granted as early as September, 1901, while a number of others are pending. Radiators of every standard type are made, while the com-



IN THE LONG GALLERIES OF THE COLISEUM THE MULTITUDE OF ACCESSORIES MAKERS SHOWED THEIR PRODUCTS.

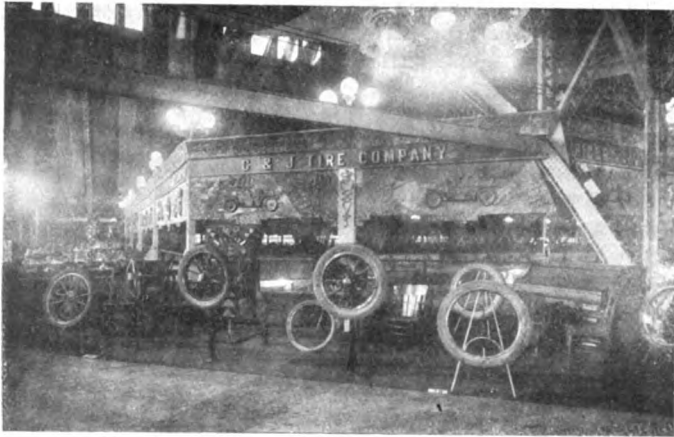
ignition line they are handling the Fry special adjustable spark plug, made by the T. C. & W. L. Fry Company, New York. Webster gasoline gauges are also handled.

Franco-American Auto & Supply Company.—One of the first things to take the attention of the visitor at the booth of these purveyors of all things automobile is a new compressed acetylene gas tank, which has just been brought out by the Commercial Acetylene Company, Indianapolis, Ind. It is termed the "Stereo" tank, and is the result of an effort on the part of the makers to bring a convenience of this kind down to a price point where it will be available to the owner of the small car who could otherwise not enjoy it. It is really a miniature edition of the larger tanks in most respects and has a capacity sufficient to supply the smaller headlights used on light cars for about the same length of time as its larger prototype does on the big cars with their more powerful headlights. Some of the other specialties handled by this firm are the Helmet oils, Index speedometers, Look sparking batteries, Long & Mann tire tools, Champion auto tool kits, Cincinnati portable electric drills, Amco tire holders, and numerous others.

Heitger Carbureter.—Though the new type of carbureter being marketed by the Heitger Carbureter Company, Indianapolis, Ind., was brought out some time ago, this is its initial bow at a show. It embodies numerous distinctive features that are the result of long study and continued

company is also in a position to figure on special requirements of any nature in this field. In addition, they also specialize on a most complete line of hoods, dashes and fenders of all types. Owing to their situation, they are in an excellent position to handle repair work, and accordingly maintain an excellently equipped department for this purpose.

Mandeville Steering Wheel Muff.—No one who has not had experience in driving a car in winter can fully realize what the conditions are, so that it took a driver to evolve a device that would keep the hands properly protected and still permit of freedom in handling the wheel. The inventor was W. Harry Mandeville, and his device is called the Mandeville Steering Wheel Muff, which, as its name indicates, is designed to keep the entire wheel covered, thus making it unnecessary for the driver to put his hands on the cold wood every time he turns a corner. Moreover, the muff affords a most effective protection for the wrists and forearms by keeping out the wind and drifting snow, and, what is equally important, it also prevents the latter from getting on the throttle and spark control levers and into the steering column. The muff is made of good quality leather with fur lining, and for those drivers who wish to see the position of the control levers is made with a celluloid window. While the greatest thing of the kind brought out for pleasure car drivers, it is indispensable to the truck driver, whose exposed position and slow speed



G & J TIRES WERE SHOWN IN A GOOD CORNER LOCATION.

keep him in the cold for long stretches at a time. The muffs are being manufactured by the Mandeville Steering Wheel Muff Company, Bluffton, Ind., and are also made in summer styles for bad weather.

Never-Miss Spark Plugs.—This is a plug of special construction, made with both porcelain and mica insulation, by the Never-Miss Spark Plug Company, Lansing, Mich. The name is suggestive of satisfactory ignition service on the road, at least where this essential is concerned, the makers stating that the peculiar and original construction of the Never-Miss plug does away with common plug troubles.

Pfanstiehl Laboratory.—The exhibit of this concern is one of the most attractive of the number of makers producing ignition apparatus, as in addition to their usual lines of "caterpillar flame" automobile coils their showing includes a tremendous x-ray coil in working order, and, as an estimate of this nature calls for the highest skill of the electrical apparatus manufacturer to turn out successfully, it will be evident that the presence of this monstrous coil at the booth of the Pfanstiehl Electrical Laboratory of North Chicago, Ill., has a definite bearing on the remainder of the exhibit, and is not there merely to attract the attention of the curious. In brief, it means that every Pfanstiehl unit is an x-ray coil.

Ross Steering Gears.—The tubular type of steering gear manufactured under their patents by the Ross Gear & Tool Company, Lafayette, Ind., is of a special design, embodying many exclusive features. This is known as the Model B A and has been designed particularly to meet the demands of heavy truck and large touring car service, in which an absolute back lock is essential. The Model B B, which is of the spiral type, has the same advantages as the first named, but gives a fore and aft motion of the arm. In this design the back lock is obtained by giving the spirals on the housing a long lead. Other models of steering gears made by this firm are a lighter type of the tubular pattern, and a new form of disk steering gear known as Model B D, which constitute a radical departure from current standards.

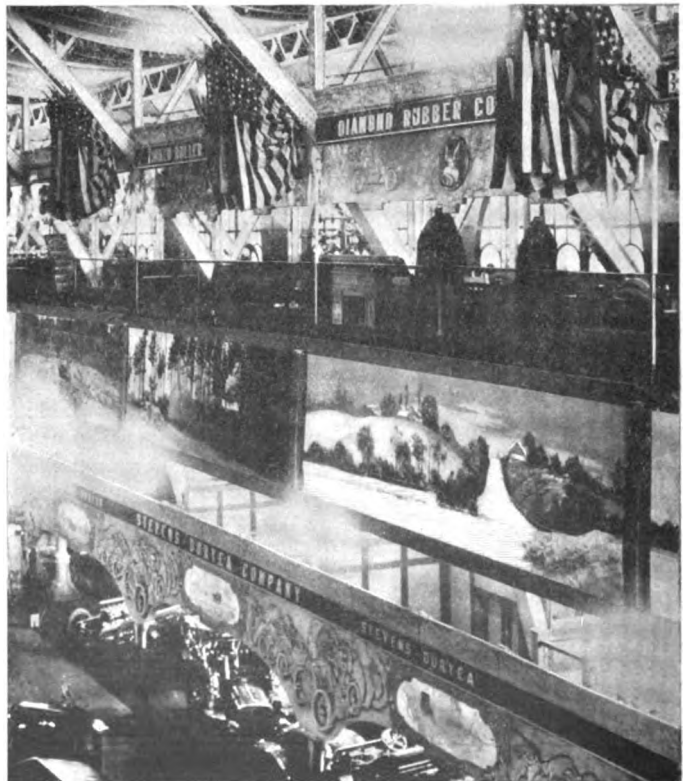
Schilbach & Beecher Wind Shields.—It is hardly necessary to call attention to these shields as a thing particularly new because the former has been on the market for some time—long enough, in fact, to have upwards of a thousand of them in daily service. Its construction is such as to entirely do away with hinges, while another unusual advantage is the fact that the appearance of the shield is the same whether the top is up or down. It is furnished in full brass or solid mahogany with brass trimmings, and is made to fit any standard type of car on the market. The Beecher is also a most practical and easily worked shield, particularly for a low-priced article. The adjustment is by means of a small wheel on either side, which firmly holds the shield at

any angle. The Voltz is another ingenious and simple shield made by this concern, the Limousine Carriage Mfg. Co., Michigan avenue and Thirty-fifth street, Chicago.

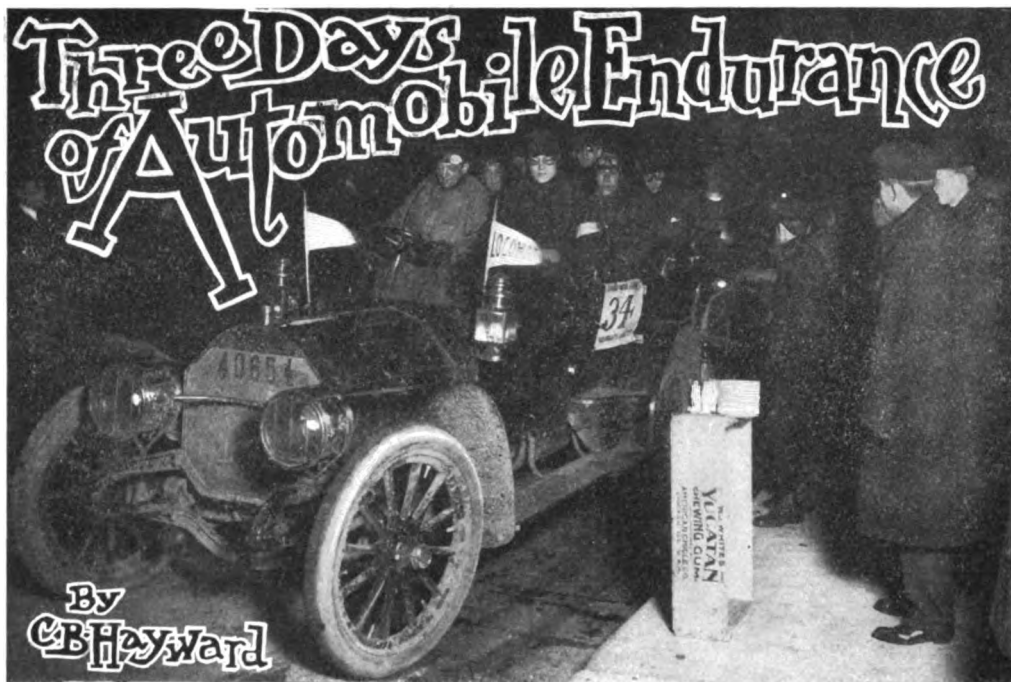
Visor Hood and Muffler.—It is not often that a single article of apparel can be put to the manifold uses of which the new Visor Driving Hood and Muffler is capable. It is made of hand-knitted pure wool throughout and can be used as a neck-muffler and chest-protector, as a driving hood, face protector, or as a sleeping cap, any of the changes being readily effected in a few minutes without the aid of another person, and without using any outside attachments, two fasteners keeping it in place regardless of the manner in which it is employed. It is made by the Visor Knitting Company, Niagara Falls, N. Y., and Toronto, Ont.

Vivax Storage Batteries.—These light accumulators are the result of several year's experimenting, with a view to the production of a battery specially designed both for ignition and electric vehicle use, in which the requirements are unusually severe, although the makers, the Vivax Storage Battery Company, 2224-2234 Michigan avenue, Chicago, also produce large cells for central station use. For ignition work they are made in sizes suitable for two, four, or six-cylinder cars, and with a properly adjusted coil not taking more than .75 ampere, will give a mileage of 1,200 to 1,500 on a single charge, while for limousine lighting they will burn three four-candle power, six-volt lamps.

Warner Clutch Company.—It took the automobile designer quite some time to realize that the character of the clutch employed on a car had a very vital influence on the life of the gear-set, and this is one of the things that the makers of the Warner clutch, the Warner Clutch Company, 1461 Michigan avenue, Chicago, have borne in mind in perfecting their device. Elimination of shocks in starting is absolutely essential to this end, and the fault with early devices was that the necessary slippage could not be obtained without damaging the clutch itself. It is also of the greatest importance that the clutch should release instantly, and both in this and the matter of slippage the Warner clutch has been brought to a high state of efficiency.



DIAMOND TIRES AND TIMKEN BEARINGS WERE NEIGHBORS.



LOCOMOBILE LEAVING ON ITS LONG PLUG THROUGH WESTERN MUD.

CHICAGO, Dec. 1.—Ten sturdy automobiles actually met all reasonable conditions in the strenuous three-day, 600-mile reliability test of the wideawake Chicago Motor Club, but its technical committee finally succeeded, by a process of elimination, in reducing the survivors to the trio who were awarded the Miles, Goodrich, and New Southern Hotel trophies.

A Haynes runabout, driven by Frank Nutt, escaped without a flaw, thus securing the Miles trophy; the Pierce six-cylinder, tooled by Arthur Kumpf, with but two points to its discredit, gained the Goodrich silver set, a loose grease cup on the rear axle being its undoing, and an Oldsmobile, driven by Ralph Owen, was charged with six points for having "a driving shaft boot loose" and an "emergency brake, medium," but gained the hotel cup.

The test was really a two-part one, and the practice of appointing competing observers made the supervision on the road no less thorough than that applied to the cars by the hard-working committee when they undertook the task of examining them to ascertain the condition the three arduous journeys had left them in. The cars were placed according to price in three different classes: A, B, and C, and were called upon to make an average of 20, 17, and 14 miles an hour, respectively.

Every time the driver had to halt or leave his seat the hawk-eyed observer was his shadow, so that by the end of the three days' work on the road more than two-thirds of the competitors had piled up so many demerits that they had eliminated themselves from all further consideration. First come the ten who survived with flying colors, seven of which later fell outside the prize list beneath the close scrutiny of the technical committee, although it seems unfortunate that accessories should have been allowed to play such

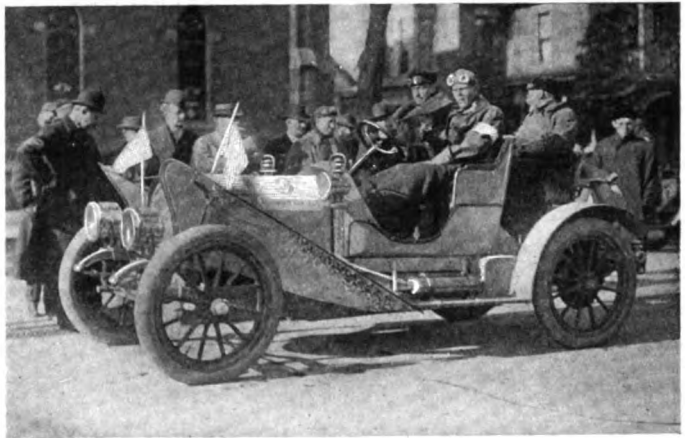
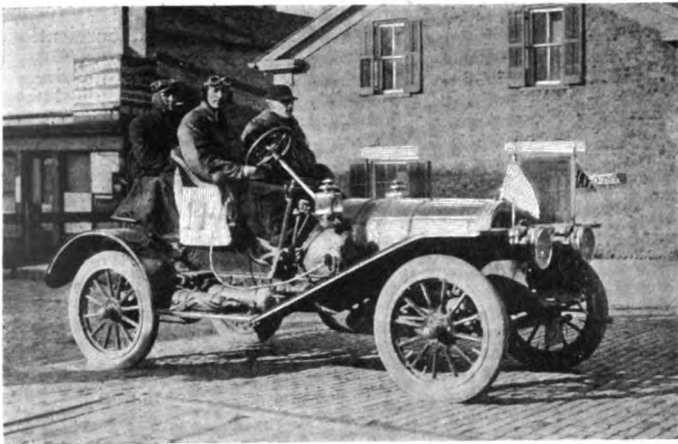
a prominent part in the scoring. After three days' conscientious work on the road, with a record which would under ordinary conditions have earned a perfect score certificate, it was disappointing to the contestants to find that they had to descend from their proud position because of some such trifling matter as loose or broken lamp, speedometer or horn. All recognize the value of the technical examination at the end of the run, for under the old régime too many ruined cars have struggled practical wrecks to the finishing line and earned equal honors with the strong and sturdy. It is just here that discrimination was needed, stereotyped rules being altogether incapable of meeting every contingency. The public wants to know just these facts revealed by the committee's examination, but drivers were certainly en-

titled to more consideration. Herewith is the list of participants and the official order in which they concluded:

No.	Car	H.P.	Cylinders	Class	Tires	Driver	Points Charged
14	Haynes	30	4	B	Diamond	F. Nutt	0
29	Pierce	40	6	A	Goodrich	A. Kumpf	2
30	Oldsmobile	38	4	B	Diamond	R. Owen	6
3	Rambler	32	4	B	Goodrich	T. Collier	8
18	Auburn	24	4	C	Goodrich	R. Parker	10
23	White	30	.	B	Goodrich	W. Leitch	12
33	Locomobile	40	4	A	Fisk	W. Mitchell	14
20	Studebaker	30	4	B	Diamond	W. Smith	16
28	Kisselkar	35	4	B	Goodrich	W. Jay	18
36	National	50	4	A	Diamond	J. Aitken	26
32	Silent-Knight	35-40	4	A	Firestone	D. Kilbourne	54
2	Pierce-Arrow	40	6	A	Goodrich	P. Hoffman	55
11	Jackson	20-24	2	C	Healy	F. Holmes	66
34	Locomobile	40	4	A	Fisk	F. Leiser	67
12	Autocar	30	4	B	Fisk	Barney Oldfield	74
35	Premier	24	4	B	Michelln	R. MacNamara	78



WHERE THE TURN WAS MADE IN SOUTH BEND FOR FIRST DAY'S RUN.



HAYNES, WHICH OBTAINED THE ONLY PERFECT SCORE.

FOURTH POSITION WAS GALLANTLY WON BY RAMBLER.

15 Dragon	24	4 B Diamond	John Haynes	90
9 Stod.-Dayton	50	4 A Goodrich	C. Englebeck	107
24 White	20	B Diamond	C. Denzer	110
22 White	30	A Diamond	Hal Sheridan	137
8 Stev.-Duryea	50	6 A Flsk	C. Clark	186
16 Rapid	25	2 Firestone	F. Grogan	188
5 Wayne	30	4 B Morgan & W.	F. Gremel	620
25 Reo	18-20	2 C Michelln	M. Vandecar	1,040
13 Maxwell	20	2 C Goodrich	O. Klose	1,108
31 Pierce-Racine	40	4 B Goodyear	J. Hanson	Out 3rd day
6 Matheson	50	4 A Diamond	R. Smith	Out 3rd day
7 Matheson	50	4 A Diamond	D. Buck	Out 2nd day
1 Royal Tourist	45	4 A Diamond	R. Cook	Out 1st day
26 Matheson	35	4 A Diamond	J. Heineman	Out 1st day
10 Jackson	20-24	2 C Healy	E. Scheiffer	Out 1st day
17 Frayer-Miller	50	4 A Diamond	J. Barnes	Out 1st day
19 Marlon	24	4 B Michelln	C. Price	Out 1st day
21 Thomas	60	4 A Goodrich	C. Coey	Out 1st day
27 Stod.-Dayton	50	6 A Goodrich	B. Payne	Out 1st day

cars to a searching examination and penalizing them for defects according to the schedule adopted. This was as follows:

Front and rear axles.—There will be no penalty when the spread of the wheels is less than 1-2 inch; for each 1-2 inch or fraction in excess, five points.

Springs.—Sag of one inch permitted without penalization. For each additional 1-4 inch or fraction thereof, five points.

Frame.—For each 1-4 inch or fraction thereof, 15 points.

Steering Knuckles.—For each 1-8 inch variation or fraction thereof, 10 points.

Motor Test.—One or more cylinders missing in a two-block test, 50 points.

Brakes.—Failure to stop car within reasonable bounds, 30 points.

Transmission.—Failure to drive on different forward and reverse speeds, 50 points.

Clutch.—Perceptible slipping, 30 points.

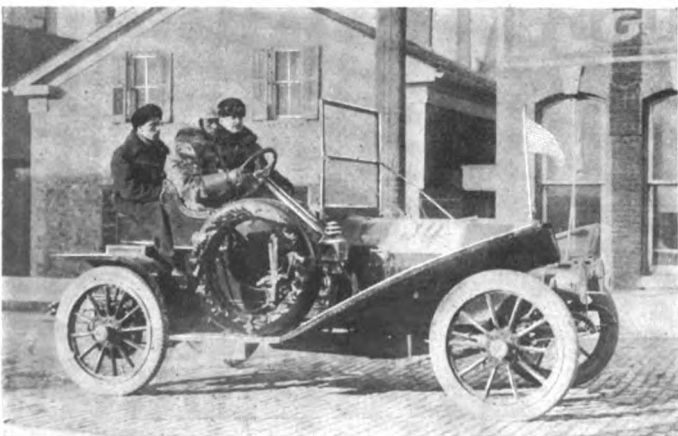
It will be recognized that the above rules were most admirably framed to demonstrate the fitness of a car to survive such a test, but, as has almost invariably been the case in the past, so many cars have demonstrated such fitness in no uncertain degree that the committee found themselves extremely hard put to it to devise some way of eliminating. Consequently, although it was understood at the outset that the rules applied both to the car's equipment as well as to its mechanism, the construction put upon them was such as it would be found difficult to read into the regulations, though it must be added that in their application the committee was consistent throughout. For instance, Sheridan's White steamer was penalized six points for having a side lamp perceptibly loose, and right here is where the committee might have exercised its own judgment in the matter rather than trust to the competing drivers. Upon the discovery of such a defect the driver was called and asked how long it would take to make good the repair, the penalty being based on his answer, and as the answers varied as widely as the poles, so did the penalties for equally trivial adjustments.

For instance, Arthur Kumpf, the juvenile driver of the Pierce

How the Test Was Conducted.

The three days' test was split into three sections: going to South Bend, Ind., and back the first day, a distance of 221 miles; to Rockford, Ill., and back, 190 miles, the second day, and to Ottawa, Ill., and back, 205 miles, the third day. The rules prevented any repairs or replacements without penalties and everything possible on the car was sealed. Observers nominated by the factories were used. The technical committee consisted of David Beecroft, F. E. Edwards and Berne Nadal, assisted by Frank H. Trego. Referee was F. C. Donald, president Chicago M. C.

Placing competing observers on all the cars resulted in lynx-eyed supervision during every moment of the running, while the cars were locked up between each day's run and after the final. Friday afternoon the technical committee, which had worked continuously for three days and nights, undertook the task of ascertaining the condition of the claimants with pretensions to perfect scores. This consisted of subjecting the



OWEN MADE THE OLDSMOBILE A CLOSE THIRD.

THE LITTLE AUBURN WAS ALWAYS RELIABLE AND STEADY.

Great Arrow Six said it would take half a minute to turn down a grease cup on the differential housing, but which did not need turning down anyway. This placed a black mark against his otherwise clean score, and it must be added that the big Pierce had gone over the course twice, so that its test was nearer 1,300 miles than 600. "Ted" Collier's Rambler was assessed one minute or two points for losing the red lens out of the tail-lamp. Leitch's White steamer, No. 23, was assessed no less than six points merely on account of a cut apron lacing which had suffered from a gravel pile on the road. John Haynes' Dragon had a loose engine pan and Ralph Owen's Oldsmobile suffered 2 1-2 minutes for a small set screw loose in the universal joint housing. These last, it will be noted, were purely mechanical troubles and well within the scope of the regulations, as were also those more serious ones, such as the bent front axle on the Stevens-Duryea "Big Six," which occurred early in the trials, and which it was evident to all would penalize the car in spite of its perfect running record, much of which was made under this serious handicap; and navigating Illinois roads at speed is not child's play, even with a perfect car.

Instances of the first sort multiplied themselves indefinitely, so that practically the entire afternoon was spent in the examination of the cars, and but few of them were given their round-the-block test to be weighed in before darkness settled down, while the committee wrestled with the problem of coming to a satisfactory basis of judging at their headquarters in the New Southern until a late hour Friday night. Next morning they went at the task again and last night the decisions were made known at the show.

Story of the First Day's Run.

As a curtain raiser the worst route between Chicago and South Bend was selected, and as the distance was 230 miles for the day's running, it was evident that the committee was determined to begin the weeding out process as early in the game as possible. Many of the competitors helped this plan along by starting out with such a slam, bang dash style of running that they eliminated themselves. C. A. Coey, driving the Thomas Flyer, settled his chances before he got beyond the Chicago city line, going into the ditch at One Hundred and Twenty-seventh street and Michigan avenue, while traveling at high speed. His observer, R. I. Eads, of the Premier company, was scratched up a bit, and C. E. Gregory, treasurer of the Chicago Automobile Club, who was a passenger, catapulted through the air, but landed safely. Before traveling 25 miles, R. W. Cook's Royal Tourist broke its rear axle, but Cook never said die and jumped on the first train, bringing back a new axle with him, causing a loss of 4 hours 45 minutes, half of which was made



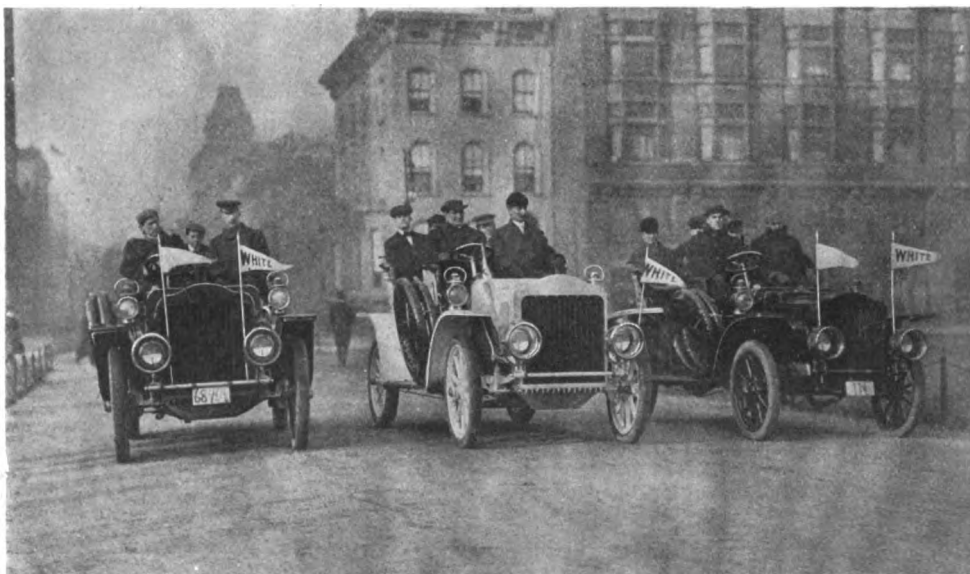
SUCCESSFUL PIERCE, WITH ITS YOUTHFUL DRIVER AND BIG HAPPY FAMILY.

up before the end of the day. C. W. Price's Marion had axle trouble also, while the Frayer-Miller, driven by J. Barnes, cracked its frame, thus making a total of four cars wholly eliminated on the first day.

Those who participated in last summer's A. A. A. tour have reason to remember the roads between South Bend and Chicago, and they will not wonder that the end of the first day's run saw no less than 12 of the 35 cars with black marks against them. Some of these were from trivial causes, such as the 16 points chalked up against the Matheson, whose driver had to resort to a piece of string to prevent the sprag from dragging, though losing some 235 points owing to trouble with a radius rod. A trifling brake adjustment cost the Locomobile 10 points. No. 13 was an ill-omen for the Maxwell, as it lost 334 points through motor troubles, though it made all controls on time. The No. 2 Pierce four-cylinder car lost 51 points.

How They Ran the Second Day.

The second installment was to Rockford and return, a distance of 189 miles. Taken all in all, the roads were an improvement over those of the first day, and there were stretches where even the most conservative would have found it hard to resist the temptation to "let her out." The Autocar, driven by Barney Oldfield, suffered to the extent of 56 points; the Premier gath-



ALL THREE MEMBERS OF THE WHITE FAMILY FINISHED IN GOOD CONDITION.



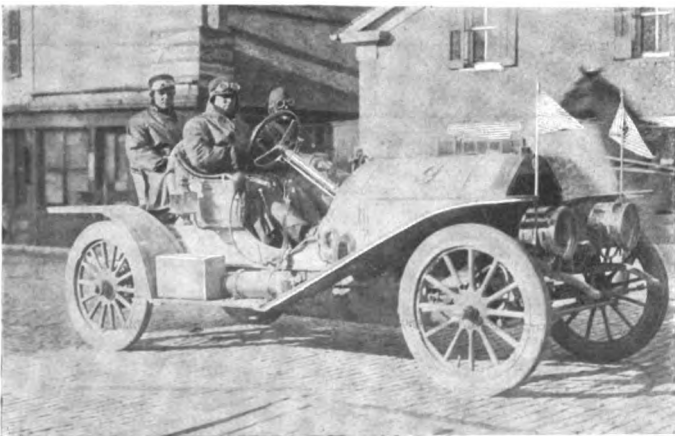
ALL THE LIGHT-WEIGHT PASSENGERS WERE NOT WITH JACKSON.

ered 35 points; the National got 4; the Studebaker the same number; the Rapid 'bus, the performance of which was one of the marvels of the run, added 29 to its initial gathering of 75 on the first day, but it brought its load of twelve passengers into every control, and the way it burned up the road with its load of rosters was the delight of the many farmers who lined the roads.

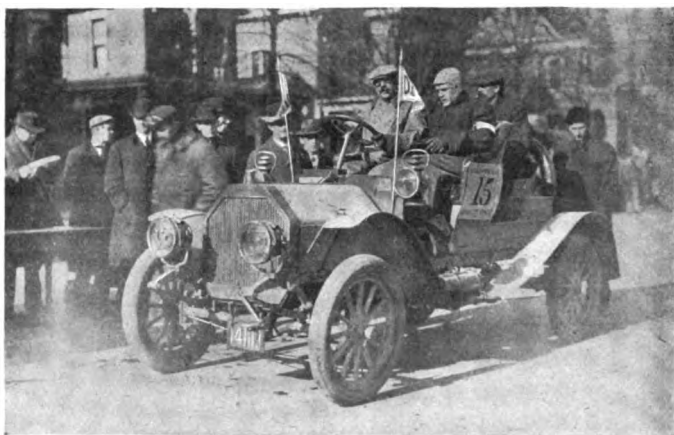
The four points placed against the Studebaker resulted from the driver's placing a chip of wood on the exhaust to hold the muffler cut-out open, which he did on the assurance of the observer that this did not constitute the use of tools and was accordingly permissible. E. Q. Cordner, the local Studebaker representative, filed a protest against the committee's penalization.

Penalizations on the Last Running Day.

It was generally considered that many of those who had survived the grueling of the first two days' runs with credit would fall under the ban through minor causes on the last tryout, though the number which succumbed was not nearly as large as many had anticipated. The No. 2 Pierce-Arrow four-cylinder car, driven by Paul Hoffman, got through without adding to its initial 51 points lost on the first day, but the No. 6 Matheson fared badly, as it was necessary to break the bonnet seals at the early morning getaway in order to start the motor by pouring warm water on the carbureter, thus utterly ruining an otherwise perfect record, which would doubtless have been maintained to the end. It was assessed 401 points. The Wayne roadster was another to hopelessly damage its otherwise perfect record by colliding with the Maxwell, thus breaking its right steering knuckle and incurring a penalty. The Jackson touring car was penalized 50 points; the Autocar roadster gathered 2 points more, while the Maxwell, which traveled in hard luck all the way through, but pluckily stuck out the 600 miles,



IT WAS COLD TRAVELING ON THE SPEEDY STODDARD-DAYTON.



JOHN HAYNES HANDLED THE LITTLE DRAGON RUNABOUT.

raked in no less than 610 points. The Rapid 'bus could not escape an additional 66 demerits, but if its total loss of points for the three days had been five times as great it could not possibly detract from the excellent performance of this machine. The No. 26 Matheson roadster and the No. 27 Stoddard-Dayton six-cylinder car did not start on the last day, while the No. 25 Reo runabout, which had only 38 points, gathered on the second day, against it, was put down in the committee's black book for having improvised a third seat by nailing a chair seat and back on the footboard in order to provide for a third passenger.

DETAILS OF THE PENALIZATIONS.

While many of the penalizations in the final summing up seem to be carrying things to an absurd extreme in the effort to eliminate possible winners, it must be added to the committee's credit that it carried a most thankless job through in a most conscientious manner. Herewith is the final official score of the event:

- No. 14. Haynes—Perfect score. Official weight, 2,690 pounds.
- No. 29. Pierce—Points lost: grease cup loose, 2 points. Official weight, 4,020 pounds.
- No. 30. Oldsmobile—Points lost: emergency brake, medium, 2 points; driving shaft boot loose, 4 points; total, 6 points. Official weight, 2,790 pounds.
- No. 3. Rambler—Points lost: pedal brake, medium, 2 points; lamp damaged, 4 points; speedometer loose, 2 points; total, 8 points. Official weight, 2,875 pounds.
- No. 18. Auburn—Points lost: wheels and spindles out, 10 points.
- No. 23. White—Points lost: running board loose, 6 points; apron loose, 6 points; total, 12 points. Official weight, 3,510 pounds.
- No. 33. Locomobile—Points lost: fan belt off, 2 points; emergency brake, medium, 2 points; grease cup loose, 6 points; fender loose, 2 points; speedometer loose, 2 points; total, 14 points. Official weight, 3,710 pounds.

(Continued on page 867.)



SEEING ILLINOIS ON A "RAPID" WAS AN EXPERIENCE.

NOTED IN THE MERGING OF THE TWO SHOWS

BY CHAS. E. DURYEY, OF THE AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION.

CHICAGO, Dec. 3.—Chicago is a city of ample elbow room, and Chicago's elbows are busily employed, with the result that even an auto show covers lots of space and presents a wide variety. Here both the licensed makers and the independents, together with a goodly number of outsiders, show in harmony, making it the most representative single show of the year, and of such mammoth proportions that three buildings are filled to overflowing. Magnificent decorations and the separation of the commercial vehicles from the pleasure cars, both add to the harmony, beauty, and practicability of the exhibition.

Chicago, the scene of the first automobile event in America, twelve years ago, has ever been to the front in this line, and the Chicago shows have been interesting because of the variety of vehicles exhibited. This year is no exception, and the motor buggy, shown at Chicago for several years, is rapidly becoming an accepted factor, and Holsman, formerly laughed at by the makers of more conventional products, is now admitted to have shown good judgment and has quite a numerous following.

The two-cycle motor, also a product of the West, having been shown by Mitchell and Pierce several years ago, is now exhibited at this show by a maker from the extreme East, on the Atlas cars, as well as by others.

The friction-drive, another Western product, first shown at Chicago, is now largely in evidence on a goodly number of vehicles, particularly on a large proportion of the commercial vehicles; being shown on the Lambert cars, both for pleasure and business, where it has for years past proven its value, because of which fact it can no longer be regarded as an experiment, and purchasers need have no fear as to its practicability when properly made.

Standardization Still of the Future.

We often hear remarks to the effect that the automobile business is becoming standardized, but a study of the exhibits at Chicago shows very clearly that this is not the case; that, on the other hand, the exhibits diversify much more than they did two or three years ago, when the five-passenger touring car was the accepted standard. So long as individual tastes vary we will find an increasing diversity in motor vehicles permitted by the various possibilities in engine kinds and sizes, as well as by the widely varying seating capacities required by different purchasers, and the Chicago show exhibits this wide variety much more fully than did the Palace show at New York. There will always be some people wanting single-cylinder motors, like the Reo and Cadillac, although others prefer four-cylinder vehicles at practically the same price, like the Ford, while still others prefer six and even eight cylinders, not to mention steamers and electrics.

Another potent reason for diversity is the differing needs of the purchaser, who for city and social use buys the enclosed limousine of moderate power and of luxurious finish and appointment. But for touring, purchases the conventional touring car, low hung, with long base and ample power and particularly chooses for flexibility and easy riding, machine specially built with this end in view. While for city use and ordinary everyday service he buys a little runabout or one of the medium powered touring cars, or if he is a busy doctor, possibly a motor buggy.

Road Clearance Receives Consideration.

Other things also influence his decision, such as the roads over which the vehicle is to be used, so that where a few years ago 28 and 30-inch wheels were the rule, to-day there are examples of 38-inch, as in the Gaeth, and 36-inch wheels are quite common, particularly on the high-speed machines. Road clearance is now given more consideration; the low clearance of the average foreign machine having been found unsuitable for American roads, and therefore having given way to a more compact de-

sign which raises the mechanism without raising the body, with the result that, although having more clearance, the bodies are lower hung and the passengers are carried in a safer and more comfortable position than in former years.

In the mechanism itself greater diversity exists than in former years, and almost every detail may be seen at this show in many modifications. Transmission gears are found combined with the engine near the front of the vehicles, in a separate case at a midway position or combined with the balance gear on the rear axle, while vague promises of cars without transmissions occasionally are heard. The once almost universal cone clutch has been largely replaced by the multiple disk, but expanding and contracting bands are seen in many instances, and the use of the band for braking purposes would indicate that it is amply able to serve as a clutch, and that we may expect a much greater number of band clutches than we have had in the past.

Position of Throttle and Spark Lever.

Even in features directly connected with the control of the car, such as the position of the throttle and spark levers or the arrangement of the foot pedals, there is a considerable diversity; the spark control being sometimes under the foot and at other times inside or outside of the wheel, sometimes on the left, again on the right, and in still other vehicles at the bottom or at the top. In a few instances the controlling lever is not stationary on the wheel column, but moves with the wheel, from which it will be seen that even in so simple a feature as the position of the throttle or spark lever there are nearly a dozen different arrangements. Yet it would seem reasonable that in the controlling equipment a standard practice should be followed, so that users might find themselves at home on any type of car, instead of having to accustom themselves to each controlling group.

The reason this is not done lies in the different needs of the purchasers, as seen by the makers who prefer to arrange their vehicles in the simplest and handiest manner which they believe will be most satisfactory and least tiresome to their users, rather than adopt the arrangement employed on some other vehicle which they consider less satisfactory.

Diversity Extends to Minor Parts.

This diversity extends also to the minor parts, such as the cooling fans. Here it would seem reasonable that the ordinary four-bladed fan developed by years of use as the most efficient device for throwing air in connection with the small economical motors, found in nearly every office in hot weather, would be employed almost generally; but such is not the case. Instead there is a wide range in the number of fan blades, reaching a dozen in number in one or two instances and varying also in shape, from a straight, narrow spoke-like blade to ovoid and fancy designs. Some of these fans are housed to direct the air in its intended path; others are in the open, and depend upon the shape of the blade to accomplish this purpose.

It would seem that in details of this kind, where the purchaser is interested only in results, that it could be determined by experiment which fan is most efficient for a given size and power, and that this most efficient form should become universally used.

For years users have hoped that tires would become standardized, but with greater diversity in wheel sizes and the adoption of quick detachable rims by many makers without the abandonment of the older forms, there seems to be no promise that this result will come about.

It is quite evident from this show that in the near future a separation must take place and different classes of vehicles will be exhibited in separate buildings, possibly at separate times, and that diversification is bound to increase.



ON THE OPEN ROAD WITH THE GEARLESS GREYHOUND SIX-CYLINDER AS A THROTTLED COMPLACENT REARGUARD.

HOW A SIX-CYLINDER AUTO HELPED A VETERAN WALKER

CHICAGO, Nov. 30.—Seven hundred and thirty-five miles on the low gear at the rate of three to four miles an hour, over roads that defy description, is a feat no less marvelous for an automobile than that of the 1,200-mile walk of Weston, the pedestrian, whose performance was the occasion for it. John W. Breyfogle, vice-president of the Gearless Transmission Company, Rochester, N. Y., and George D. Wilcox, its manager, in a spirit of athletic good-fellowship, decided that helping the veteran pedestrian on his trip to Chicago would constitute a test for a car such as had never before been undertaken. There are records and records of every imaginable nature, but the palm for making a slow pace, hour after hour, often for twenty hours out of the twenty-four, without heating or trouble of any nature, must certainly be handed to the Gearless Greyhound, and some idea of what the performance of this 75-horsepower six-cylinder car means may be gained from the fact that few, if any, of the drivers of low-powered cars who turned out by the score to join the procession at different towns along the way found it possible to maintain the slow pace for more than a few miles at a time. Not an involuntary stop was made, the only replacement being a burst tire, which was run flat till Weston halted.

Equipped with two 12-inch Rushmore searchlights—the largest automobile headlights to be had—and a unique buffet kitchen improvised over the exhaust manifold of the motor, Manager Wilcox and Mr. Breyfogle joined Weston at Rochester, November 12, leaving there shortly after noon. Both were familiar with the route and road conditions along the way through having driven over it previously. The pair took turns at the wheel, and as Weston did far more walking than sleeping, one of them found it convenient to bunk out on the fender of the car.

When seen at the Illinois Athletic Club, Weston simply bubbled

over with enthusiasm regarding the aid which the automobile had rendered him. "Made it possible to cut off at least ten hours from the record," he said, "and saved fully half the fatigue of stumbling into the ruts and mudholes, the lamps making it as light as day. But the old man, in his ignorance of things automobile, made it doubly hard for the sleepy driver of the car at night, as he would drop back without warning from his place, ten or fifteen feet in advance of the car, to warm his hands on the radiator, or to place on the car one of the endless gifts that enthusiastic admirers along the way handed out. Even at that slow speed, to have struck him would doubtless have ended the walk, so that the strain on the driver may be imagined. And how long-drawn-out a process this was may be gleaned from the fact that toward the last Weston walked almost continuously, one of his stretches being from Sunday morning at 12:08 (midnight) to Tuesday afternoon at 4:10, during which time he only stopped fifty minutes all told, covering ninety-five miles.

But neither the light nor the protection the automobile afforded was superior to the service it rendered as traveling kitchen of the "Johnny-on-the-spot" kind. Weston carried a whistle constantly and a blast on it was the signal for the driver-chef to get busy. The man off duty would put the cans of coffee, milk, or soup on the "gas stove," or even get ready to "boil two medium"; the driver would speed up a bit and the kitchen would be in full blast.

To protect Weston from the crowds which fairly mobbed him, Wilcox attached two 50-foot pieces of stout rope to the forward dumb irons, and when a town was entered the ends of these would be handed out to the most prominent of the local authorities that could be corralled. With the aid of this improvised cordon Weston could proceed undisturbed.



LAST CALL FOR SUPPER ON THE "DINING CAR."



MAYOR BUSSE ESCORTING THE HERO AT THE FINISH.

LEARNED IN THE PROCESS OF EVOLUTION*

By CHARLES B. HAYWARD.

DOCTORS' mistakes are said to be put under six feet of ground; lawyers' errors often hang, while those of the cloth are said to arrive at the wrong destination. But who pays for the automobile designers' slips? The buyer of the car naturally has to foot the bills every time, or, as it is expressively put in the vernacular, "the dear public pays the freight." It may seem unfortunate that, over and above the first cost of a car, its purchaser should have to pay for fundamental errors of design or poor judgment in the choice of materials, but experience in whatever line has to be bought dearly, and had it not been for the lessons learned from a great number of cars it is quite probable that the development of the automobile would not have advanced at the extremely rapid rate that it has. A rope that is almost severed will frequently stand an amazing load, and a poorly built car of cheap materials will often give satisfactory service, as is borne out by the sententious observation of the New

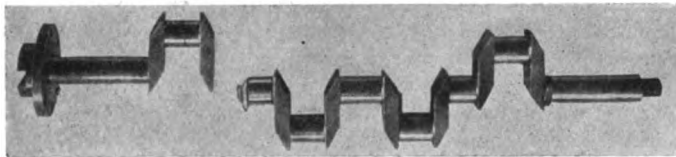


FIG. 1.—Typical instance of defective design, insufficient material in the cheek

York agent of what was probably as cheaply put together a machine as has ever been marketed in quantities. "Some of our customers never have any trouble, but a great many of them can't go ten miles without having something break." A statement illustrative of the chance destiny that causes some to succeed while others fail, though all be cast in the same mold.

Some Parts that Break Oftenest.

It also seems particularly unfortunate, at least from the viewpoint of the owner of the car, and who is in consequence paying for the designer's experience, that expensive parts should have such a habit of giving way. For instance, crankshafts are among the commonest and at the same time the most costly parts of the car to replace. In the course of little more than one month 26 instances of broken crankshafts were reported on one of the best-known foreign cars that is imported into this country. That is, this number were brought to the local agency for repairs, some of them being illustrated by photographs in connection with this article, but of them more later. Right here a momentary digression may be made to remark that it is not the cheap car that is always giving way by any means. Of all the cars with which the present deals, whether directly or indirectly, more than 90 per cent. of the broken parts were from some of the highest-priced cars made on either side of the Atlantic—cars in which it is to be presumed, judging from their selling price, if nothing else, that no pains or expense had been spared to make their design

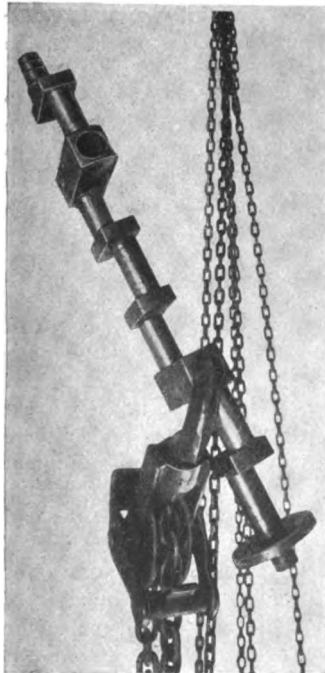


FIG. 2.—Somewhat of a freak design, this crankshaft being designed for a motor no larger than that of Fig. 1.

* Photographs by the author.

and construction as advanced, an example of the automobile builders' art as it was possible to produce.

Front axles, frames and springs are other equally expensive parts that have a habit of giving way when least expected, and of these three probably the last-named is the most common. As a matter of fact, the frequency with which springs give way shows conclusively that there is a great deal of room for better-

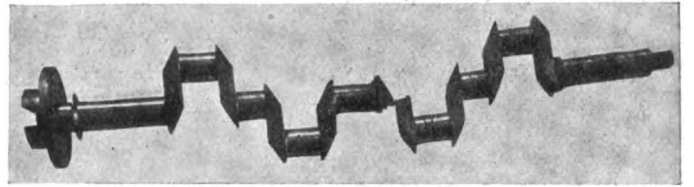


FIG. 3.—This is a repetition of the same fault as that characterizing Fig. 1 and occurred on the same make of car.

ment in this essential, and this is one of the things in which choice of poor material is most often found to be at the root of the trouble, though incorrect design plays its part here as elsewhere. For instance, it avails little to supply the best spring that money and skill can create, if it is to be held on its saddle by U bolts of common wrought iron or Bessemer steel from the hardware dealers' stock. Under such conditions the spring does not remain rigidly attached to the axle for any great length of time, as the strain soon causes a permanent set in the bolts, frequently amounting to 1-16 inch or more, permitting the spring to crawl. Then, instead of absorbing the shock through its leaves, as would be the case were it rigidly clamped down, the whole spring is lifted and thrown bodily against its support, before this dampening action can begin, and the result is a break. In consequence it is found that the springs usually give way under the clamps. Steel comparatively high in carbon usually

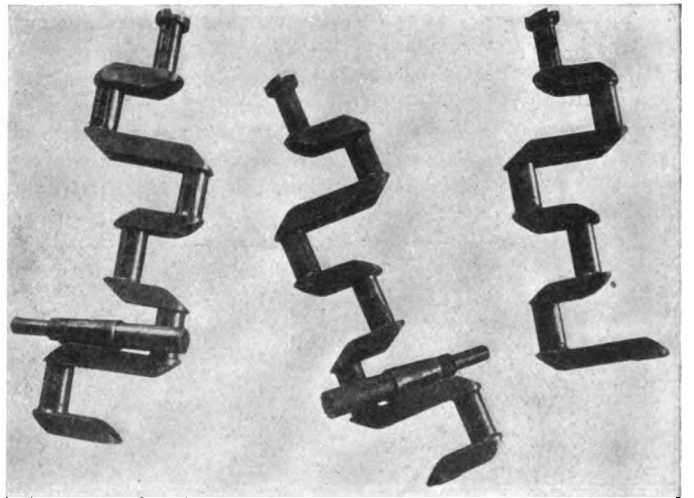


FIG. 4.—Three from a batch of more than a score, all of which broke in the same place in little more than a month.

about 60 point, is the material most commonly employed for this purpose and serves its ends satisfactorily—more so since the requirements have come to be better understood. It has been found that the semi-elliptic spring is exceedingly sensitive and on that account particularly desirable where roads are good, as is the case abroad, but its limited range of action does not fit it for extreme shocks, and the full elliptic type is much more favored on American cars, those designers who retain the former making it very much longer than was formerly thought necessary.

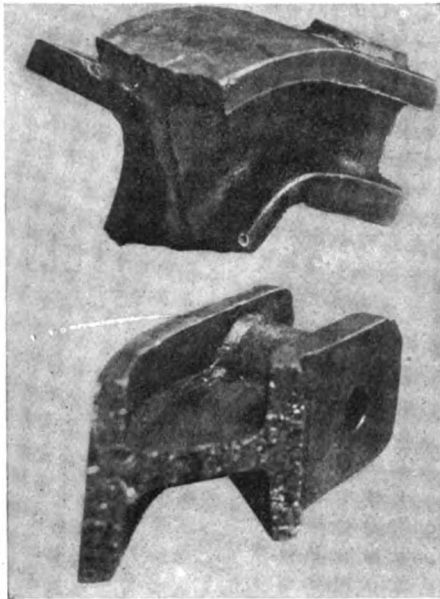


FIG. 5.—Extreme instance of crystalline structure in aluminum alloy

To the experienced eye every broken crankshaft tells its own story, and when this important breaks faster than the agent can make replacements, and all the breaks are in the same place, it would not appear as if the significance of the wholesale defect on were very deeply hidden. This is the case already referred to, in which at least 26 owners who had paid for high-priced foreign cars found occasion to go to the expense of replacing the crankshafts in the course of a month. There may have been more, but certainly the number cited was enough to point the moral, and the group of three shown by the accompanying photograph, Fig. 4, speaks for itself. As will be noted from this, all have given way at exactly the same point, two of the ends being shown, while the third is missing. From the designer's point of view this was the "right place" for those crankshafts to break, if there can be said to be such a thing. In other words, it sufficed to show conclusively that not the design but the material was at fault. This is made clear by reference to Figs. 1 and 3, taken from an American car—a high-priced one at that—which are typical examples of defective design, an insufficient amount of metal being allowed in the cheek where it joined the crank pin. But examination also proved the material to be defective, being too high in phosphorus, and consequently what is termed "cold short," tending to brittleness. In this connection it may be mentioned that carbon steel possesses the peculiar property of splitting or running when notched or nicked, and this quality has caused trouble with crankshafts drilled for oil holes.

But to return to the group of broken shafts—these were all taken from one model of the same car—one of the highest-priced machines that is imported into this country. It will be

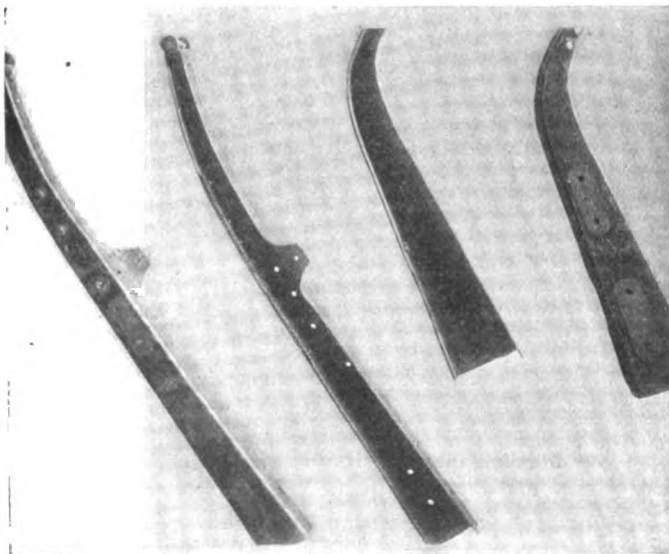


FIG. 6.—Four expensive breaks, all on cars of the same high-priced make and all due to the same cause—improper material.

noted that the rupture invariably occurred at the point of maximum load, between the flywheel and the fourth crankpin, a point where the summation of all the stresses is centered. The breaks were due to flexure of the material, which was not sufficiently rigid to stand the constant bending strain without giving way—a fault that seriously affects the dynamic life of the part with the result so strikingly depicted by the photograph—and it may be added, so painful to the owner of the car. The crankshaft illustrated by Fig. 2 is merely shown as an instance of what extremes designs may sometimes be carried to. In the first place, this crankshaft has sufficient metal in it to transmit several times the power of the engine for which it was intended. The designer's idea in giving it this shape was to evolve a three-bearing crankshaft which could be easily machined in a lathe, the space ordinarily occupied by giving the intermediate connecting cheeks a staggered relation, being filled by large blocks which were drilled to reduce the weight. But it will be noted, by referring to cut, that in drilling these a far thinner web has been left than is employed in the other cheeks, which would seem to indicate that the others

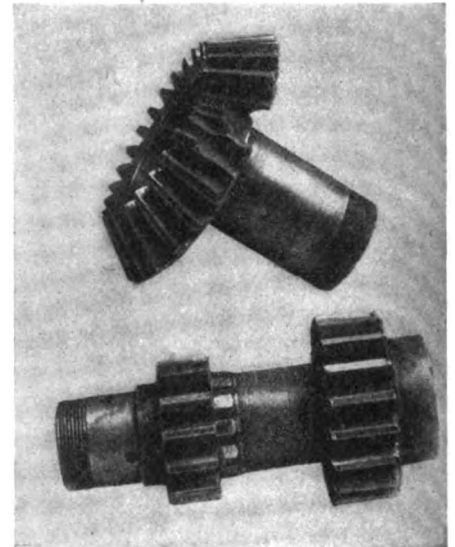


FIG. 7.—First, an instance of high-priced material of the wrong kind; second, the result of abuse of the best of materials.

were unnecessary, which, in fact, is the most striking characteristic of the whole piece, as it is not intended for use in any larger motor than the other shafts shown on this page, the pictures all being in the same proportion. While, so far as known, it has not occasioned any unusual trouble, it would appear to constitute a good example of how not to make a crankshaft. Before leaving the subject of crankshafts, it may be stated on the authority of a designer who has probably had a better opportunity to find out the weaknesses of a great many cars than often falls to the lots of his confrères that some cheap American engines of several years ago actually had *cast iron* crankshafts and that he never saw a broken one—a fact that illustrates the point that where the metal has sufficient initial rigidity and is free from internal strains it will serve this purpose as long as its rigidity is not disturbed.

Frames and Front Axles Frequently Go.

Doubtless the average observer would ask what the driver of the car happened to collide with to cause the four petty specimens of frame breakage shown by the photograph, Fig. 6, and would be correspondingly surprised to learn that, in the current slang of the day, these frames simply "laid down." They were not in a wreck or collision of any kind. All are from different cars, but of the same make and of high-priced French construction. They gave way simply because they had come to the end of their life—all are flexure breaks. The point of bending of the material was fixed at a point far below that necessary for such requirements, and having withstood the limited number of shocks of which it was capable of resisting it had come to the end of its dynamic life. The usual point of frame breakage is the rear end of the front spring, and it shows the fallacy of reducing the section of the side frame member excessively, though binding of the hanger is sometimes responsible. As a matter of

fact, however, the frame seldom defaults except in cases of extreme stress, such as could not be adequately provided for by any reasonable design—in short, wrecks and collisions.

Front, axles, however, are in quite a different class—in fact, they form a rather close second to crankshafts, one European car that bears an excellent reputation having a record of sixteen failures in this essential during a comparatively short time. It was not merely a case of poor metal, but a poor distribution of the metal at a load-carrying point—between the spring hanger and the steering knuckle, another equally prominent foreign car having suffered similarly in spite of the fact that the material was all that it should have been. The story is really one of wheels within wheels, for the design of the latter was faithfully copied by that of the former before its originator had had any experience in its use, but the copy was a Chinese imitation in that extremely poor material was employed to execute it. As already mentioned, front axle breakage is most common between the spring saddle and the steering knuckle, and in the attempt to save weight excessive reduction of the section of the axle had been made at that point. On later models of the first-mentioned car it was noticeable that the reduction or I-beam section at the point in question was scarcely more than a surface indentation and was presumably for appearance sake only, as the amount of weight thus saved would be practically a negligible quantity.

Minor Parts that Wear and Break.

It may occasion the experienced autoist no little surprise to note that as yet nothing has been said of the shortcomings of the gearbox. The truth of the matter is, so much attention has been given to this essential that it has reached a point where, in the words of a well-known designer, "it is above suspicion." From being the most prolific source of expense where mechanical replacements are concerned, it has attained to the other extreme. Proper materials, better designed teeth, accurate cutting and the use of ball or roller bearings sum up the improvements; where it was nothing unusual to ruin a gear-set a season, with legitimate use there is now no reason why the life of this part of the car should not correspond with that of the vehicle as a whole. But that improper handling will do damage, despite the designer's best efforts, is well illustrated by the sliding member

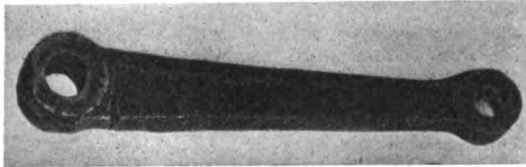


FIG. 8.—Illustrating the fact that no part of the car is immune.

design left anything to be desired—they could hardly be improved upon, and ordinarily the badly worn pinion on the left should have lasted the life of the car. As it is, it forms a striking example of the long service obtainable from proper design and materials under the most adverse conditions. This, in short, is purely a case of poor driver. The man who handled the lever on the car in question was in too much of a hurry to get under way and had a habit of letting the clutch re-engage before the pinions were fully meshed. In this way the entire load was carried by the corners of the gears, and that they were able to do this on slightly less than a third of the tooth surface allowed by the design, as shown by the worn portion, bears witness to the ample factor of safety allowed.

It is doubtless the average layman's opinion that poor material is synonymous with low first cost and that if the maker cared to share his portion of the burden of expense there need be no further ground for complaint on this score. The bevel pinion shown in the upper half of the same illustration, Fig. 7, is evidence of the fact that this is not always the case. It was taken from a

French car that is built in this country under license and is an excellent illustration of misplaced high-priced material. Analysis showed it to be of 13-point Tungsten steel, a nature-hard steel, oil quenched, that was the prize tool stock of several years ago. The pinion in question was replaced with a low carbon steel wheel, and it is safe to say that, barring accident, the new bevel will last as long as anything else on the car will. Steel of this

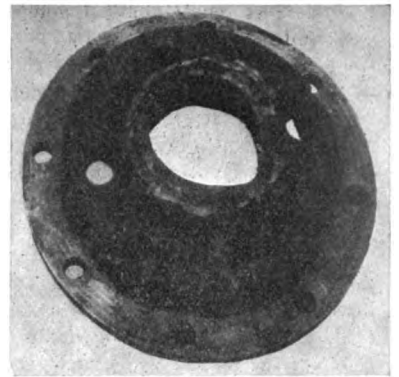


FIG. 9.—Typical case of extreme bungling in an alleged light racing car.

kind has better dynamic properties and will simply wear out in use, whereas the Tungsten steel is practically non-dynamic and wholly unfitted to withstand shock. Neither the bevel driving unit nor the differential occasion much trouble, owing to the fact that there are so many intermediate steps between them and the source of power that shocks do not reach them directly. This also accounts for the immunity of the cardan shaft, as breakages here are also more or less rare.

The Maker Paid for This Experience.

It has already been said that the gear-box is no longer a great source of expense in the way of replacements to the autoist, but this had reference more particularly to the contents rather than to the gear-box itself. Aluminum alloys have always been a source of more or less trouble, but "not when they are properly alloyed and cast" immediately retorts the aluminum founder. There's the rub—not every automobile manufacturer makes his own aluminum castings, and not every maker is fortunate in always getting a supply that conforms to the requirements. One year—it was in the transition period of 1903, by the way—the makers of one of the highest-priced foreign cars found it necessary to call in all the gear boxes that had been sent out on cars of that year's model when the season was well advanced and a large number had been turned out. This was a case in which the error was of so serious a nature that the maker preferred to stand the expense of replacement himself rather than saddle it on the purchaser of the car. A little consideration would seem to indicate that the wholesale breaking of crankshafts chronicled earlier fell within the same category, but unfortunately this was not the case. It seems rather a coincidence that both these costly errors of design should have occurred on the same make of car.

Another instance in which the maker had to foot the bill—in this case unwillingly—is recorded by the illustration of the two broken crankcase arms, Fig. 5. These were taken from a car of French make and of

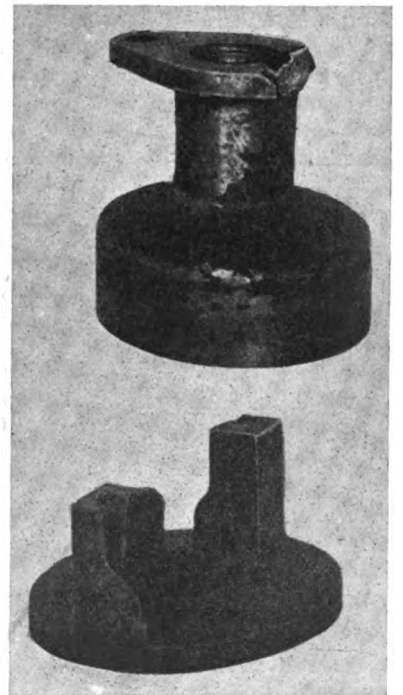


FIG. 10.—The first of these pieces was not at fault, but the second shows the result of very poor design.

such sterling reputation that numberless American autoists have been quite willing to pay the 45 per cent. duty in order to become the possessor of one. It is not referred to here to its detriment, as it was merely one of those accidents that are apt to happen at times in the best of well-regulated families and on the best built cars, regardless of where they are made. Usually such faults make themselves known before the car leaves the factory, but this was an exception. The New Yorker who purchased it refused to settle for the car and was sued by the maker's representatives. The former enlisted the services of a well-known designer as an expert witness and, divining the cause of the break at a glance, the expert casually picked up a hammer and dealt the offending case a smart blow. The part struck broke into several pieces, which flew about the room, and the result was such a surprise to the intending litigants that the action was never pressed any further. Both the arms shown are from the same crankcase, the one at the right being the part that originally offended, while the other was broken intentionally to examine the nature of the fracture. The crystalline nature of the break in the first is strikingly evident even in the photograph and shows plainly that the metal was burnt. Of eight or ten cases of similar breaks this was by far the worst, but, as already mentioned, was nothing more nor less than an exceptional instance. Aluminum properly alloyed to meet the requirements of this service will pene down under the hammer.

Some Unusual Instances of Breakage.

If a designer were asked what, in his opinion, constituted a part of the car least apt to break, he could probably think of nothing that would answer the question better than the starting crank. Yet starting cranks do give way, as evidenced by the substantial specimen pictured in Fig. 8. It only goes to show that some men, when at the end of the crank, are well able to stand the shock of a backfire, and this is not always true of the crank itself. Fig. 9 represents what was originally a differential housing and is an excellent example of what should not be done. It was taken from a specially built racing car and strikingly exemplified the amateur idea of weight saving. The pinions were made microscopical in size, while the cast steel casing would have held down an ocean liner, if properly applied. It is merely a case of a vast surplusage of material coupled with bad design in other respects. The piece shown in the upper half of Fig. 10 represents a differential sprocket housing from a heavy side-chain driven car, but scarcely calls for extended comment, as the result shown was more of an accident than otherwise, both the material and design being good. Beneath it is illustrated an error in design, pure and simple. In this the jaw clutch of the direct drive of a gear-set was made with but two projections, so that when engaging the parts had up to 90 degrees travel before striking with the excessive wear shown as a result.



ANOTHER CASE FOR THE COURT TO ADJUDICATE.

French Gendarme—"Having asked him what he was doing there hidden under the car, he replied that he was hunting a catterpin; consequently we have drawn up a summons for illegally hunting an unknown game during closed season."—*Omnia*.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 9-14.....—Detroit, Riverview Park Auditorium, Detroit Automobile Dealers' Association. LeRoy Pelletier, manager.
- Dec. 14-21.....—St. Louis, Mo., Jai Alai Building, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association. D. M. Strauss, manager.
- Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, manager.
- Jan. 14-18.....—Hartford, Conn., Foot Guard Hall, Hartford Automobile Dealers' Association.
- Feb. 1-8.....—Providence, State Armory, Automobile Show. Frank M. Prescott, manager.
- Feb. 10-15.....—Detroit, Light Guard Armory, Tri-State Automobile and Sporting Goods Association, Seventh Annual Show.
- Feb. 17-22.....—Cleveland, Central Armory, Annual Show, Cleveland Automobile Dealers' Association. George Collister, manager.
- Mar. 7-14.....—Boston, Mechanics' Building and Horticultural Hall, Boston Automobile Dealers' Association. Chester I. Campbell, manager, 5 Park Square.
- Mar. 9-14.....—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dal H. Lewis, manager.
- Mar. 21-28.....—Toronto, Canada, St. Lawrence Arena, Automobile Show. R. M. Jaffray, manager.
- Apr. 5-12.....—Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Motor Boat Shows.

- Dec. 7-14.....—New York City, Grand Central Palace, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 1-8.....—Chicago, Coliseum, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 25-Feb. 1.—Boston, Mechanics' Building, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Feb. 3-8.....—Buffalo, Convention Hall, First Annual Power Boat and Sportsman's Show, auspices of Buffalo Launch Club. Dal H. Lewis, manager.
- Feb. 20-Mar. 7.—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsman's Show.

FOREIGN.

Shows.

- Dec. 5-22.....—Berlin, Germany, Automobile Show.
- Dec. 21-Jan. 2.—Brussels, Show, Palace of the Cinquantenaire.
- Jan. 18-Feb. 2, '08—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park. Automobile Club of Turin.
- Mar. 21-28.....—London, Agricultural Hall, Cordingley's Show.
- May 6-20.....—Moscow, Russia, International Automobile Exposition. Automobile Club of Moscow.

Races, Hill-Climbs, Etc.

- Dec. 8.....—Paris, Straightaway Aeroplane Speed Test, auspices of "L'Auto."
- Dec. 8.....—Paris, Break-down Competition, auspices of "L'Auto."
- May, 1908.....—Paris, Competition for Agricultural Automobiles, auspices of "L'Auto." (Exact date to be announced.)
- May 10.....—Sicily, Targa Florio, Automobile Club of Italy.
- June 20-July 5.—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
- July 13-17.....—Ostend, Belgium, International Race Week. Automobile Club of Ostend.
- July 20-30.....—Ardennes Circuit Races and Coupe de Liedederke, Automobile Club of Belgium.
- August, 1908...—France, Coupe de la Presse, Automobile Club of France. (Exact date to be announced.)

LETTERS INTERESTING AND INSTRUCTIVE

IS FRONT FLYWHEEL PLACING WRONG?

Editor THE AUTOMOBILE:

[191.]—Will you kindly inform me through your "Letters Interesting and Instructive" if there is any mechanical or scientific objection to placing the flywheel of an automobile engine in front, as in marine engines, instead of back of the engine as is done in the majority? I have been told that it is mechanically incorrect and that in engines so constructed there is a greater strain in the shaft when the clutch is let in and that the main bearings are shorter lived. Please go into the matter as thoroughly as possible, as I am anxious to form an opinion one way or the other.

St. Louis, Mo.

ALBERT C. HAUSMAN.

Without going into the matter deeply from a theoretical point of view, it is evident that the location of the weight of the flywheel on the forward end of the crankshaft will impose an extra torsional strain on the crankshaft when the clutch is let in, and this should be particularly noticeable where the engagement is sudden or harsh. With the flywheel at the rear, as ordinarily employed, it will be apparent that the shock of starting is absorbed by the momentum of the wheel before reaching the crankshaft, whereas in the other case it must necessarily be transmitted through the crankshaft before reaching the wheel. However, whether this is really sufficient to make the main bearings appreciably shorter lived, or whether it can be said to constitute a form of practice that is mechanically incorrect, is quite another thing, for the practice of placing the flywheel at the rear end was more the result of accident than otherwise. The cone clutch was then universally employed and it was found most convenient to combine it with the flywheel, though this situation also gives a better distribution of the weight. The Stevens-Duryea, Northern and Maxwell cars are some instances of forward placing of the flywheel that have been consistently adhered to in this country, while in the Motobloc, a French type, the flywheel is centrally located between the two pairs of cylinders. Probably some of our readers who have had personal experience with cars of both types—i. e., in which the flywheel has been at either end of the crankshaft—may throw some more definite light on the subject. Endless mathematical formulæ could be adduced in support of either position, but such evidence does not carry a great deal of weight with the average man.

WHY ARE VALVE STEMS NOT LUBRICATED?

Editor THE AUTOMOBILE:

[192.]—Will you kindly explain in your columns why it is that automobile manufacturers, without exception so far as my observation has gone, make no provision for the lubrication of valve stems in their motors. It has always seemed to me that it is of as much importance to have the valve stems lubricated as it is of any other part, the valves being a very important part of a motor.

Minneapolis, Minn.

O. A. WEISS.

On the majority of modern motors the camshaft is located in the crankcase and is exposed to the splash of the oil utilized for lubricating the main bearings, pistons and other moving parts. This oil takes care of the lubrication of the camshaft bearings, cams, rollers and the like, as well as the valve push rods, the housings of which are usually open from below for this purpose. The movement of these rods seldom exceeds 3-8 inch. so that, despite their speed, they do not require a great deal in the way of lubrication. Many drivers find that an occasional drop or two of oil allowed to run down the stem is all that is necessary, while others seldom touch these parts of the motor, and we have known cars having overhead valve gear of the rocker arm type to run 600 miles without being oiled. We have known cases of seized valve stems on racers, which could be traced, however, to a breakdown of the lubrication system. The answer to your query would accordingly seem to be that there is no necessity for such provision, but if there are any of our readers whose experience indicates otherwise we should be glad to have their views.

WHAT POWER AND SPEED WILL THIS HAVE?

Editor THE AUTOMOBILE:

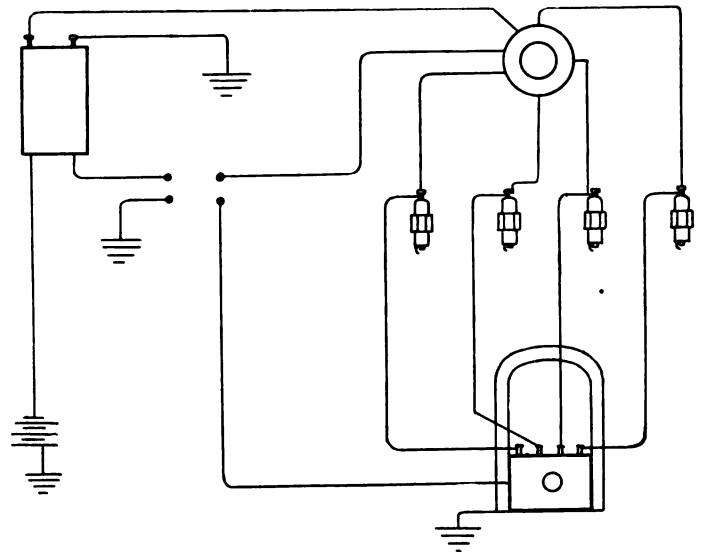
[193.]—I have just completed a four-cylinder motor as follows: cylinders, 6 x 6; exhaust valve, 3 3/8 inches with 3-inch opening, intake valve the same; exhaust valve has 1-4 inch; lift intake has 3-16 inch; lift valves are on opposite sides; compression, 78 pounds; connecting rods are 12 inches long; the motor is very flexible, and rather high speed. I am going to put it in a touring car and will gear it 2-1-4 to 1, using 36-inch wheels. Kindly state horsepower of same, also how fast motor should turn up, and how fast car should travel at its best.

I would also like some information on the following: I want to use a high-tension magneto with one set of plugs, also single coil, and distribute them as per sketch. I want to use the storage battery, single coil, and distribute for starting and after starting switch over to the magneto. The magneto will be a Bosch.

Baltimore, Md.

EDWIN S. ZELL.

Why not give the exhaust valve the same amount of lift as the intake, as it is equally essential to clear the combustion chamber of burnt gases as it is to fill it with the fresh charge. Ac-



[SKETCH OF MR. BELL'S PROPOSED IGNITION SYSTEM.]

ording to the A. L. A. M. horsepower formula, the output of the motor should be 57.6, but its actual brake output at 1,200 r.p.m. would probably be nearer 80 horsepower. You say it runs very fast, presumably light, and if you will ascertain this speed with a counter, taking two-thirds of it will give you the speed of maximum torque, this rule being found to apply to the great majority of motors similarly proportioned. As you have allowed liberal valve openings, doubtless the free speed of your motor will reach as high as 1,800 r.p.m., or a little over, so that its maximum torque would be reached in the neighborhood of 1,200 r.p.m., though it will probably run as high as 1,500 r.p.m. without showing an excessive falling off in power, and that this figure may be taken in calculating the probable speed of the car. The 36-inch wheels cover 9.91 feet per revolution, or for convenience in figuring, 10 feet. As the gear ratio is to be 2.25 to 1, neglecting any loss from slippage or similar causes, the road wheels will make 660 turns per minute, or about 1.25 miles per minute. The gear ratio is low for a motor of this power and by raising it a speed of ninety miles an hour or over would be obtainable—rather high for a "touring" car in either case.

Referring to your sketch of the proposed ignition system, we have altered this as indicated. As one end of the primary winding of the magneto is grounded on its frame, merely fastening it in place on the car gives the primary ground connection. By taking a wire from the other terminal of the primary

to a switch, one point of which is grounded as shown, the magneto may be cut out by short-circuiting its primary winding, this being the usual method. The secondary connections are taken directly from the distributor on the magneto to the plugs, as shown. One side of the battery is grounded and the other led to the single coil; the second terminal of the primary of the coil is led to the low-tension side of the distributor, a switch being interposed as indicated to permit of shutting off this side of the system. One of the secondary terminals of the coil is grounded and the other led to the distributor, the latter, of course, being grounded in the usual way, the connections not being indicated, in order not to complicate the diagram unnecessarily. Starting is so easily accomplished on the magneto and the latter is so reliable that we should hardly think it worth while to go to the trouble of installing the second system on a home-built car.

HOW DO RADIATORS DIFFER, AND WHY?

Editor THE AUTOMOBILE:

[1994.]—Will you please inform me, through "Letters Interesting and Instructive," what the difference is between cellular and tubular radiators, and which is superior? J. E. HARRIS. New York.

A cellular radiator is built up of a great number of small parts, in practically the same manner as a honeycomb radiator is made. These parts are small tubes, their length being that of the thickness of the radiator. They come together at both ends, where they are soldered, but are of smaller section for the remainder of their length, thus leaving thin water spaces between. The tubular radiator is composed of large, flat tubes, covered with radiating fins, and through which the water circulates. From the point of view of efficiency alone, the cellular radiator is superior, but owing to its construction, it is delicate and difficult to repair, so that the tubular type is ordinarily preferred in this country.

WANTS ENTRY LISTS OF FOREIGN RACES.

Editor THE AUTOMOBILE:

[1995.]—Being an interested reader of "The Automobile," I would like to ask a few questions. Could you give me the complete entries of the following events: Scottish Reliability Trials, Targa Florio, Irish Reliability Trials, and the Bexhill Speed Trials? These being all foreign contests, I could not find them out, and if you could help me I would be much obliged. L. R. W. New York, N. Y.

These events having attracted a large field of entries, it would be impossible to reproduce the full lists here, the matter being only one of personal interest. If you will give a more complete address than "New York," we will be pleased to give you the desired information by mail.

SOME INTERESTING QUERIES AS TO PRIORITY.

Editor THE AUTOMOBILE:

[1996.]—As a reader of your interesting journal, I take the liberty to ask the following. Several makers claim that they built the first six-cylinder car. (1) What American company first marketed such a car (2) Where did the three-point support, as applied to automobiles, originate? What American concern first used the above construction? (3) What American maker first turned out cars having the power plant installed as a unit? (4) I am under the impression that the motor 'buses used in New York City are made in England. Please state what company built them. (5) Is the Darracq the only make of taxicab used in New York City? Brooklyn, N. Y. C. N. S.

1.—We believe the Gasmobile Company, a concern that became defunct the latter part of 1902, should be credited with having offered the first six-cylinder car for sale. It was exhibited in the show in Madison Square Garden in January, 1902, and was generally regarded as nothing more or less than one of the many freaks that each succeeding show of that time brought forth. So far as we are aware, this was the original six-cylinder, but these columns are open to all claimants of the honor. Unless such claims do appear, antedating the foregoing conclusively, the old Gasmobile must be awarded the palm in this respect.

2.—We do not know to a certainty and will have to refer the question to our readers. Both the Stevens-Duryea and the Autocar embodied this form of construction in early models.

3.—This also applies to the unit power-plant, and necessarily so, as the idea is to give both the power-plant and the transmission the benefit of the three-point suspension, and to do this most conveniently they must be combined.

4.—The motor 'buses used in New York City are made in France by the house of De Dion, but the output of the latter has been contracted for by an English firm, which markets them and accordingly affixes its name plates to the chassis.

5.—There are a number of different makes of taxicabs running in New York City, but the Darracq (red) and the Delahaye (green) predominate. Some of the others are the Renault, De Dion, Aries and Chenard-Walker, all of French manufacture, but only having one or two representatives of each make, though all ply regularly for hire.

WHERE THE FOUR IS BETTER THAN THE SIX.

Editor THE AUTOMOBILE:

[1997.]—In the October 31 issue of "The Automobile" there was an article by a maker of four-cylinder cars, and in the following issue, an article on the same subject by a manufacturer of six-cylinder cars, in which the latter has taken his four-cylinder opponent so severely to task that, in places, he seems to be hard pressed for material upon which to base a sound argument. As both of these articles were written by manufacturers, perhaps a few words from a private owner, unconnected with the trade, would not be entirely out of place.

Let us consider two motors, one of four cylinders and the other of six, both of the same horsepower. The cylinders of the former would have to be of greater size in order to produce the same horsepower at the same speed. Now the fundamental argument in favor of any type of machine, except in extreme cases, is its efficiency, or, in other words, the ratio of the energy expended in doing useful work to the total energy received. Gas and steam engines are "heat" engines; they transform heat into work, and they are also capable of performing the reverse of this process. The units of heat are called British thermal units, and one B.T.U. is the amount of heat that will raise the temperature of one pound of water one degree; to be exact, distilled water, at or near the temperature of 39 degrees Fahr. temperature, then, of a gas or substance, is the measure of the heat units it contains.

In a gas engine, when compression occurs, the temperature of the gas in the cylinder is raised, and in this case the energy of the moving piston is transformed into heat. When ignition takes place the gas is exploded—the temperature rising several hundred degrees almost instantly—that is, heat units have been added to the gas. It is this heat, or rather part of it, that drives the engine. Under the second law of thermodynamics, the efficiency of an engine

like a gas engine may be expressed by the formula $\frac{T-T_1}{T}$, in which T

is the temperature of the gas at explosion, and T₁ is the temperature at release or exhaust. It will be clearly seen that the greater the difference of the temperatures at explosion and at exhaust, the greater will be the efficiency, and the greater the number of heat units transformed into useful work—provided it is all expended in driving the piston, and here we come to the important part.

As a matter of fact, only a small portion of this heat expended in the cylinder drives the piston. One authority gives the distribution as follows:

Work indicated in the cylinders.....	17 per cent.
Heat lost to the cylinder walls.....	52 " "
Heat carried away by the exhaust.....	15.5 " "
Heat lost by radiation and conduction.....	15.5 " "
	100.0

The power of a gas engine increases as the square of the diameter of the cylinder, while the cylinder wall area does not increase so rapidly, and therefore the larger the bore of the cylinder, the less the percentage of cylinder wall surface there is, and the more efficient the engine becomes.

Applying the above to the two engines of equal horsepower, one of four cylinders and the other of six, the former will have the higher efficiency, as the greatest waste of a gas engine is the heat carried away by the water-jacket. This is strikingly shown by the following table of results from tests on stationary gas engines of different cylinder sizes but of about the same amount of compression:

Diameter of cylinder.....	9.5 "	14. "
Stroke	18.0 "	25. "
Actual efficiency .....	.21	.27
Theoretical efficiency .....	.40	.41
Ratio of efficiencies.....	.53	.67

Again, the six-cylinder engine will have more friction than the four-cylinder of the same horsepower, for there is the friction of six crank pins, etc., instead of four, and the four-cylinder motor adds to its already better efficiency here.

One might say that the same reasoning could be applied to the two-cylinder against the four. However, with four cylinders there are two impulses for each revolution, the same as a one-cylinder steam engine, and this gives so much better balance than the two-cylinder, and is of such importance, that it outweighs the gain in efficiency and the four-cylinder is to be desired. With the six-cylinder this point does not apply as it would if we were considering eight, for eight cylinders would be equivalent to two steam cylinders.

Few people will deny that two cylinders are better than three. Many two-cylinder cars are built to-day—the Darracq Company is building them—but do you find any three-cylinder motors built this year? Judging from the sad experience of the three-cylinder cars, the future of the six ought to be clearly defined.

The six-cylinder advocate tells us that an engine with six cylinders, of the same size, etc., as four, will develop 50 per cent. more power because it is not a matter of "testing" or "opinion," but "it is the working out of mechanical laws." Mechanical laws may work out to a certain result, but the rub comes when you try to get the same result in practice. Do you get it? The four-cylinder advocate states that after trying to do it, and after testing the matter out carefully for a considerable length of time, that he could not get the 50 per cent. more power. From my own experience, in charge of tests on steam and gas engines varying from 10 to 4,000 horsepower, I should not hesitate to believe the four-cylinder spokesman. And if he, a maker of a successful and reliable car, could not obtain the 50 per cent. more power, is it unreasonable to suppose that another maker cannot do so, when he presumably has not tested it out carefully, since he did not state his results?

Quoting from the columns of "The Automobile" of November 7, page 708: "Six cylinders will be in evidence (Paris), but will certainly not be one of the features of the show. Important speed contests this year, which have much less connection with fashion than automobile shows, have failed to develop any remarkable features in the sixes that are not already possessed by the fours. Leading French makers * * * will produce six-cylinder models, generally as a concession to a popular fad, but not because of any firm belief in their superiority."

Perchance this might explain "Why the public should demand inferior cars (sixes) and still be willing to pay more for them than they do for fours." As the breakfast food man says—"Get back to Nature"—the horse and the greyhound have four, so has the elephant, and here we have usefulness, speed and power, but the six-cylinder man will tell you that this last statement is as irrelevant as carbureters, torque and perpetual motion, and perhaps it is.

E. L. HILL.

Worcester, Mass.

IN DEFENSE OF THE MANY-CYLINDERED MOTOR.

Editor THE AUTOMOBILE:

[199.]—It is with considerable diffidence that I take up cudgels in defense of the motor of more than four cylinders against the attack of Mr. Stearns, in your issue of October 31, both on account of the well-known reputation of Mr. Stearns and also on account of the appalling amount that has been written on the subject. If it will not be considered as dodging the issue, perhaps the eight-cylinder motor may be included in the controversy, as offering a more radical contrast with the four-cylinder than the "six" does.

Beginning with the question of torque, which seems to be the crux of the matter, the four-cylinder motor is deficient, as twice every revolution the torque drops to zero. In addition to this, it must be remembered that during the latter part of the power stroke the power is small and rapidly decreasing. In fact, with standard gearing and engine, very few four-cylinder cars would be able to climb a steady 6 per cent. grade on the direct drive, without the help of the energy stored in the flywheel. Considering the eight-cylinder motor as the other extreme, the torque is found to be almost constant. Firing every quarter of a revolution, one impulse begins long before the preceding one is expended. As a gasoline engine delivers by far the greater part of its power during the first half of the piston stroke, the flywheel in an engine of this type has very little to do, and may be quite light without making any perceptible difference in the smoothness of operation.

The statement that it is utterly impossible to notice any difference in the smoothness of running between the best four-cylinder and six-cylinder engines running at a speed of over 200 r.p.m., may be passed over as a matter of personal opinion, but it is doubt-

ful if everybody would agree with Mr. Stearns after driving behind a four-cylinder and also a six, or, better still, an eight-cylinder, up a stiff grade with an engine speed of about 200 r.p.m.

The declaration that "a six-cylinder motor geared, say, 2 to 1, delivers 12 impulses to the rear axle for every revolution of the wheels" and the following comparison with a one-cylinder motor is presumably a typographical error, but the deductions if of any value rather incline toward a preference for a one-cylinder motor over all others, as the question of torque and balance are ignored.

The statement that the six-cylinder motor used 50 per cent. more radiating surface, weighs 50 per cent. more than a four-cylinder motor of the same power, and the other accompanying statements, are hardly borne out by the facts. Indeed, in airship practice, when maximum power per unit of weight is necessary, I believe the tendency is toward the multiplication of cylinders, even up to eight, twelve, and more, as exemplified by the Antoinette motors. The conclusion that the "six" needs 50 per cent. more care and 50 per cent. more repair bills than the "four" is arbitrary and unjust. The 15,000-mile non-stop record of the Rolls-Royce, the 24-hour record of Mr. Edge in the Napier, and the work of the Hotchkiss may be instanced as pretty fair examples of the reliability of the six-cylinders. The absence of vibration, the constant pulling effort and the dividing of the power into a succession of surging impulses instead of instantaneous shocks rising immediately from zero to maximum so reduces the destructive effect on the entire machine, including not only the engine itself, but also the transmission, frame, body, and tires, that repairs on well-made six and eight-cylinder cars are reduced to a minimum.

The criticism of Mr. Stearns in regard to the excessive length of hood needed for some six-cylinder motors is well taken. However, if an engine is built with eight cylinders, four on each side, 90 degrees apart, it need have no longer hood than many "fours." An engine of this type is almost as far ahead of a "six," in regard to flexibility, as the "six" is ahead of the "four," and as it is a very substantial engine and still light, it may be seen a good deal more of in the future. Although most racing cars are of four cylinders, as Mr. Stearns says, still the fastest time in the world for two miles was made by an eight-cylinder machine of this type.

Carburetion troubles, instead of being increased by the multiplication of cylinders, are practically eliminated in an engine of this type, as suction is so constant as to prevent the irregular action noticeable in four-cylinder engines from different piston speeds, and the sudden cessation of suction at the end of each stroke. This arrangement of the cylinders also lends itself to intake piping of simple and symmetrical form, allows of a crankshaft similar to a four-cylinder one, needs only one camshaft, and brings the center of gravity of the motor and machine very low.

On the whole, Mr. Stearns' most valid objection to the six-cylinder machine seems to be on account of the long wheelbase, and if this can be overcome, and if, at the same time, it is possible to get greater flexibility and greater wearing qualities and reliability, will he still object?

A. G. BROOKE RIDLEY.

Alameda, Cal.

REAL CHAMPIONS OF THE AMERICAN INDUSTRY.

Editor THE AUTOMOBILE:

[199.]—I have read in one of the daily papers that Chairman Jefferson DeMont Thompson, of the A. A. A. racing board, has just placed an order with the E. R. Thomas Motor Company for a racer for his own personal use. If this is true, let all patriotic Americans take their hat off to him, as one of the real champions of the American industry among the wealthier sportsmen.

We have had several millionaire sportsmen, who incessantly talk of their intense interest in the welfare of the American industry, and who have established some of the largest existing tours and races, in order, as they say, to stimulate the American manufacturers and give them a chance to win; nevertheless, these self same men, after making these impressive speeches, take the first steamer to Europe and purchase two or three more foreign machines, even bringing back foreign racers to enter in their own races against American cars. Would they do this if they were sincere? If they were, would they not place their orders with American manufacturers, to help them in their struggle to gain the first rank which foreigners have been holding for years?

It is true we have had a few of these good sportsmen, probably the most prominent of whom is Dr. Harold E. Thomas, of Chicago (who owned the "Locomobile" that made such a wonderful record in the 1905 Vanderbilt Cup race, and thereby proving that at least one American manufacturer could turn out a car that was the equal of the best of the foreigners, if not better), but how few and far between have these men been. Therefore, every patriotic American ought to rejoice that Mr. Thompson has taken up the "good cause," and let them hope that a few of our wealthy sportsmen will follow his excellent example.

AMERICAN WHO WOULD, IF HE COULD, BUT CAN'T.

Boston, Mass.

ACROSS THREE CONTINENTS BY AUTOMOBILE

AT the end of February, or early in March, a group of automobiles will start from Times Square, New York City, bound for Paris via Bering straits and the Continent of Asia. The Parisian journal, *Le Matin*, past-master in the art of organizing world-stunning performances, originated the unique contest and immediately obtained the co-operation of the New York *Times* in the realization of the idea. Although the *Matin* has had exceptional experience in organizing sporting events for its own and the public's benefit, such efforts as making the French army march, running an automobile tour around France, sending a fleet of motor boats from Algiers to the bottom of the Mediterranean, and finally the successful automobile run from Peking to Paris appear trivial compared with the scheme on which it and the *Times* have now set their journalistic hearts.

New York-Paris has only been made possible by reason of the successful termination of the Peking-Paris run, and although one may object to the shrillness of *Le Matin* trumpet and prefer fewer "Lisez *Le Matin*" posters, the journal must be congratulated on having proved the impossible possible and for displaying more faith in the automobile than the most enthusiastic automobilist. Five automobiles and one tricar started on the run across Asia and Europe, three of the cars finishing without difficulty, one straggling home very late, and only the tricar being left to whiten its bones on the desert.

To the tremendous difficulties of the 1907 run are added the hardships of crossing the Arctic regions with no other aid than the contestants can mutually grant. Providing, however, that adequate arrangements are made for supplying fuel and supplies along the route of march, there is no reason why the tour should not be successfully accomplished by a good percentage of the starters. The essential is that courageous and resourceful drivers should be selected, and that the machines should be specially constructed and equipped for the difficulties they will have to encounter. Greater road clearance, provision against cold, exceptionally low gearing, special wheels for traveling over ice, portable bridges and the best arrangement of supplies to gain space and weight are some of the matters that will have to be carefully thought out. Lessons learned from the Peking-Paris

run are that while the stores of each competitor must be so complete as to make him self-sufficing in the most complete isolation, weight must be reduced to a minimum. It is important, too, that the contestants should be bound to keep together, at any rate until European centers of civilization are reached. The natural desire to push ahead of slower competitors, dangerous in the Peking-Paris tour, might be fatal in view of the greater physical hardships of the Arctic regions.

Particulars of the route have not yet been definitely announced, expert opinion still being sought as to the most suitable way of reaching Alaska and crossing the Bering straits. It has been tentatively announced as New York to Chicago, then northward into Canada, following the line of the Canadian Pacific Railroad to Vancouver; or the run may continue across the United States through St. Louis and Denver to San Francisco, then up the coast through British Columbia to Alaska, across the Bering straits, then through Siberia to Moscow, from which point the route will be that followed by the Peking-Paris travelers. Total distance will be about fifteen thousand miles.

In France the round-the-world tour has been received with enthusiasm, Marquis de Dion, whose two cars finished in the Peking-Paris run, already declaring that he has ordered the construction of special machines for the event. Paul Lacroix, American agent for the Renault firm, who has just returned from Paris, announces that the Renault Brothers have fully considered the scheme and are decided to put in a car. Other announcements have not yet been made, but it is certain that a representative group of foreign cars will be obtained. America will not be behind, the Hol-Tan company having already made a formal entry, and Thomas and Franklin announced keen interest in the event. As a demonstration of the ability of American cars and American drivers to stand up under the greatest strain ever imposed on man and machine, no better event could be found than the run to Paris. The event will be one which will attract not merely local but world-wide attention, and American manufacturers have too much at stake to allow themselves to be outnumbered at the starting line, or to line up a team in Times Square less suited for the strenuous test than their foreign rivals.

NO DIFFICULTIES WITH ALCOHOL AS FUEL

PARIS, Nov. 25.—An interesting statement regarding the possibilities of alcohol as fuel was presented at the conference being held in Paris during the Salon, by Eugène Brillié, designer of the 140 motor buses in use in this city. Since 1900 it has been known that both pure and denatured alcohol could be used for internal combustion engines with satisfactory results, but it has been left to the Paris municipal omnibuses to publicly demonstrate its value. The service was inaugurated on June 11, 1906, and up to date 2,231,000 miles have been covered entirely on 50 per cent. denatured alcohol. In his report M. Brillié stated that they had noted no cases of erosion or pitting of the valves, a defect which has often been attributed to alcohol, and the engine certainly heated less than with gasoline. One drawback of alcohol was a certain difficulty in starting the motor during cold weather, but this could always be overcome by passing a little gasoline through the petcocks. Their experience was that alcohol was just as effective as gasoline, the only question to be considered in its use on commercial lines being the cost of operation. In Paris gasoline cost 56 francs the hecoliter, 20 francs of which was town duty; denatured alcohol cost 39 francs per hecoliter, 5 francs 10c. of which was town duty; the difference in favor of alcohol was thus 17 francs per hecoliter. He estimated that by the use of

alcohol a saving of \$60,000 had been effected since the inauguration of the municipal omnibus service. Outside Paris the monetary advantage of alcohol was but slight, owing to the lower price of gasoline consequent on the abolition of the *octroi*.

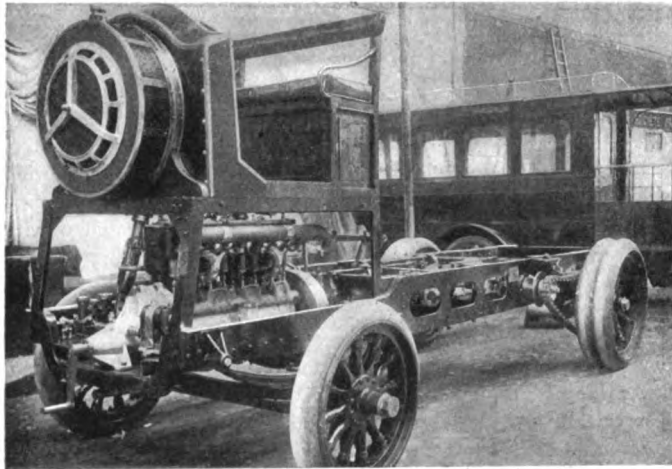
FARMERS CAN SUPPLY DEMAND FOR FUEL.

Reporting on the use of small alcohol stills in France, Consul-General Robert P. Skinner, of Marseilles, says that the distilling process is an exceedingly simple one and that it is possible with a mechanical outfit constructed according to the best modern experience to produce an alcohol of sufficiently high proof to be utilized for light, heat and power from such material as damaged wine and the pulp of grapes, apples, pears, etc., from which the juice has already been extracted. There is no reason either why the cheap stills on the market should not produce alcohol of even greater strength than 90 degrees if required. At present the French farmer is only interested in *eau de vie* of 50 to 70 degrees alcohol strength, but could produce a grade of greater strength if there were a demand for it for industrial purposes. Whether equal results could be obtained from potatoes and grains has yet to be proved. Automobile fuel is available if encouraged.

TWO-CYCLE ENGINES AND ALCOHOL AT SALON

PARIS, Nov. 25.—For the more pronounced departures from the beaten track of automobile design, it is necessary to leave the gorgeous Grand Palais and plunge into the busy hall of machinery on the opposite side of the River Seine; here the many problems connected with commercial vehicles have been tackled, two-cycle and rotary engines have been developed, and alcohol is shown to be reliable as automobile fuel.

More attention than ever before is given to the use of denatured alcohol as fuel, the Automobile Club of France interest-



ELEVATED RADIATOR AND PLATFORM ON TURGAN TRUCK.

ing itself in the subject and having its own stand, designed to point out what has already been done in the matter of alcohol as a fuel for existing internal combustion engines. Progress is shown by its employment on the 140 motor buses equipped with Eugene Brillie motors, now in circulation on the streets of Paris. At the A. C. F. laboratory eight different motors, comprising a De Dion, Panhard, Dietrich, Aster, Peugeot, Tony-Hubert, Abeille, and Gillet-Forest are being run regularly with either pure or denatured alcohol as fuel.

Although the commercial position of the two-cycle engine is still very feeble in France, its standing in the technical quarters has been enormously increased. Tony-Hubert, Ixion, René Legros, Peugeot and Mietz & Wiess, all show two-cycle engines, several of them being in motion with gasoline and kerosene. Interest in this type of engine has been considerably increased of late by the efforts of the A. C. F., which has just held a competition at its laboratory. Most distinctive of all at the Salon is the Burlat rotary engine, two models of which are shown, one of 12-16-horsepower with four cylinders, and an eight-cylinder model developing 30-40-horsepower. All cylinders, which are air-cooled, rotate with the crankshaft, ignition being effected by the tops of the plugs coming into contact with an arm extending from the chassis, which conveys the high-tension current as each cylinder makes its connection in passing.

The feature of the industrial section is the showing of vehicles designed for special classes of work—as compared with standard chassis fitted with a commercial body.

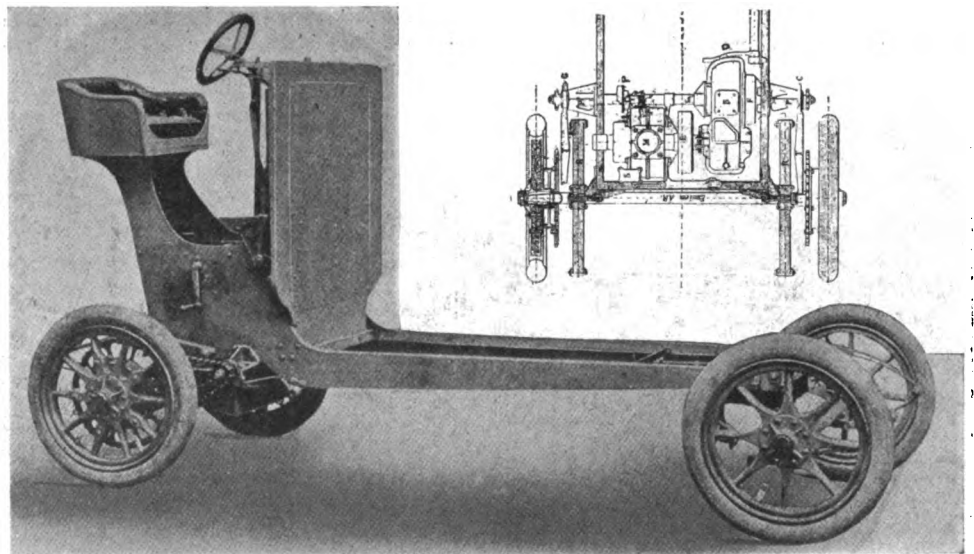
Delahaye shows an automobile fire engine driven by a four-cylinder motor and operating a Delahaye-Farcot pump. Provision is made for carrying twelve men, ladders, and over 800 yards of piping. A good feature is the mounting of the hose lengths on reels hung to the frame between the road wheels. Several of these vehicles have been adopted by the Paris municipality. Dietrich also shows a fire engine designed specially for use in rural districts, driven by a four-cylinder engine and capable of delivering from 400 to 1,000 liters of water a minute. A larger model, with a 35-horsepower engine, will throw 2,000 to 2,500 liters a minute, only three men being required in the operation. This model has been in use for the past year at Nancy.

Agricultural interests are cared for by one firm only, Turgan & Rusinol, with a 50-horsepower tractor for plowing, and an automobile reaper. The plow is an original construction with three driving wheels, two of which are also steering, fitted with three speeds forward and reverse. The reaper, in addition to its ordinary work in the field, is designed to drive any fixed machines by means of belt connection.

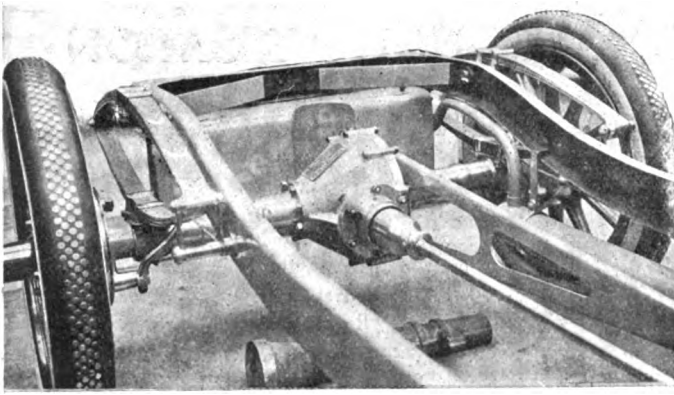
Turgan appears to have solved the question of accessibility in rather an original manner. On one of their heavy trucks the engine is carried forward between the two side members, and two feet above it, supported on four columns running up from the side members, is the driver's platform with the radiator hung on the front of the dash. By removing the two side and the front plates the motor is rendered as accessible as on a shop bench. The arrangement necessitates some changes in the steering gear and in the water piping and pump, but is an excellent design for securing engine accessibility.

About half a dozen different types of tipping trucks are shown, fitted with metal bodies for coal, dirt or stones. On the Orion truck the tipping is performed by means of levers operated by the driver while at his steering wheel. Most of the others have adopted a worm gear by which a five-ton load can be dumped out by one man.

In the light delivery vehicle class one of the most original chassis is the Roval, particulars of which have been published in THE AUTOMOBILE, and which is now illustrated. Briefly, it consists of a single-cylinder motor with its gear set and transmission shaft placed transversely in the frame just forward of the rear axle, and driving the rear wheels through short side chains. A high metal platform above the power plant provides a seat for the driver, while leaving the engine and transmission perfectly



ROVAL LIGHT DELIVERY CHASSIS, WITH ENTIRE POWER PLANT OVER REAR AXLE.



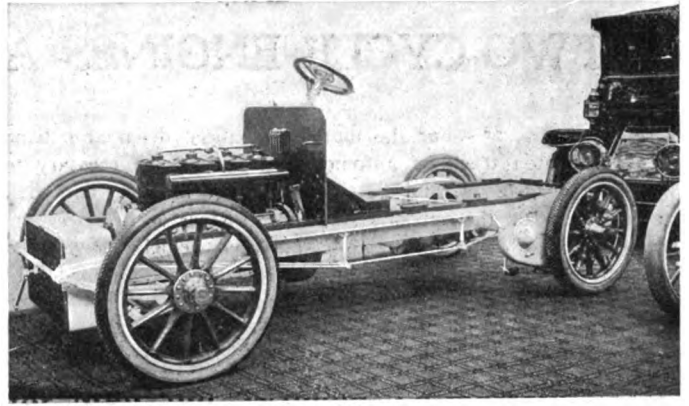
BERLIET HAS FULL ELLIPTICS, SHAFT DRIVE, DROP FRAME.

accessible. Steering is by rack and pinion with connection to the front wheels. The principle is good in that it gives the maximum of space for carrying loads, but it is hardly possible to use it for anything bigger than a two-cylinder engine.

Belt transmission on a five-ton truck is decidedly novel at this stage of development, yet one such is to be seen at the Salon. A two-cylinder horizontal engine developing 12-15-horsepower transmits by a crossed belt to a transverse gear box providing four speeds forward and reverse, final drive being by roller chains to the rear wheels. Instead of a clutch a belt shifting arrangement is provided. The Pantz proved its reliability by covering 1,200 kilometers during the fifteen days of the French army maneuvers without any adjustment.

In the small runabout class—or as the French prefer to call it, *voiturette*—a new and distinctive type of vehicle has been developed, which if put on a sound commercial basis should give the French a new lease of life in the automobile world. Unfortunately in the majority of cases the small cars, though excellent from a mechanical standpoint, are not produced by firms with sufficient commercial standing to give them more than a local success. There are a few exceptions, as in the Lion-Peugeot, Werner, Darracq, and Sizaire-Naudin, but the majority are likely to go down for want of financial backing, or to find their efforts exploited by outside moneyed interests.

Prominent among these little vehicles listed at prices varying from \$500 to \$1,000, is the Sizaire-Naudin, typical of its class in having a single-cylinder vertical motor forward under a bonnet, but distinctive in several features of engine design and transmission. As in all these models, a pressed steel frame is employed, with the car well suspended and hung low to give a smart, racy appearance. The Sizaire-Naudin is distinctive in having a transverse front spring, though in the majority of cases the *voiturettes* have semi-elliptics in front and platform type or three-quarter elliptics in the rear. The power plant consists of a high-speed

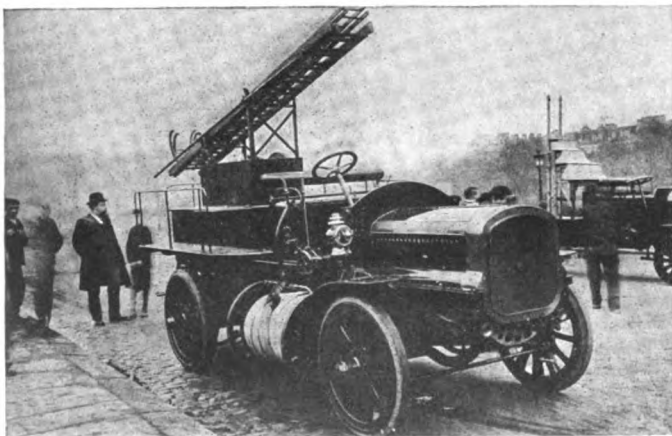


NEW MODEL OF FOUR-CYLINDER CHAIN-DRIVEN CHARRON.

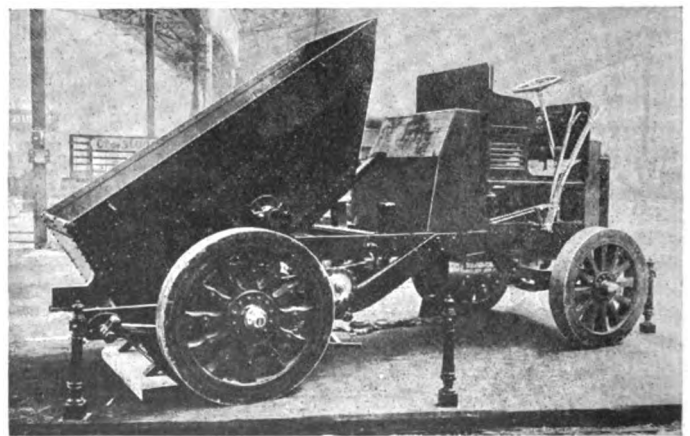
single-cylinder motor 4.7 bore by 4.3 stroke, water-cooled, with mechanically operated valves, the intake being immediately above the exhaust valve and operated by a rocker arm. Motor control is entirely by variable intake valve, the inlet valve cam being movable on its shaft by means of a lever fixed on the steering wheel. Ignition is by high-tension Simms-Bosch magneto with fixed sparking point. Thermo-syphon water circulation is employed through a tubular radiator without fins, surmounted by a large capacity water tank.

In both clutch and transmission the Sizaire-Naudin has distinctive features, excellent because of their simplicity and consequent low price of production, and their reliability as shown in tests. A special type of disk clutch is employed, and the gearbox and differential are contained in a single housing on the rear axle.

In the majority of the *voiturettes* standard lines of construction have been followed more closely, the machines being but miniatures of large touring cars, with such standard features as disk clutch, sliding gear transmission and shaft drive. There is one case of a selective transmission on a single-cylinder car, and a single case of transmission by friction disks; planetary transmission, too, has one supporter. Lion-Peugeot is distinctive in employing side chains for final drive for both the two-cylinder and single-cylinder machines. Side members and body in a single stamping, which offers considerable attractions for a cheap production, has not found the number of supporters expected of it. Darracq has adopted this type of construction for the new single and two-cylinder models, and some examples of this type of construction are found on the metal-workers' stands, but it does not appear to have been adopted by other constructors. The accepted principle appears to be to stamp out one seat with each side member, uniting them together when the frame is built up with the cross members. The construction is one of the strongest possible, can easily be upholstered, and allows of enameling instead of painting and varnishing; its cost, too, is low.



DELAHAYE AUTO FIRE ENGINE AS USED BY PARIS BRIGADE.



BERNA FOUR-CYLINDER TRUCK WITH PIVOTING BODY.

WHAT AMERICAN VISITORS SAW AT LONDON'S BIG SHOW

By ALFRED REEVES, GENERAL MANAGER, AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION.

LONDON, Nov. 18.—Two Americans direct from the New York shows can hardly visit a big exhibition like the one now in progress at the Olympia without observing many new things and being impressed in particular with the importance of American makers sending their representatives to the English and French shows. While there are many things we can teach the foreigners, especially in the matter of general appearance and method of marketing, we can also learn a great deal from our English cousins. This much was proven to me beyond argument after a week at Olympia in company with Howard C. Marmon, the designer of the Marmon car and a member of the technical committee of the American Motor Car Manufacturers' Association.

The exhibition here is for two weeks, and there is a decided difference of opinion as to the worth of so long an affair. Most exhibitors declare one week to be enough. The automobile makers have decided against many of the opposed local shows, declaring in favor of one big exhibition, just as American makers favor. There is a little talk of giving up shows, but very little. Olympia has been taken again for two years as the place for shows here. It is generally agreed that nothing would be more harmful than a failure to hold the annual exhibition. The attendance at Olympia has run from fifteen to twenty thousand a day.

No one can visit the 140 car exhibits at this show without being impressed with the dominating influence of the small car. It is seen everywhere on the streets and apparently is taking the lead. The favored types seem to be those of four cylinders of from 10 to 20 horsepower, with a seating capacity of four. There are some students of auto building here who declare the car to make now is either a small one for the man who does not have a chauffeur, or a very large one on which a chauffeur is absolutely necessary.

I was very glad to see a feeling of conservatism in the trade, without pessimism. It is generally agreed that a little toning down of business is necessary and will be beneficial, but our English friends say they cannot see where there is going to be any great falling off in trade. Nevertheless they have discounted a good portion of any falling off by a general reduction in prices, averaging about 25 per cent. This is rather a big cut, and it applies pretty generally. The makers believe it warranted by the large production of cars and a lower cost of manufacture.

Olympia show is twice the size of anything held in America. The stands are all individually decorated, supplying a novel effect though of course rather costly. Next year will see uniform dec-

orations for the building and the stands, just as we have in America. There are four American cars shown—the Ford, White, Cadillac, and Buick. There was always a crowd at the Cadillac, which has a good reputation here, and at the White stand, for the steamer has been unusually successful in England. Those Americans who were here had the first opportunity along with other visitors of seeing the Ford line, and, as might be expected, the low prices create a sensation. The new four-passenger light touring car and the taxicab or town car were constantly surrounded by visitors. Among a score of other things which Americans would notice at the show were:

- Every stand showing a shaft-drive car except Mercedes.
 - Entire lack of runabouts with rumble seats, except the Buick.
 - Adjustable foot pedals.
 - Tubular front axles even on heavy cars.
 - Many advances in coach work.
 - Almost total disappearance of the cone clutch.
 - The appearance of a couple of buggababouts.
 - The increased use of the motor as a brake.
 - Lack of interest in self-starting devices.
 - A growing practice of abolishing the spark adjustment on the wheel.
 - An unlimited fancy in radiator designs.
 - General cleaning up of dashboards.
 - Change in the carbureter, locating the auxiliary air valve from the manifold.
 - A tendency to lengthen rather than shorten wheelbase.
 - The use of three bearings on transmission shaft.
 - Increased use of shock absorbers as general equipment.
 - Ratchet sprags on transmissions.
 - The fastening of crankcases without the use of arms.
 - Three-quarter elliptic springs on the rear.
 - Grease cups on ball-bearing steering joints.
 - Hand adjustment of brakes.
 - Thermo-syphon system of cooling on town cars.
 - Casting of four cylinders in one on small cars.
- London itself is a city of automobiles, ranging from the motor-cycle to auto drays, carrying loads of coal. There are 800 taxicabs in successful operation in the streets and 200 or 300 motor 'buses that are having a hard time standing up under the terrific trials they have to go daily. The roads around England call for enthusiasm from the American, for they are simply ideal. Among the Americans at the show this week were noticed Walter C. White, Russell Huff, and Howard Coffin.

FIRST IMPRESSIONS OF FRENCH DECENNIAL SHOW

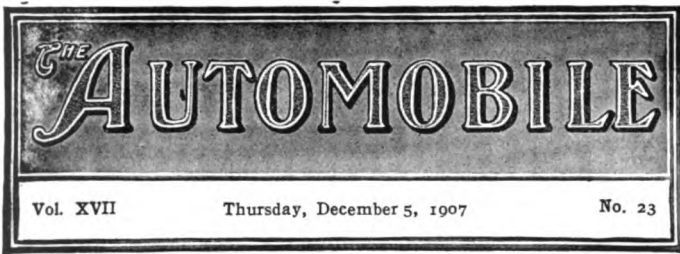
By ALFRED REEVES, GENERAL MANAGER, AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION

PARIS, Nov. 23.—Though the London show was a great automobile event, the Paris Salon eclipses it and is certainly the finest thing of its kind the world has ever seen. The thousands of lights under the roof of the Grand Palais make up a decorative scheme which is par excellence, and the automobiles on exhibit comprise the finest constructions in the world. One feature of the exhibition is the great foreign demand for low priced and medium priced cars; while in some respects the foreign cars are superior to those constructed in America, in the medium priced class we are equal to if not better than the foreigner. There is no dearth of enthusiasm here among the automobile purchasing public, and sales will certainly equal those of last year, especially in medium priced cars. All Paris is alive with the Salon, the show being organized on such a scale that it is impossible for any individual to be unaware of its existence. During the busy

hours of the afternoon the crowd is so great that at times further entries have to be refused. To judge from the crowds in the Champs-Elysées on Sunday, all Paris is bent on seeing the show.

FORD PLACES AN EXCLUSIVE FRENCH AGENCY.

PARIS, Nov. 25.—Henry Depasse, one of the best known of French sportsmen, who in the bicycle days won fame under the name of Dary, has obtained the exclusive agency for France of Ford runabouts. A few years ago Depasse founded the Elysée Automobile Palace in the Avenue des Champs-Elysées, and it is here that the American runabout will be shown. The little four-cylinder car will be marketed in France at \$780. Other American firms having agencies in Paris are Oldsmobile, represented by H. de la Fresnaye, and Mitchell with a garage in the suburbs.



THE CLASS JOURNAL COMPANY

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
LOUIS R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES:

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hilffe & Sons, Limited, 20 Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.
The Automobile is a consolidation of The Automobile (monthly) and the Motor
Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903,
and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905	- - - - -	730,000
“ “ in 1906	- - - - -	791,000
“ “ this issue	- - - - -	18,000
“ “ since January 1	- - - - -	816,900

Certainty of Sounder Health in Auto Industry. There are some men who are so constituted that they gaze out upon the world through a thick and mournful haze, as it were. To them every cloud is a black one and every omen one portending evil to come. In common with all others, the automobile industry has its share of these pessimists and calamity howlers, and probably it always will, but it is doubtful if they will always be granted the opportunity to give vent to their dolorous wailing at the expense of the industry that supports them, as has been the case during the past half year or so. The inexorable law of the survival of the fittest will make its influence felt no less surely in their case than it does in that of others, although the process may be a slow one.

To any one who will take the trouble to look beneath the surface it must be evident that there is really less reason for indulging in a streak of pessimism regarding its future than there ever has been during its short but marvelous career. As an industry that has catered almost exclusively to the man who invests for pleasure alone, it has suffered less from the recent financial depression than any other similarly situated, and, all things considered, the outlook for a successful business year during 1908 could not be improved without changing the face of things in general.

It must be borne in mind that, unfortunately, the recent slump took the industry at its worst—at a time when it was going through a period of transition, passing from the status of the “automobile game” to that of a well-settled business in which

the great big hip, hip, hurrah style of proceeding will no longer figure prominently. Then why not take things at their par value and realize that, while there may be a portion of the industrial body diseased, it is rapidly being cut away and that the eventful result will be sounder health in the automobile business than has ever before prevailed. Dyed-in-the-wool pessimism never helped anybody or anything, and never will.



Changing Standards of Automobile Suspension.

There have been two epochs, so to speak, in the history of the American automobile. The first, in which design and development were entirely in accord with purely American ideas and long independent lines—in short, a period in which foreign ideals were looked at askance, and the average American builder was determined to evolve a distinctive type of his own. The second, in which these ideals were thrown overboard and foreign standards closely patterned after. In common with other features of design, the suspension has changed with the varying standards followed. Primarily, the American car closely followed the carriage maker’s idea of springing and double-elliptic springs were common. They gave way later to the long semi-elliptic with its new methods of placing and attachment to the frame that the continental designer had introduced, and now it is noticeable that there is a more or less general reversion to former standards for reasons that are not hard to understand. The semi-elliptic spring is extremely sensitive, but its range of action is correspondingly limited, and this fact was responsible for the creation of the now familiar shock absorber, for the semi-elliptic is not capable of absorbing unusually heavy shocks, particularly when they follow one another quickly. To overcome this, foreign designers have increased the length of the spring until it now measures a third or more of the length of the frame, and while its sensitiveness is correspondingly enhanced, and its “good road” action proportionately improved, its adaptability to rough road work is not such as to make it the equal of the full-elliptic spring, which is again coming more and more into vogue with the American designer. The platform type of suspension is likewise finding renewed favor, on the part of both foreign and American designers, though it will be recalled that both have tried it and abandoned it in earlier days. Where the American builder is concerned, it is merely a case of coming to a realization of the fact that what is suitable for the good roads of the Continent is out of place on their American counterparts, and designs must be altered accordingly.



The Plain Truth and a Certain Remedy.

After a close study of the features of the present financial disturbance, the American Trade Press Association has arrived at the gist of the matter in the following resolution, which, among others, was adopted at a special meeting of the Association:

That the so-called business depression is due principally to a want of confidence which is unwarranted by agricultural and industrial conditions, and that one of the worst results of the panicky feeling that prevails is the hoarding of money, in which many banks are principal offenders—many holding much more cash than the reserves called for by the banking laws, and setting a most hurtful example to individuals.

Official figures are not wanting to prove the soundness of the Association’s summing up of the situation. They are found in the \$1,434,000,000 imports during the fiscal year of 1907, compared with \$1,227,000,000 during the same period of 1906, and \$765,000,000 in 1897; in increased exports from \$1,718,000,000 to \$1,854,000,000 during the last financial year. Records for production are equally satisfactory: thus for 1906, the last year for which figures are available, pig iron had increased 2,000,000 tons during the twelve months; petroleum production was 5,333,000,000 gallons against 2,500,000,000 a decade earlier; the number of cotton spindles in operation in mills of the Northern States was 15,666,000 against 13,900,000 in 1897; in the Southern States the figures for the same relative periods are 9,000,000 and 3,250,000.

VANDERBILT CUP RACE TO BE HELD IN 1908

THERE will be a race for the William K. Vanderbilt, Jr., Cup in 1908. Exact date and location of course may not be announced before July 1, though conditions may make possible earlier publicity. At any rate, a race will be held, and the manufacturers may count upon the event for October next.

After the executive committee of the A. A. A. Racing Board had had a session on November 27 at A. A. A. headquarters, No. 437 Fifth avenue, and disposed of many routine matters, it resolved itself into a meeting of the Vanderbilt Cup Commission. Recognizing the need of an early announcement, it was decided to take the bull by the horns and decide upon the holding of a race for the cup in 1908, assurances from various sources justifying the commission in reaching its decision.

The official announcement contains these facts, though the rules will be given further consideration before being made public:

Competition for this cup, under the terms of the deed of gift, is open only to clubs that are recognized by or affiliated with the American Automobile Association, or to clubs likewise related to the Automobile Club of France, and not more than ten cars can represent any one competing country. No car shall be allowed to compete for this cup whose weight shall exceed 1,100 kilos, or 2,424.4 pounds, instead

of 1,000 kilos, or 2,204 pounds, as heretofore, and must carry two persons seated side by side, whose weight must not be less than 132 pounds each. Each car must be manufactured in its entirety in the country which it represents.

The club winning the trophy is obligated to deposit with the American Automobile Association a bond of not less than \$3,000 for the safety of the cup. The entry fee will be \$1,000 for each car, which covers the elimination and final events, and entries received after the closing date, September 1, 1908, and before October 1, 1908, will be doubled, making the fee \$2,000. No entries will be received after October 1, 1908. The race shall be for not less than 250 miles, nor over 300 miles.

Before taking up its duties as the Vanderbilt Cup Commission, the board unanimously adopted this resolution:

Resolved, That it is the sense of this meeting that the Racing Board approve the sportsmanlike action of the Automobile Club of America and the Florida East Coast Automobile Association, in their endeavor to resuscitate high class racing on the Ormond-Daytona Beach; and further, we assure both clubs of our hearty and earnest support.

Present at the meeting were Jefferson deMont Thompson, chairman; Dave H. Morris, Frank G. Webb, A. R. Pardington, A. G. Batchelder, A. L. Riker, technical advisor; Frederick H. Elliott, secretary.

A. A. A. ANNOUNCES TECHNICAL BOARD.

Announcement has been made by President William H. Hotchkiss, of the American Automobile Association, of the appointment of the new Technical Board of that body. Waiving his right to nominate the members to the president for appointment, Chairman N. H. Van Sicklen requested President Hotchkiss to select such persons as he thought were best qualified to perform the work of the Technical Board, the appointments being, therefore, with the exception of the present technical advisors of the Racing Board, E. R. Thomas, A. L. Riker, and Henry Ford, largely the nominees of the various State associations. The composition of the board is as follows:

N. H. Van Sicklen, Chairman, Chicago.
David Beecroft, Chicago.
H. O. Smith, Indianapolis, Ind.
Edgar Apperson, Kokomo, Ind.
Walter C. Baker, Cleveland, Ohio.
Henry Souther, Hartford, Conn.
S. N. Colburn, Minneapolis, Minn.
E. R. Thomas, Buffalo, N. Y.
Clarence E. Whitney, Hartford, Conn.
E. T. Birdsall, Rochester, N. Y.
Angus Sinclair, Newark, N. J.
J. C. Kerrison, Boston.
Henry Ford, Detroit, Mich.
H. M. Rowe, Baltimore.
A. C. Newby, Indianapolis, Ind.
A. L. Riker, Bridgeport, Conn.
Roy F. Britton, St. Louis.

It is quite probable that the present membership of seventeen will be increased by nominees from the affiliated clubs and State associations. David Beecroft, of Chicago, has been suggested by President Hotchkiss for the post of secretary and vice-chairman. The first meeting of the board will be held at Chicago on December 6, when it is expected that plans will be laid for a number of technical contests in different parts of the country during the coming season.

The French Minister of Public Works has called a conference to be held in Paris in November of next year, to consider road question developed as the result of the growth of automobile traffic; new methods for new conditions will be the theme of the gathering. The Touring Club of France and the national automobile club are taking an active part in the organization of the meetings, delegates being expected from all countries.

EUROPE OUTLINES A FULL PROGRAM.

PARIS, Nov. 25.—Dates for the most important European automobile events were decided upon at the calendar congress held at the A. C. F. temporary clubrooms in the Grand Palais and attended by representatives from all European automobile associations and organized bodies. The congress, the third annual one held in Paris, is intended to mark out as near as possible the sporting program for the year without clashing of interests. From January 18 to February 2 the Automobile Club of Italy will hold its international exhibition. Events in March will be the automobile week at Nice and a number of local contests in the south of France. Monaco motor boat races have been fixed for April 1 to 13, followed by yachting and cruising events, and on April 25 the French commercial vehicle tests will commence, ending exactly a month later. Important meetings in May will be the Targa Florio on the 10th and the Moscow exhibition. The Royal Automobile Club of Great Britain has fixed on June 1 to 18 for its reliability trials. During the first fortnight of July—the exact date has not yet been decided on—the Automobile Club of France will hold its Grand Prix race, probably at Dieppe. Ostend races will be run off from the 13th to 17th and races on the Ardennes circuit for racers and touring cars will occupy July 20 to 30.

The Coup de la Presse in Normandy, Ostend motor boat week, Evereaux speed tests, Paris-to-the-Sea motor boat race, Salon straightaway tests and Mont Ventoux hill climb will be the outstanding features of August. During September *L'Auto* will run the voiturette race, motor boat races will be held at Arcachon and the Italian clubs will organize commercial vehicle tests. Near Paris motor boats will race on the Seine and all classes of cars will climb Chateau-Thierry hill. October events are the Gaillon hill climb in France and the Royal British clubs only speed test under limited cylinder rules.

At the international conference of automobile clubs, attended by representatives from all countries but America, an international formula for touring car competitions was referred to a special committee. What to do with two-cycle engines and those of the Gobron type in races under the international 155 millimeter rule was settled by leaving the formula to be adopted by the technical committee of the A. C. F. Complaints were received from drivers on the danger to eyesight from the present system of tarring race tracks. The next meeting is announced for Paris in May.

"MOTORING" MORGAN SHOULD ASK MR. MORRELL

BY AN A. A. A. MEMBER.

ONCE upon a time the auto department of the New York *Globe* contained news matter. Nowadays it serves principally as an avenue for "Senator" Morgan to vent his spleen upon the officials of the American Automobile Association, possibly because the New Jersey Automobile and Motor Club, of which he was once a prominent member, does not designate him as one of its directors to the State association and also on the national board of directors. Herewith is a recent sample of what the "Senator" considers "news" for *Globe* readers:

"The question whether the membership of the American Automobile Association would approve the spending of their money in a race meet speculation is another matter, but they were not consulted in the Morris Park meet in 1908, of which there has never been any definite financial statement made. If the A. A. A. is to enter the lists as a promoting body it would seem that it should first consult the membership of the association, as running race meets is not altogether a financial certainty, unless it happens to be a Vanderbilt road race, which was made a success before the A. A. A. took hold of it."

In view of the fact that the Morris Park meet referred to was conducted in July, 1905—not—1903—when Robert Lee Morrell was chairman of the A. A. A. Racing Board, Alfred Reeves, the manager of the track, and Dave Hennen Morris, president of the Morris Park Motor Racing Club, the suspicious "muck-raker" of automobilism is referred to these three for "facts," which when printed should prove as great a "mare's nest" as the well-meaning but erratic "Senator" has unearthed in other directions. By all means have the financial statement made public.

While the successful conduct of all organizations requires the election of directors and the delegation of power to them, it might be that if the entire membership were consulted by a referendum on all questions the transaction of business would be facilitated. But a majority seem to hold to a contrary opinion. In support of this is the recent acquiescence of Automobile

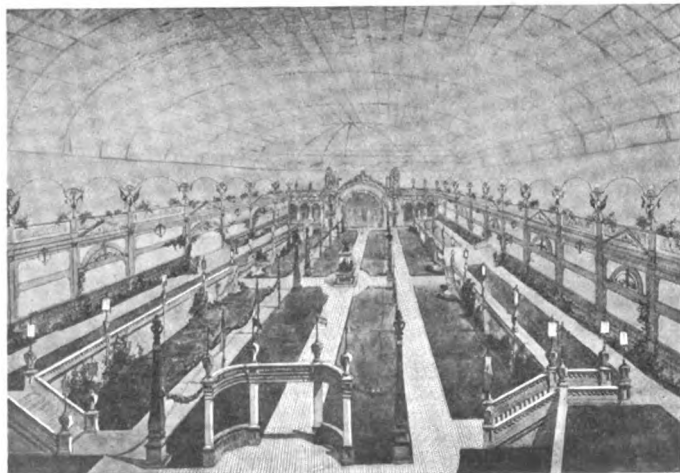
Club of America members (who were not consulted) in accepting as a matter of course the action of the club's governors directing the contest committee to take complete control of the 1908 Ormond-Daytona races, though Florida papers recently stated that "Motoring Morgan is in full charge of this tournament." When the A. A. A. Racing Board was some time ago approached by ex-President Asa Paine, of the Florida East Coast Automobile Association, looking forward to the adding of the Florida meet to the two other A. A. A. national fixtures—Vanderbilt Cup race and Glidden Trophy tour—one condition insisted upon by the Board was that it should have a free hand, unannoyed by any "tournament manager." Realizing that meager profits—if any—could not now be expected from two Florida races, the Racing Board's consideration of the matter was actuated simply by a desire to give makers, and also amateur opportunity of competing under assured conditions. With F. E. C. A. A., even though it were through the clever manipulations of "Motoring" Morgan, accomplishing an arrangement with the A. C. A., that solution found ready acceptance by the national organization, which will assist its biggest club member in whatever way it can to insure a success, it being positively announced by the club that it alone has charge of the affair.

"Motoring" Morgan's reference to the Vanderbilt race is as erroneous as his other statements. The A. A. A. Racing Board, the executive committee of which constitutes the Vanderbilt Cup commission, has conducted the three cup races held thus far, and therefore it couldn't have been "made a success before the A. A. A. took hold of it." With A. R. Pardington, the chairman in 1904; Robert Lee Morrell, in 1905; and Jefferson deMont Thompson, in 1906, the race has been in capable hands, as it will be again in 1908, with Mr. Thompson as chairman and Mr. Pardington a member of the board, to which Mr. Vanderbilt also belongs.

AN ARTISTIC SETTING FOR IMPORTERS' SHOW

FOR the decorative scheme of Madison Square Garden during the Importers' Salon, opening December 28, the artist in chief has set himself the task of reproducing a scene on a fête day in the Avenue des Champs-Élysées, Paris. Although the illusion as shown by the designer's sketch is not very convincing, a decorative scheme appears to have been adopted worthy of the artistic home of most of the coming tenants.

The floor plan of the Garden has been so altered for the Importers' Salon that there will be a wide aisle down the center



HOW THE BIG GARDEN WILL BE DRESSED FOR THE IMPORTERS.

parallel to which and on either side will be two other aisles. The same amount of floor space will be available as before, but without the impediment of overhanging balconies and other obstructions. On the ground floor will be housed all the car exhibits, the platform encircling the arena and the mezzanine floor just above it being given over to the accessory exhibits. The top gallery will serve as a spectators' gallery and as a café, the gallery at the Fourth avenue end, usually set apart for visitors, being occupied entirely by the large canvas mural decoration.

Entrance to the Salon will be from the foyer through a Louis XIV gateway with a canopied ceiling, into the refined beauty of the ivory and blue hall. Entrance to the main aisle will be through a semicircular façade adorned with electric lights. In the center of the hall a sculptured group will be erected, the main figure of which will embody the "Spirit of Speed" delineated in "Pal's" advertising poster of the Salon, the same motive being adopted in the decoration of the gateway and the panels. At the extreme Fourth avenue end the central aisle will terminate in a fountain more than thirty feet in height, on each side of which will be a peristyle of columns capped with glowing lights.

There will be no exhibition in the concert hall, this part of the building being intended as a real garden in which natural flowers and palms are promised and where wicker chairs will invite the weary to rest. On the top gallery of the main hall visitors may lounge and sip coffee and, in imagination at least, enjoy the gay scene of the Champs-Élysées in its gayest and choicest setting. S. R. Ball, the well-known decorator, will prepare the Garden for its imported tenants and American visitors.

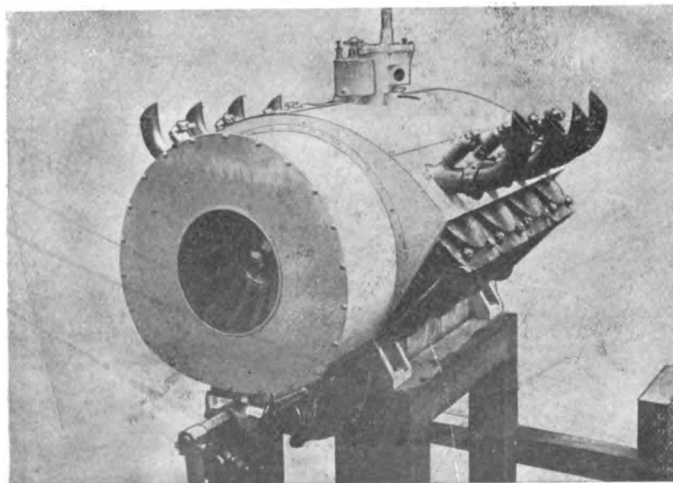


PISCHOFF AEROPLANE, DRIVEN BY ANZANI MOTOR PREPARING FOR TRIAL FLIGHT NEAR PARIS.

AEROPLANE FLEET STILL GROWING IN SIZE.

PARIS, Nov. 25.—Still another unit has been added to the aeronautical fleet of Paris, and has made its debut on the common training ground at Issy-les-Moulineaux. The aeroplane, built for M. de Pischoff by the Chauvière firm, is of the cellular type, driven by a two-cylinder Anzani motor carried forward and coupled direct to a two-blade aluminum propeller. The pilot is placed immediately behind his power plant and between the two bearing surfaces, an inclined column and automobile steering wheel giving communication with the rear road wheel and the rear cellular rudder. While running at three-quarter speed on the second day of the tests Pischoff collided with a tree while trying to avoid a group of soldiers, with the result that the rudder was smashed and one of the road wheels collapsed, the pilot being thrown to the ground without injury.

Officials of the Aero Club of France are having a busy time attending to all the engagements for the \$20,000 Deutsch-Archdeacon prize and record flights of 150 meters. Henry Farman is still favorite, for he has already practically covered the closed kilometer in practice flights, but is closely pressed by a dozen others, all training for aerial supremacy. While testing his aeroplane at Buc, Esnault-Pelterie was agreeably surprised by a visit from the *Ville de Paris*, with Madame Kapferer, among others, on board. A descent was made, greetings were exchanged, and M. and Mme. Kapferer descended, Comite de la Vaulx took their place and the aerial yacht continued its trip.



RENAULT EIGHT-CYLINDER AIR-COOLED ENGINE.

AERONAUTICAL SCHOOL FOR NEW YORK.

Instruction in aerial science, at present confined to a few schools in Paris, Lyons and Bordeaux, is promised for all by a correspondence class to be opened in January as a branch of the New York School of Automobile Engineers, in West Fifty-sixth street, New York City. Albert Triaca, one of the instructors at the school of automobile engineers, believing that interest in aerial navigation will become even greater than that in automobile matters, has made a close study of the science and is now perfecting details for a course of instruction by correspondence which will offer all the advantages to be obtained by attendance at the European centers. With this object in view he has visited France and obtained the collaboration of some of the leaders in the aeronautical world, among them being Colonel Espitallier, vice-president of the international aeronautical commission. An important matter in the study of the science of aeronautics is that close touch should be kept with the work of experimenters; this has been arranged for in such a way that as developments are made and experiments succeed, the results will be communicated to the school and through the course to all students.

Mr. Triaca, who returns to this country shortly, will bring with him a collection of models of aerial machines, a library of aeronautical works gathered at the suggestion of George Besançon, secretary of the Aero Club of France, an Antoinette eight-cylinder motor for aerial work, and will represent such well-known constructors as Mallet and Chauvière. The course to be commenced in January will be entirely by correspondence; it is hoped, however, to give class instruction at an early date, and to arrange for ascensions, probably under Charles Levée, of the French Club.

EIGHT-CYLINDER AERO ENGINE BY RENAULT.

PARIS, Nov. 25.—The new aerial motor produced by Renault Frères, and now shown at the Salon, is attracting considerable attention in aeronautical circles. It is an eight-cylinder air-cooled engine, with cylinders placed in V and slightly offset. The valves, all mechanically operated, are superimposed, the exhaust valves being in the cylinder head and operated by rocker arms. In the angle formed by the cylinders is the carbureter and all intake piping, and the connections to the spark plugs, each one of which is placed immediately above an inlet valve. The high-tension magneto is bolted in an inverted position immediately below a forward extension of the crankshaft. Above it is a high-speed fan drawing in a strong draught of air to the cylinder walls, the housing around the engine being designed to give the best distribution of the forced draught.

FRENCH WAR BALLOON AN AERIAL DERELICT.

PARIS, Dec. 1.—All France is mourning the fate of the *Patrie*, finest unit of the army aerial squadron and undoubtedly the most successful dirigible balloon ever built, now a helpless aerial derelict somewhere over the Atlantic. While some repairs were being effected on her engine at Verdun, Saturday, a strong squall of wind flattened the airship down to earth and gave the 200 troopers a busy time holding onto the guy ropes. Before they could recover themselves a second and stronger squall caught the air ship and carried it skywards despite the efforts of the clinging soldiers. One by one the men dropped off, and, freed from all restraint, the balloon shot skyward and headed towards Chalons, sailing majestically, notwithstanding that the valve rope had been pulled and gas was escaping.

Automobiles immediately chased after the balloon, and telegraph orders were sent to the Atlantic naval stations to keep a lookout for the passage of the ship. The only news that was received, however, was a message from Lloyds signal station at Tarr Head, Ireland, to the effect that the *Patrie* had been seen drifting northward at the rate of about six miles an hour, and all hope of saving her had therefore to be reluctantly abandoned. The Government is considering the offer of Henry Deusch de la Meuthe to place his private airship *Ville de Paris* at the disposition of the army authorities pending the completion of the *Republique*, sister ship to the *Patrie*, now building. Indignation is strongly mixed with the sorrow at the loss of the French airship, and an official inquiry will be held to fix the responsibility for the loss. The envelope of the *Patrie* was made in Germany by the Continental Caoutchouc Company, the design, however, being the work of French engineers. German authorities are reported to have endeavored to obtain the secret of her success, but in vain. Only a few days ago the *Patrie* made a non-stop run from Paris to Verdun, her military station on the eastern frontier, covering the 150 miles in seven hours, proving as steady in a strong breeze and at a twenty-mile-an-hour gait as an Atlantic liner. Her motor is a four-cylinder Panhard.

Latest news received of the *Patrie* is to the effect that she has been seen passing over Clydebank, near Glasgow, in a north-westerly direction.

DRAWBACK ALLOWED ON EXPORTED FITTINGS.

WASHINGTON, D. C., Dec. 1.—Regulations have been issued by the Treasury Department providing that on the exportation of automobiles manufactured by Brewster & Company, of New York, with the use of imported woolen carriage cloth, plate glass, metal fittings, metal chains, rubber tires, and other imported parts and materials, a drawback shall be allowed equal in amount to the duties paid on the imported parts and materials so used, less the legal deduction of one per cent., except in the case of leathers manufactured in the United States from imported hides, on which an allowance of 100 per cent. of the duty paid on the portion of the hides so used is granted by law. The drawback entry must show the total number of automobiles exported, the number of imported parts, chassis and tires, and the amount of other imported materials of various kinds.

ARMY TO EXPERIMENT WITH AUTO TRUCKS.

WASHINGTON, D. C., Dec. 1.—It is stated at the War Department that experiments with a view of determining the practicability of extending the use of automobiles in the army are in contemplation by the Quartermaster General. Automobiles have been employed to some extent, such as for passenger transportation, for headquarters in the field, signal corps wagons, and ambulances. Now the army officers have in view tests to demonstrate the efficiency of motor-driven vehicles for transportation of heavy stores in the field, under all conditions to be met in the service, such as hilly country, bad roads, and long distances from sources of supply of fuel.

NOW THE AUTO HAS INVADDED THE STAGE.

Under the name of "The Auto Race," the New York Hippodrome is running a play only possible on the immense stage with which this house is equipped. The spectacular features of the play are based on the Vanderbilt Cup race, and to the automobilist the show is interesting in exhibiting the ingenuity of the modern stage manager in overcoming the obstacle of presenting the modern vehicle in action in a public building. The opening scene shows a road on Long Island with people arriving in automobiles, sight-seeing cars, and other vehicles to witness the race. An idea of the immensity of the production may be judged by the fact that there are six White steamers, a huge electric sight-seeing car, and the three racers on the stage at one time, the latter cars being property vehicles built on the lines of the big racers. The White steamers run on the stage under their own power, and one wonders how the law against gasoline is overcome. It remained for Edwin Wakefield, the property man of the house, to solve the problem. Each of the steamers is equipped with a tank of compressed air and it is this medium which furnishes the power. The start of the race is a brilliant scene, but it lacks the dramatic ensemble of the exciting scene which early morning visitors of the real race witnessed, and a number of changes are now being made to bring the effect out stronger.

Though this is not the first time real automobiles have appeared on the stage, several being used at a Broadway theater producing "The Vanderbilt Cup," it is the first time such a large and realistic display has been attempted.

WILMINGTON HOLDS ITS FIRST BEACH RACES.

WILMINGTON, N. C., Nov. 20.—It was at first intended to hold the Wrightsville Beach auto races, organized by the Wilmington Automobile Club, on Thanksgiving Day, but as the tide waits for no man, and the beach surface would have been impracticable at the hours desired on that day, the date was advanced to Saturday, November 23. The beach course at Wrightsville is a trifle over a mile and a half in length, and, in spite of the threatening weather, the course was well lined with spectators who saw some good sport. Four events were on the program, two of which were open to Maxwell and Ford runabouts respectively, the former being won by Frank Herbst, and the latter by J. E. Platt. The third event was between the winners of the preceding events, and was won by Mr. Herbst in his 15-horsepower Maxwell in 2:04 1-5, the distance driven being the length of the course.

The fourth event was for a mile with flying start and for a championship medal offered by George Honnet, Jr. The Maxwell runabout, with Mr. Herbst at the wheel, was again a winner in 1:23, with Fred Dock, in a Ford, second. The successful manner in which the races were conducted means that several events open to automobilists in the State will be arranged for the beach course in the near future.



FRANK HERBST IN HIS WINNING MAXWELL AT WILMINGTON.

THREE DAYS OF AUTOMOBILE ENDURANCE.

(Continued from page 848)

- No. 20. Studebaker—Points lost: exhaust cut-out repaired, 4 points; oil cup lost, 4 points; wheel belt broken, 8 points; total, 16 points. Official weight, 2,905 pounds. (Protest has been filed by local representative.)
- No. 28. Kisselkar—Points lost: frame and engine bolt loose, 2 points; emergency brake not adjusted, 4 points; shield fastening bolt broken, 4 points; bonnet clip broken, 4 points; total, 18 points. Official weight, 2,965 pounds.
- No. 36. National—Points lost: headlight screw loose, 4 points; muffler separated and hanging, 14 points; crank bracket loose, 2 points; gasoline tip loose and leaking, 2 points; loose lamps, 4 points; total, 26 points. Official weight, 3,100 pounds.
- No. 32. Silent Knight—Points lost: lamps loose, 8 points; oil pipe off, 8 points; drag-link replacement on drive shaft, 20 points; joint cover loose, 8 points; work on lamps, etc., 10 points; total, 54 points. Official weight, 3,325 pounds.
- No. 2. Pierce-Arrow—Points lost: brakes, 26 points; emergency brake, medium, 2 points; lamp loose, 2 points; seal broken, 25 points; total, 55 points. Official weight, 3,490 pounds.
- No. 11. Jackson—Points lost: battery wire repaired, 25 points; battery dead, 4 points; steering gear loose, 8 points; strut rod work, 4 points; seal broken, 25 points; total, 66 points. Official weight, 2,700 pounds.
- No. 34. Locomobile—Points lost: brake repair, 10 points; spring shackle work, 16 points; battery dead, 2 points; grease cup loose on jackshaft, 6 points; horn out of commission, 8 points; seal broken, 25 points; total, 67 points. Official weight, 3,690 pounds.
- No. 12. Autocar—Points lost: work on spark plugs, 8 points; muffler, 4 points; emergency brake, 4 points; lamp, speedometer and horn loose, 2, 4 and 2 points respectively; seals broken, 50 points; total, 74 points. Official weight, 2,600 pounds.
- No. 35. Premier—Points lost: fenders repaired, 18 points; grease cup lost, 4 points; bonnet clip broken, 4 points; replacing fenders, 46 points; fastening seat, 4 points; fastening lamp, 2 points; total, 78 points. Official weight, 2,518 pounds.
- No. 15. Dragon—Points lost: one cylinder missing, 50 points; emergency brake, medium, 2 points; steering gear, 6 points; mud apron down, 26 points; shock absorbers, 6 points; total, 90 points. Official weight, 2,240 pounds.
- No. 9. Stoddard-Dayton—Points lost: replacing valve spring, 82 points; broken seal, 25 points; total, 107 points. Official weight, 2,755 pounds.
- No. 24. White—Points lost: fan blade broken, pump broken, pipe disconnected, 110 points; total, 110 points. Official weight, 3,065 pounds.
- No. 22. White—Points lost: steering gear defective, 135 points; lamp loose, 2 points; total, 137 points. Official weight, 3,735 pounds.
- No. 8. Stevens-Duryea—Points lost: bent front axle, 174 points; horn loose, 8 points; lamp loose, 4 points; total, 186 points. Official weight, 4,113 pounds.
- No. 16. Rapid (12-passenger bus)—Points lost: ignition trouble, 54 points; ignition trouble, 16 points; running board, 4 points; mud apron, 2 points; speedometer, horn and lamp, loose and broken, 12 points; broken seals, 100 points; total, 188 points. Official weight, 3,705 pounds.
- No. 5. Wayne—Points lost: starting handle loose, etc., 20 points; broken spindle, 600 points; total, 620 points. Official weight, 2,505 pounds.
- No. 25. Reo—Points lost: radiator trouble, 134 points; strut rod, 2 points; deck screws, 4 points; radiator, 900 points; total, 1,040 points. Official weight, 1,900 pounds.
- No. 13. Maxwell—Points lost: engine work and running gear repairs, 734 points; wheel replaced, 77 points; fan bracket and fan down, 12 points; strut rod, 10 points; broken seals, 275 points; total, 1,108 points. Official weight, 2,122 pounds.
- No. 31. Pierce-Racine—Withdrew, third day.
- No. 6. Matheson—Withdrew, third day.
- No. 7. Matheson—Withdrew, second day.
- No. 10. Jackson—Withdrew, second day.
- No. 1. Royal Tourist—Withdrew, first day.
- No. 26. Matheson—Withdrew, first day.
- No. 17. Frayer-Miller—Withdrew, first day.
- No. 19. Marlon—Withdrew, first day.
- No. 21. Thomas—Withdrew, first day.
- No. 27. Stoddard-Dayton (six-cylinder)—Withdrew, first day.

GOSSIP OF THE BIG SHOW.

Among the hard workers at the annual automobile shows are the advertising managers and publicity experts of the leading concerns. Probably two of the best known and, incidentally, the most industriously sought by the advertising solicitors of the Chicago daily papers, were R. H. Johnston, of the White Company, and A. N. Jervis, of the American Locomotive Motor Car Co. Both were responsible for the placing of considerable publicity, though had they accepted the pressing invitations to invest in the columns of all the dailies they would have made serious inroads into the bank accounts of their companies. There were times when various subterfuges were necessary to sidestep the persistent solicitors, some of whom always seem to be on the trail. H. T. Clinton, of the A. L. A. M. publicity bureau, was another individual whose whereabouts was the source of much concern to the advertising solicitors.

Coming of the Commercial Vehicle.—Robert D. Garden, a well-known figure in the automobile trade, in a show interview in the *Chicago Tribune*, expressed himself regarding the future of the commercial vehicle as follows: "Commercial motor cars will take the lead over pleasure cars in the future in the automobile industry. The commercial car has been neglected because the manufacturers were making plenty of money out of the pleasure car, but the future will develop a great change. The business men of the country are fast being impressed with the utility of the automobile for commercial purposes. There are hundreds of uses to which cars with capacities ranging all the way from one to five tons may be put. In Chicago the time is not far distant when all merchandise delivery and heavy trucking will be done by automobiles, and horses will practically disappear from the streets entirely."

Banquet of the Chicago Automobile Trade Association.—On Friday evening preceding the opening of the show came the banquet of the local trade association, held in the new clubhouse of the Chicago Automobile Club and attended by nearly three hundred. It was the first feast participated in by the clubmen and the dealers, the former having been in the past somewhat indifferent to the trade, though it supplied a substantial part of the membership. President Joseph F. Gunther presided as toastmaster, and the speakers included President Ira M. Cobe, of the Chicago Automobile Club; Dr. W. A. Evans, representing Mayor Busse; M. J. Foreman, Francis Simmons and Chief of Police Shippy. L. C. Boardman talked about good roads, and H. H. Gross told how to get them, while Samuel A. Miles made clear the worth of the show as an educator.

The Gathering of the Pioneers.—At the New Southern Hotel on Sunday night there was held the second annual gathering of the Pioneers, organized in 1906 for the object of uniting the "old timers" of cycling once a year. An eleventh hour notification to members was responsible for a decrease in attendance over that of the previous year, but several score partook of the frugal repast and "reminded" until nearly midnight. In the election an executive committee of five was designated, consisting of A. G. Batchelder, president; W. M. Harradon, vice-president; George G. Greenburg, secretary, treasurer; N. H. Van Sicklen, and L. C. Boardman. This quintette will do some recruiting and make the third annual a notable affair.

A few days before the opening of the show the local weather-wise man, who has a sanctum in the Auditorium tower, gave vent to an oh-be-joyful stanza. "Wait," said the wise one, "there can't be a Chicago show without snow." And so the event proved, for there were three inches of snow on Saturday; the sun retired for good on Friday, and no one has caught a glimpse of Old Sol since. Even "Joe" Ryan's seductive press work could not bring forth sunshine.

HOW THE BAY STATE AUTOIST IS TAXED TWICE IN A YEAR

BOSTON, Dec. 2.—Though the automobile owners of Massachusetts have not yet recovered from their soreness at being obliged to pay a registration fee of \$5 each in the middle of the summer, the Highway Commission is getting ready to give them another prod. This will come in an announcement that on the first of January the commission will be prepared to receive from each owner of an automobile in the State the sum of \$5, which will cover registration for the year 1908. In return for the fee the commission will issue a registration certificate and also a brand new set of number plates.

The annual registration law was passed just as the legislature of 1907 was about to adjourn and it was more or less of a compromise measure between the Senate and the House. The Senate wanted a graded horsepower fee, but at the last minute gave in to the House, which desired a flat annual fee. To please the Senate the bill was permitted to go into effect on the first of August. Thus an owner who may have bought a machine in June and registered it for \$2 was required to pay \$5 more on the first of August, and will have to give up another \$5 the first of January. This process naturally met with some opposition, though the law provides that the fund that accumulates from these fees shall go towards road maintenance.

Some of the owners of cars determined not to pay the fee and they have been successful in part, for in the limited time allowed the Highway Commission was unable to secure new sets of number plates. It was therefore necessary to continue to use the old plates, and under these circumstances it has been comparatively easy for persons so inclined to escape paying the fee. The commission has issued lists of owners who did not pay and has put

these lists in the hands of the police. This measure has brought in many delayed fees, the total income from registration fees, both original and re-registration, since the new law became effective being \$63,875.

With the re-registration on the first of January, however, nobody will be able to escape payment, for the commission has devised a new number plate which is quite different from that which has been used in the last four years. The new plate has blue figures on a white background, instead of white figures on a blue background, and it also bears the numerals "1908" and the letters "Mass." After the first of the year it will be illegal to drive with one of the old plates, so it is expected that there will be a complete round-up of all the owners. The commission has bought 14,000 sets of the new plates and owners who have numbers below 14,000 can retain their old numerals by making application to the commission. Those whose numbers are over 14,000 will be given numbers which have been given up by their original holders.

It is estimated that there are now about 12,000 automobiles registered in Massachusetts. By re-registering these the commission will obtain a gross income of about \$60,000, which, added to the \$63,875 already received, will provide a fund of \$120,875. From this amount the expenses of the automobile department of the Highway Commission are to be paid, and the remainder, which should be in excess of \$100,000, will form a road maintenance fund, from which the Legislature may appropriate sums for road work. One-fourth of the fund will be for the uses of the Metropolitan Park Commission, and the other three-fourths for the Highway Commission.

REORGANIZATION OF THE DRAGON COMPANY.

Announcement is made that the Dragon Automobile Company, of Philadelphia, has been superseded by the Dragon Motor Company, a new organization with a capitalization of \$1,000,000. The plant of the old company at Thirty-first and Chestnut streets, Philadelphia, will be taken over, and work will be carried on under entirely new lines. Special attention will be paid to the construction of taximeter cabs, 200 of which are declared to be on order, fifty of them being promised in New York City before January. The officers of the Dragon Motor Company are: J. Edward Calhoun, president; A. L. Kull, vice-president; R. G. Kelsey, secretary and treasurer. The directorate includes these officers and H. F. Rawle and C. A. Pickard, president of Salisbury Steel Works.

The factory will be handled by R. G. Kelsey, assisted by John O'Brien. John W. Haynes and J. C. Middleton will remain as assistant sales managers. It is announced that there will be at the present time very little change in the selling organization in the various cities. The A. L. Kull Automobile Company, of New York, will continue as the New York branch, while the Philadelphia and Boston branches, in charge of F. A. Broadhead and George C. Lewis, respectively, will be continued. H. P. Branstetter will remain the Dragon agent in Chicago.

In addition to the taxicab business, the regular touring car and the new roadster model will also be manufactured by the company in considerable quantities.

East Liberty, Pa.—The East Liberty Automobile Company, which was recently burned out, is having plans prepared for the erection of a new garage that will be much larger than the old building, in addition to being of fireproof construction. In the interim, temporary quarters are being occupied next to the ruined building.

ALL READY FOR A GOOD SHOW AT DETROIT.

DETROIT, MICH., Dec. 2.—Everything is in readiness for the show of the Detroit Automobile Dealers' Association, which opens at Riverview park auditorium next Monday, continuing throughout the week. Following close on the heels of the Chicago show, many of the exhibits will be shipped direct by express from that city, thus insuring an exceptional line of cars. It is anticipated that twice as many models will be exhibited as in the past.

The suggestion was made recently that in view of the financial stringency it might be well to declare the show off, or at least postpone it until matters had straightened themselves out. A canvass of the dealers put an effectual quietus on such a move, however, they being unanimous in their determination to carry the original program through. Every foot of floor space in the spacious auditorium, which is in reality a sun garden, the entire sides and roof being glass, thus giving unexcelled light for the purpose, has been taken and dealers are vieing with each other in making their individual displays as comprehensive and attractive as possible.

TEMPORARY RECEIVER FOR BERKSHIRE CO.

PITTSFIELD, MASS., Dec. 3.—Fred T. Francis, of the Berkshire Savings Bank, has been appointed by Judge John C. Crosby, of the Superior Court, temporary receiver of the Berkshire Motor Car Company, of this city. The action was taken at the instance of the company to protect creditors. Liabilities are stated at \$35,000; assets at \$30,000.

Harmon, Pa.—The Biarritz Auto Garage is the title of the latest addition to the garage facilities of this town. It is located at 337 Franklin street, and is owned and managed by Walter H. Biarritz. The building is modernly equipped and has a well-fitted shop for repair work.

EARLY WINTER DOINGS OF THE AUTO CLUBS

HARRISBURGERS ALIVE TO PRESENT DAY NEEDS.

HARRISBURG, PA., Dec. 2.—By unanimous vote of the Motor Club of Harrisburg, at an enthusiastic meeting at the Board of Trade last Friday evening, it gave a pledge to the Supervisors of Susquehanna township to bear one-half of the township's share in rebuilding as a State road the present Fort Hunter turnpike.

The question of good roads consumed the entire attention of the meeting, and general satisfaction was expressed with the rapid progress in abolishing the present toll road and starting the movement to have it replaced with a splendid macadam roadway. The club also took up the question of better roads throughout Dauphin and Cumberland counties, especially those leading into the city.

The contest committee made its report on the receipts from the automobile races held at Middletown, which showed that nearly \$750 was realized to turn over to the club treasury. The contest committee was granted permission to make arrangements for the annual endurance run next May.

The question of affiliation with the American Automobile Association was brought up, but no action will be taken until the annual meeting, when the Motor Club of Harrisburg will apply for membership at the start of the fiscal year of the Pennsylvania Motor Federation, the State organization of the A. A. A.

SEALED BONNET CONTEST FOR CAPITAL CITY.

WASHINGTON, D. C., Nov. 30.—Promoted by a local newspaper and given under the auspices of the Automobile Club of Washington, a sealed bonnet contest will be held December 10 and the indications are it will be the best automobile event Washington automobilists have ever participated in. The route selected is rather a trying one over roads that are good in spots and exceedingly bad in some places. The distance to be covered is 114 miles, starting and finishing at the country home of the Automobile Club of Washington on the Brightwood road. The first leg will be to Olney, thence to Ridgeville, where the National pike will be taken to Frederick, Md. The contestants will then double back over the National pike to Ellicott City, and return to the starting point by way of Ashton and Burnt Mills. There are a number of stiff hills along this route, together with a thousand or more thank-you-mams, and the contestants will have their work cut out from the start.

Entries are coming in freely and the indications are there will be thirty or more cars in the contest. As this is the first event of the kind ever pulled off in the Capital City, interest in it is becoming intense and there is no doubt it will have a very stimulating effect upon automobiling here.

BAY STATE A. A.'S INTERESTING SMOKE TALK.

BOSTON, Dec. 2.—"The Automobile Law, Its Uses and Abuses," was discussed from every conceivable standpoint at the smoke talk of the Bay State Automobile Association at the Hotel Oxford last Saturday evening. There was much of interest and value along this line brought into the full light of the day or rather night, by the speakers on the subject, and if but one-half of the suggestions advanced were adopted, both on the part of the police and the driver of a motor vehicle, there would be fewer arrests recorded.

The speakers included Chairman McClintock of the Massachusetts highway commission, President L. R. Speare, H. D. Crowell and Frank J. Tyler.

Owing to a lack of room in which to hold the smoker at the regular quarters of the club, special arrangements had been made with the hotel people so that the smoker could be held there. This followed close upon the serving of dinner in the club dining rooms, which some seventy-five members attended.

QUAKERS PLANNING TWO-DAY NEW YEAR'S RUN.

PHILADELPHIA, Dec. 2.—The contest committee of the Quaker City Motor Club has decided on a popular innovation in arranging for its next two-days New Year endurance run. This is the conclusion of a "purely-for-pleasure" class, open to anybody and any car, and unrestricted as to schedule and checkers, except that the run must be completed within the time limit each day. And a prize cup will be awarded in the class, too, but car-performance or driver-efficiency will have nothing to do with its disposition, the cup being awarded in perpetuity to the driver in that particular class who is voted the "most popular," only those passengers, observers and drivers in the "purely-for-pleasure" class being entitled to drop a ballot. Already there are many entries from those owners who like to be "on the ground" during a contest, but who fail to extract any amusement from the strain of adhering to a schedule and observing strict rules as to bonnet-raising, adjusting, etc., under the eagle eye of an official absolver.

For those who are "out for blood" there will be three classes, with a handsome cup for each. Class A, for which the McDonald & Campbell emblem will be hung up, will be for touring cars carrying four or more; Class B, for the long, low, rakish, high-powered roadsters; and Class C, for small runabouts.

Chairman E. C. Johnson, of the Contest Committee, believes that fully 60 cars will line up for the start at 8 o'clock on New Year's day from the club's quarters at the Hotel Majestic. The first day's run will be via Willow Grove, Doylestown and Easton to Allentown, where the overnight stop will be made. The return trip will be via Hamburg, Reading, Pottstown, and Norristown—the round trip being estimated at a trifle over 200 miles.

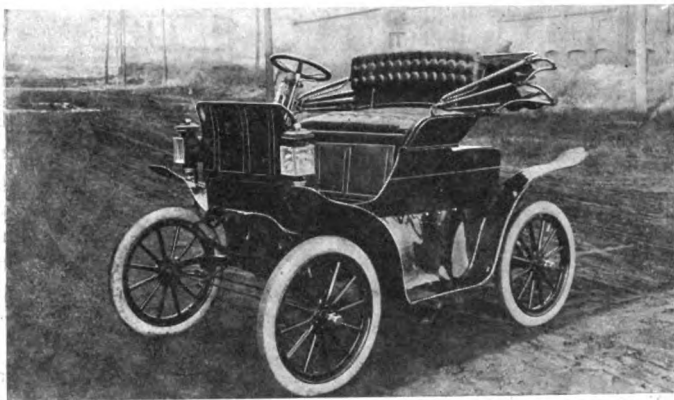
"LEGAL SPEED LIMIT" FOR PHILADELPHIANS.

PHILADELPHIA, Dec. 2.—The demand for another "legal speed limit" run has become so insistent that the tours and runs committee of the Automobile Club of Philadelphia is considering the advisability of promoting such an event, to be pulled off possibly on Saturday, December 14. A similar run for the Brazier Cup, about a month ago, was spoiled by a pitiless rainstorm, which not only scared off the bulk of the contestants, but marred the pleasure of those who did start. And then, as a wind-up, the officials first announced the Packard as a winner, and afterwards, on a re-inspection of the scorer's sheets, gave the run to Swain's Apperson "Jack Rabbit." Later a protest against the "Rabbit" for failure to adhere to the scheduled route coming into the city was sustained, and the cup finally awarded to the Ford, which came in second.

The run of the 14th will be open only to club members, with the same rules as obtained in Brazier Cup run as to penalties for passing the hidden checkers ahead of or behind schedule, loss of time through repairs, etc. The cup, which will be hung up by the club, will become the property of the winner.

A. C. OF AMERICA HOLDS MONTHLY DINNER.

NEW YORK, Dec. 4.—A large number of members and guests attended the regular club dinner of the Automobile Club of America last night in the clubrooms, West Fifty-fourth street. A smoker and interesting entertainment followed the dinner. Members of the Aero Club of America, who attended the event in strong force, decided to raise a fund of \$10,000 to purchase three balloons and send a team to Germany to compete in the next race for the International Cup. Announcement is made that the Automobile Club of America will hold a ladies' day at the clubrooms on December 17, between the hours of four and six in the afternoon. Tea will be served and members are invited to bring guests. The regular monthly club dinners of the A. C. A. are proving a popular feature.



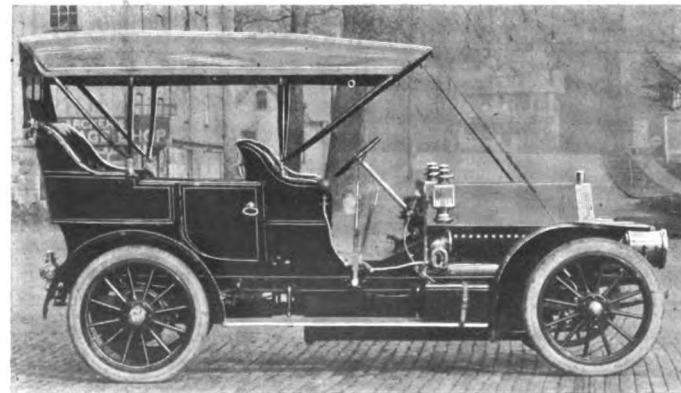
JEWEL MODEL D, SPECIAL RUNABOUT TYPE FOR 1908.

JEWEL PRODUCES A LARGE TOURING CAR.

After graduating in the small car class, the Forest City Motor Car Company, of Massillon, O., has turned its attention to a more pretentious class of vehicle, the new model, to be known as the Jewel touring car, giving promise of being as popular in its own sphere as its smaller predecessors.

The new touring car, listed as a 40-horsepower model, has as its power plant a four-cylinder Rutenber vertical engine, with bore and stroke 4 3-4 by 5 inches, developing its normal power at 1,000 revolutions, but capable of speeding up to 1,500 revolutions per minute. Cylinders are cast separately with integral water jackets, and valves are all on one side with a single camshaft. On the 1908 model engine a new carbureter is used, made entirely of brass, this metal having proven itself to be better adapted for this work than aluminum. It is of the float feed type, compensated to give a correct mixture at all engine speeds. A double ignition system has been installed, each one entirely independent of the other. One set of spark plugs is in connection with an imported high-tension Bosch magneto, the other set with a storage battery and four-unit coil, a conveniently located switch allowing a change over from one to the other instantaneously. Engine lubrication also is of the double type, by six-feed mechanical oiler with its self-contained pump.

Standard lines of construction have been followed in the transmission, the clutch being of the leather-faced cone type, with a series of springs behind the leather, gear set of the selective sliding type, and final drive by propeller shaft to rear axle. Timken roller bearings are employed throughout in the transmission, and tow ball-bearing universal joints are provided on the propeller shaft. The rear axle is of the Timken full floating type, with the top half of the housing removable to permit of easy inspection of the bearings. Webs are cast at important points inside the housing to give additional strength. Steering gear is of the screw and nut type, spark and throttle levers being held on a quadrant above the steering wheel, but not revolving with it. Semi-elliptic



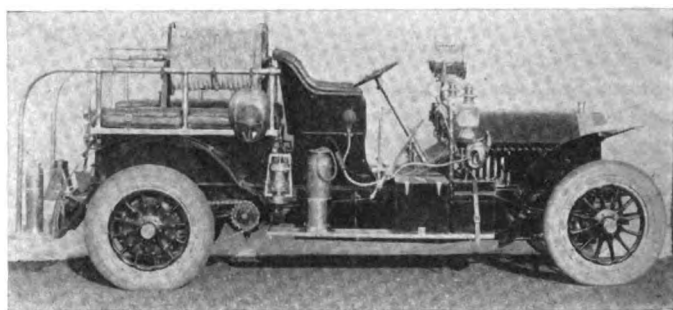
JEWEL 40-HORSEPOWER TOURING CAR—A NEWCOMER.

springs are employed in front and platform type in the rear. With a wheelbase of 117 inches there is sufficient room for a comfortable tonneau, capable of containing five people, three being on the rear seat and two on folding seats.

BRIDGEPORT PROUD OF ITS AUTO FIRE ENGINE.

Automobiles as an aid in fighting fire have not been given the attention they deserve, probably as much from the neglect of constructors to tackle the problem of adapting a car for this purpose as from honest conservatism on the part of authorities.

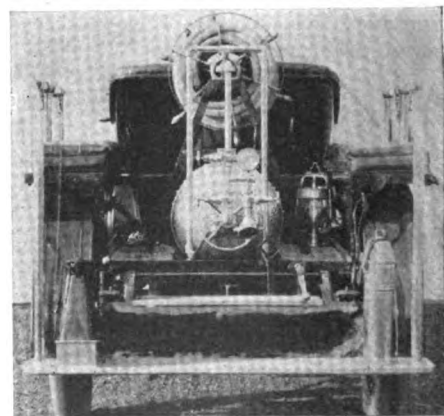
At the Bridgeport factory of the Locomobile Company of America, a special machine has been brought out and has just been delivered to the Bridgeport fire department, which appears to be a highly successful attempt to adapt the automobile to fire service. Though the machine is spoken of as being adapted, it is in reality an entirely original construction, designed specially for the work it is intended to perform. A special four-cylinder 60-



BRIDGEPORT'S NEW LOCOMOBILE CHEMICAL FIRE ENGINE.

horsepower engine is mounted on a strengthened chassis with a wheelbase of 123 inches. Features of the transmission are the same as on the firm's touring cars, but adequately strengthened for the heavier work; they include selective transmission giving four speeds forward and reverse, and final drive by side chains. Total weight of the car is about 4,200 pounds, to carry which load powerful semi-elliptic springs are employed, and wheels are shod with 36 by 5-inch Fisk demountable tires.

The bodywork of the new fire fighter, built by the Bridgeport Vehicle Company, is designed to carry eight men, two on the front seats, two on each side and two on the rear, but ten in all can be accommodated if necessary. The machine is equipped with a 50-gallon Babcock chemical tank, hose reel and hose, small hand extinguishers, crowbars, axes, helmets, and other apparatus necessary for fire fighting. Warning signals are an auto chime and a bell, but as the car is capable of a speed of fifty miles an hour, and will always travel at a much faster rate than a horse-drawn engine, some third warning device may be necessary. An interesting feature of the equipment is an electrical apparatus which permits of the lighting of the big acetylene searchlight from the seat without striking a match. Painted red, with the initials B. F. D. on the radiator, the chemical fire engine presents an extremely businesslike appearance. It is now under the direct care of two attendants who received training at the Locomobile factory.



REAR VIEW SHOWING APPARATUS.

December 5, 1907.

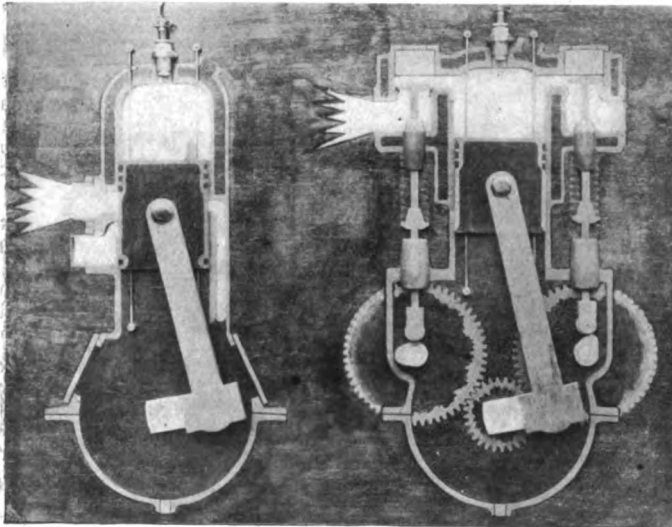
THE AUTOMOBILE.

CHAUFFEURS' ASSOCIATION IN QUAKER CITY.

PHILADELPHIA, Dec. 2.—The Philadelphia Mechanical Chauffeurs' Association, an organization which first saw the light last spring, has already increased in membership to such an extent that a room was opened last week in Odd Fellows' Temple, where weekly meetings are held for the discussion of live topics and the advancement of the general interests of the association. This association now includes nearly 75 per cent. of the most proficient chauffeurs in the city, and weekly accessions are being made to the ranks. No applicant is received who cannot give evidence of his ability at his chosen occupation, and also satisfy the membership committee of his general character—morals, temperance, etc.

A COMPARATIVE MODEL OF THE "CYCLES."

One of the agents of the Atlas Motor Car Company, of Springfield, Mass., who modestly requests that his name be not published, has sent to the factory for inspection a clever model in wood, showing the salient points of difference between a two-cycle and four-cycle type of engine. This enthusiastic and enterprising agent of the Atlas car, the motor of which is of the two-cycle type, uses the model to clinch his argument in favor of that



UNIQUE MODELS SHOWING TWO AND FOUR-CYCLE OPERATIONS.

type of machine with his customers. The board on which the models are carved and built is hung in a convenient place in his salesroom and, as he puts it, "as soon as the customer shows the least sign of being a 'mental Missourian,' I show the prospective buyer in an unmistakable manner, that as applied to gasoline engines in particular, two solid blows on the head of a nail are more effective than four 'tenderly administered' ones."

TRADE CHANGES IN THE QUAKER CITY.

PHILADELPHIA, Dec. 2.—With the approach of the 1908 season comes the usual announcement of agency changes here. The most important in this connection is the addition of the American Berliet to the list represented locally by the Louis Bergdoll Motor Car Company at 323-327 North Broad street, which now handles the Imperial, Benz, and Welch. Another announcement no less important is that of the Hills Motor Car Company, 130 North Broad street, to the effect that the "full-jeweled" Corbin has been added to its line, consisting heretofore of the Royal Tourist. The Berliet had been represented here before by H. Oscar Brown, at 229 North Broad street, while the Corbin is a newcomer.

George T. Thompson, former manager of the Eastern Automobile Company, one-time representatives of the Stevens-Duryea and Lozier cars, has joined the sales force of the local branch of the Locomobile Company.



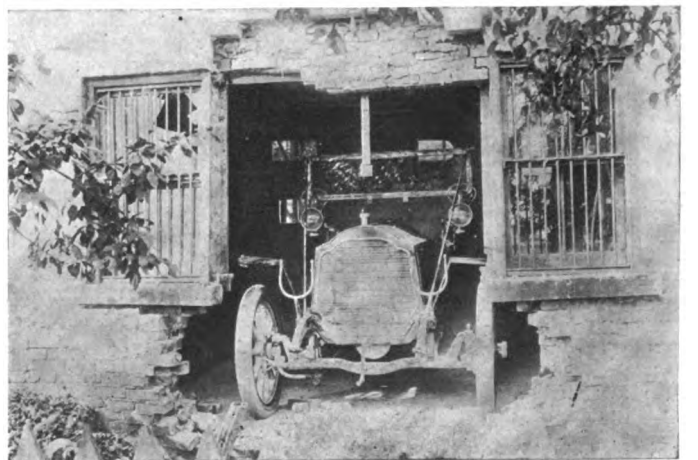
GEN. MANAGER MILES OF THE N. A. A. M. STARTS THE FRANKLIN.

FRANKLIN ON 180-HOUR MARK-TIME RUN.

CHICAGO, Dec. 2.—When Samuel A. Miles had cranked up the 24-horsepower Franklin air-cooled engine at Chicago last Saturday afternoon he did not climb into the drivers' seat, slip in the low and run away, for to have done so would have defeated the ends for which the Franklin people had invited him to display his skill as a chauffeur. The air-cooler has to mark time in the Chicago showroom for exactly seven days and a half, running constantly at a speed which would give thirty miles an hour if the gears were put into mesh. Next Saturday at midnight some one will throttle her down if she has not stopped before—and the Franklin people are convinced that she will not; thus a run equivalent to a trip of 5,400 miles will have been accomplished without a turn of the road wheels. With nothing more refrigerating than the warm air of the showrooms to throw upon the stationary cylinders, the demonstration is strenuous enough to prove the full worth of the waterless car.

WHAT IS TAUGHT AT THE PACKARD SCHOOL.

Most men, when they match their automobile, either willingly or otherwise, against a brick wall, have occasion to sigh over the length of the repair bill. Not so with the owner of a Packard, who, writing from Rochester to the factory, states: "Last night my man ran my car through a brick wall, knocking out the whole side of the barn. There was no injury to the car except smashed lamps and slightly bent mud guards. I am running the car to-day. The gentleman who performed the feat of going through a brick wall without injuring the car is a graduate of the summer class of your chauffeur's school. I presume, therefore, that the instruction in your curriculum includes detailed directions for driving a Packard through a brick wall without scratching the paint off."



WHERE THE PACKARD DELIVERED A KNOCKOUT TO THE WALL.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

A 4 1-2-ton Frayer-Miller gasoline truck has been purchased by Arbuckle Brothers, the big Brooklyn coffee concern.

At the American Michelin Tire Factory in Milltown, N. J., work is now carried on from 7 o'clock in the morning to midnight with a full force of skilled workmen.

The Ralph Temple Auto Company, of Chicago, has recently secured the agency for the Rapid Vehicle Company's line of commercial vehicles in that city, and has placed an order for cars for the season.

Having secured more commodious quarters at 741 Boylston street, H. C. Stratton & Company, Boston agents for the DeLuxe and Kisselkar, will shortly remove thereto from their present location on Huntington avenue.

According to telegraphic advices received by the Gearless Transmission Company, of Rochester, N. Y., a Gearless six-cylinder won the free-for-all in the hill climb at Los Angeles, Cal., on Thanksgiving Day, the time for the 34-5 miles being 6:16.

Knight & Wall, the new agents for the Dragon car at Tampa, Fla., will handle the Cuban market, and expect to make shipments of 25 Dragons to that island by January 1. The first consignment has been shipped from the Philadelphia factory.

The Milwaukee Merchants and Manufacturers' Fire and Burglar Dispatch has selected three Rambler cars for use in its service. They will be sent on emergency calls reporting fire, burglary, open safes or vaults, neglected lights, windows or unlocked doors.

Cassius F. Baker, after a trip round the country in the interests of the Pope Motor Car Company, Toledo, O., reports an increased briskness in trade. Money has been tied up, but the drift of opinion is that currency is going to be freer than ever, and that automobile business will be brisk.

As the result of a change of agency the products of the Supplementary Spiral Spring Company are now being handled in Chicago by Page & Palmer, 1712 Michigan avenue. They will have the exclusive agency for their territory, as well as for the States of Michigan and Wisconsin.

With a view to obtaining the European agency for American novelties in automobile accessories, the United Motor Industries, Limited, of London, has commissioned G. H. Smith to visit New York this month. Headquarters in the city from December 26 will be at the Hotel Astor, New York City.

After an extensive Western tour, J. D. Maxwell, designer of the Maxwell car, declares that road manners have considerably improved of late. In almost every case now automobilists will stop upon seeing the raised hand of a horse driver. On several occasions he saw automobiles help pull farm wagons over steep inclines.

The Studebaker Brothers Manufacturing Company, South Bend, Ind., has just been notified by the Jamestown Exposition jury of awards that their exhibit of automobiles, street sprinklers, garbage and dump wagons, contractors' wagons, and trucks, has been awarded a diploma and gold medal for vehicles of that class.

The Autolyte Manufacturing Company, 26 Warren street, New York City, has

acquired the automobile department of Sibley & Pitman, at the same address. Mr. Pitman has been elected treasurer and a director in the Autolyte Company. A. H. Funke will continue as manager.

Charles A. Singer, Jr., of the Palmer & Singer Manufacturing Company, of New York, announces that he will take part in the Ormond-Daytona beach races with a Matheson car, and expresses confidence in his ability to lower the record of 50 1-5 seconds for a stock car with seven passengers, established by the late Tom Cooper in a 1906 Matheson.

Foreign appreciation of the Bosch system of ignition is shown by statistics furnished by the makers on the recent London and Paris shows. According to figures given out, 90 per cent. of the exhibiting cars at the Olympia exhibit were equipped with the Bosch magneto, and at the Paris show the proportion of complete cars with Bosch magneto was 68 per cent.

"Opponents of the six-cylinder idea," says Chas. B. Shanks, of the Winton Company, "often argue that if sixes are better than fours, then eights are better than sixes. The statement is unfair, for it is not a question of multiplicity of cylinders but of obtaining results. Eight cylinders, or any other number beyond six, cannot do more than the six in producing continuous power."

The Acme Sextuplet, the new six-cylinder product of the Acme Motor Car Company, of Reading, Pa., is having an excellent sale, according to reports from W. J. Flinn, traveling sales manager for the company. Shipments have been made to San Francisco, Los Angeles, Boston, and Chicago, and Mr. Flinn is to receive this week in New York City the first of the six-cylinder Acme runabouts, with which he will give practical demonstrations in the Eastern States.

Every owner of a Rambler automobile who can furnish proof of having driven his car 15,000 miles is eligible for membership in the Rambler Fifteen Thousand Club. The president of this body must have qualified for membership with the least expenditure for fuel, oil and repairs; the vice-president will be the owner of the oldest Rambler car still in daily service. The second vice-presidency will go to the owner who has actually covered the greatest distance; the secretary must have accomplished the most successful and economical single trip of greatest length, and the treasurer will be the conservative and sane driver who has never been fined for speeding. Rambler owners have caught the spirit of the movement and hundreds of applications are being sent to Thomas B. Jeffery & Company, Kenosha, Wis., for membership.

NEW AGENCIES ESTABLISHED.

The Corbin Motor Vehicle Corporation, of New Britain, Conn., has closed its branch house in the Motor Mart at Boston and placed the local agency with George J. Dunham, at 182 Columbus avenue, who will also handle the Royal Tourist.

Recent agencies appointed for the Corbin Motor Vehicle Corporation include the following: Reese Motor Car Company, Cleveland; Covey & Wallace Motor Company, Portland, Ore.; Pacific Coast Automobile Company, Seattle, Wash.; Inland Auto

Company, Walla Walla, Wash.; B. S. Bernard, Troy, N. Y.; Carlton Garage & Repair Company, Brooklyn, N. Y.; Clark & Davis, Syracuse, N. Y.; Wirick-Bennett Auto Company, Sioux City, Ia.; Bell Bros., Stamford, Conn.; Bridgeport Auto Company, Bridgeport, Conn.; New Haven Auto Corporation, New Haven, Conn.; E. H. Towle Company, Waterbury, Conn.; Pyramid Motor Car Company, Danbury, Conn.

PERSONAL TRADE MENTION.

W. W. Burke has resigned as manager of the Motor Parts Company, 25 West Forty-second street, New York City, with future plans not yet announced.

Emil Grossman, president of the National Sales Corporation, of New York City, starts this week for a five or six weeks' business trip through the middle west and far west.

F. C. Lindoerfer, who for the past three months has been associated with the sales department of the Logan Construction Company, Chillicothe, O., has severed all connection with that concern.

Charles A. Davis, formerly with the G & J Tire Company, as Pacific Coast manager, has joined the selling force of the Michelin Tire Company. Mr. Davis will be the special factory representative to the Pacific Coast trade.

E. R. Benson, formerly secretary of the Hartford Rubber Works Company, Hartford, Conn., and head of the sales department, has resigned to accept an important place in the sales department of the Cadillac Motor Car Company, Detroit, Mich.

Oscar Stevenson, of New York City, secretary of the York Motor Car Company, York, Pa., has joined the office staff at the latter city, and will remain for some time to supervise the 1908 output at the home of the Pullman automobile. H. R. Averill, sales manager of the company, is attending the Chicago show during the present week.

C. S. Johnston, treasurer and general manager of the Continental Auto Manufacturing Company, New Haven, Conn., has sold out his entire holdings in that concern, and in future will only be connected with the Continental car in helping to increase its sales when it does not conflict with any other interest that he may take up in the automobile industry.

D. W. Henry, for the past five years a general representative of the Electric Vehicle Company, Hartford, Conn., has just assumed charge of all the agencies of the Columbus Buggy Company, Columbus, O. This company will devote considerable attention to turning out its air-cooled high-wheeler in quantities during the coming season, in addition to its quota of electrics, which will also be increased.

Roy F. York, vice-president and sales manager of the F. B. Stearns Company, has left for the Pacific coast and will visit the numerous new Stearns agencies established throughout the West. Mr. York regards the great west as one of the coming big fields for the sale of high-powered automobiles of the better class. "Our company for some years past has felt a strong and growing demand for cars from the western part of the United States," he said, "and each year a large share of our output is shipped

to western dealers. One result of the success with which Stearns machines have met is the opening of many new agencies throughout the West." All of these will be visited by Mr. York on his trip.

A NEW THOMAS MANAGER.

A valuable addition to the forces of the E. R. Thomas Motor Company, Buffalo, N. Y., has been made in the person of E. C. Morse, recently appointed to take charge



E. C. MORSE.

of the sales department, advertising and commercial end of the business. Mr. Morse comes to the automobile industry with a good reputation as commercial manager with the National Cash Register Company, at Buffalo.

FORD COMMERCIAL MANAGER.

Rapid growth of business has compelled James Couzens, of the Ford Motor Company, to relieve himself of some of the burden connected with the management of the sales department of his concern, and N. A. Hawkins has been appointed to the position of commercial manager, Mr. Couzens being left free to look after general affairs.



N. A. HAWKINS.

Though new to the automobile public, Mr. Hawkins is no stranger to the Ford interest, having in his capacity of auditor and adviser, been closely connected with Messrs. Ford and Couzens since the inception of the company. He is thoroughly familiar with every department of the concern, acquainted with every member of the organization, and will be an invaluable addition to Ford forces by reason of his exceptional ability in organizing and systematizing.

NEW TRADE PUBLICATIONS.

From the Niles-Bement-Pond Company, of New York, comes a well produced illustrated catalogue dealing with the firm's 21-inch and 28-inch rigid turret lathes. Illustrations are given of the lathe on various classes of work, and

examples given of various classes of work which can be done.

A six-page folder has been published by the Apperson Bros. Automobile Company, of Kokomo, Ind., calling attention to the fact that out of a total of 73 of the most prominent automobile owners in one of our large cities, as per list selected by a well-known and conservative newspaper, over 40 per cent. had purchased Appersons.

A handsome illustrated pamphlet has just been produced by the Continental Caoutchouc Company, descriptive of the demountable rim introduced by that concern. The invention, which has been named the Continental Ready Flated tire, allows of the carrying of an inflated tire on a separate rim ready to be fixed on the wheel with the delay of but a few minutes whenever a puncture makes a change necessary.

An interesting publication dealing with vanadium steel for use in automobile construction has been sent out by G. F. Ehrenzeller, Pennsylvania Building, Philadelphia, sole agent in the United States and Canada for Willans & Robinson, Limited, of Queen's Ferry, Flints. A valuable comparative table is given, showing average static and dynamic tests of the various steels manufactured at the Queen's Ferry works. The publication will be useful to automobile manufacturers, from the fact that it deals exclusively with steels for automobile work, specific examples being given of crankshafts and axles, springs, forgings and stampings of all sorts, hollow shafts, tubes for frame work, gear wheel blanks and all classes of forgings.

There is much more than mere platitudes in the 60-page instruction book just issued by the Ford Motor Company, Detroit, Mich. The work has been produced to assist owners of 1906 and 1907 Ford models in a complete understanding and care of their cars, and is certainly one of the most complete and valuable publications of its kind ever sent out by a manufacturer. It contains a photographic reproduction of every part, bolt, nut and screw on the 1906 and 1907 models, with complete instructions for the adjustment, removal and replacement of each, the cost of photographing, retouching, cuts and printing alone amounting to about \$5,000. As an example of how thoroughly the work is done, for the motor alone there are 98 distinct illustrations, each one numbered and named, and its price indicated. The book is not intended for general publication, but an endeavor is made to obtain the name of every Ford owner and send one to him direct. It is naturally difficult to trace all owners, on account of cars changing hands and other reasons, but a copy will be sent to every person possessing a Ford immediately on receipt of name and address.

INFORMATION FOR AUTO USERS.

Improved Storage Batteries.—Several new and improved features have been incorporated in the storage batteries produced at the Schug Electric Manufacturing Company's factory in Detroit, Mich. As a protection against breakage, the Schug battery is built with separate rubber jars and protected with an outer case of wood. Instead of using screws and nails to hold the case together, as is often done, maple pins are employed; there is thus nothing to corrode and no danger whatever of the bottom of the case falling out. The cells are joined together with burned-in lead connectors, the terminals being brought over the side of the box.

The only metal parts not made of lead are the screws and washers used to fasten the rubber handle or strap to the box, and the brass thumb screw for fastening the wires to the battery. The top of the

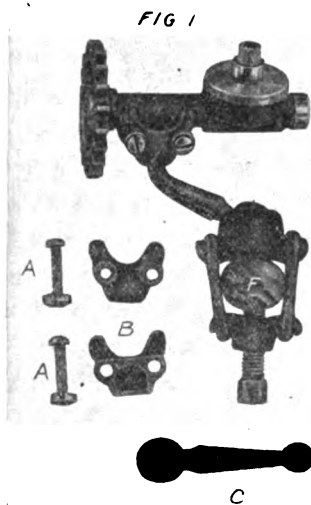


THE SCHUG STORAGE BATTERY.

battery is sealed over with a special acid-proof compound. The improved construction increases cost a little, but this is more than regained by the longer life of the batteries. Three sizes are made, 40, 60 and 80 amperes, all 6 volts.

Bullard Speedometer Bracket.—A

chain being no stronger than its weakest link, speed indicators have often been considerably diminished in value by the weakness and unsuitability of the method of attaching the cable to the road wheel. What is claimed to be an improvement on any device yet put on the market has been produced by J. H. Bullard, manufacturer of automobile specialties, of Springfield, Mass. The accompanying illustration shows the general design of the Bullard improvement, consisting of a gear



DETAIL OF THE BULLARD BRACKET.

bracket and connections by means of which the speedometer shaft can be connected to the arm of the steering knuckle by the use of only three screws. It is declared that no American machine has yet been found that one of these connections will not fit. Fig. 1 shows the bracket and gear box complete with the driven gear, AA being the two bolts that hold the clamps B on the small end of the ball-standard and also clamp the neck of the gear box, allowing it to be turned at any angle. The standard C is made of the best quality of soft steel and can be bent between the balls at a right angle if necessary, so as to fit where a straight standard could not be used.

THE AUTOMOBILE

PUBLISHERS' SPECIAL ANNOUNCEMENT TO ALL SUBSCRIBERS

NEW SUBSCRIPTION RATE

Owing to extensive improvements in **THE AUTOMOBILE**, as well as to general increased cost of production, the subscription rates will be

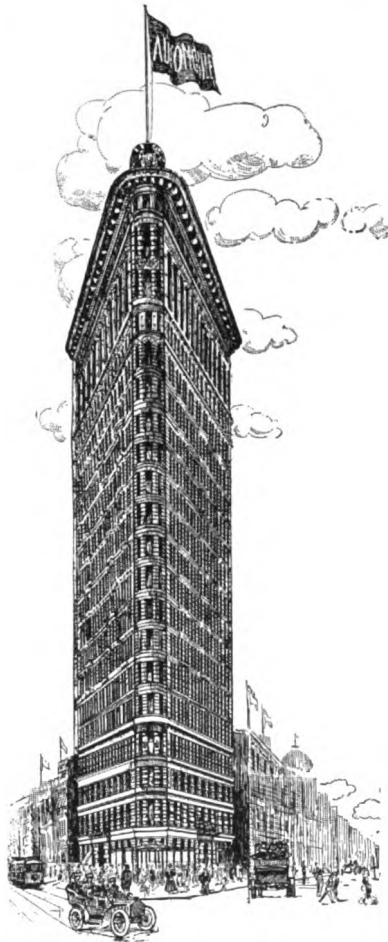
\$3.00 A YEAR

after January 1, 1908, and all amounts mailed after that date will be credited at that rate.

All present subscribers and subscriptions mailed before January 1, 1908, may renew for any period from the date of any expiration as shown on the wrapper at the present rate of

\$2.00 A YEAR

All subscriptions renewed for 5 years for \$10, now paid to some period of 1908 will be credited to January 1, 1914, or all subscriptions expiring this year (1907) may renew to January 1, 1914, by paying \$11 before January 1, 1908.



REASON WHY

When the \$2 a year price was established in 1902 **THE AUTOMOBILE** gave its readers 22 editorial pages, with 15 to 20 illustrations.

This year **THE AUTOMOBILE** gives its readers an average of 40 editorial pages, with 50 to 60 illustrations, at an editorial expense of production per issue of three times the cost of the issues when the price of \$2 was made.

THE AUTOMOBILE is ably, conscientiously and efficiently edited. It has a complete staff for both its news and engineering features, and its policy is to reflect in all its phases the great and growing industry for which it speaks.

During these years **THE AUTOMOBILE** has sold and is selling to legitimate readers many more copies than any other publication in the field.

RENEW AT ONCE

while the matter is before you, avoiding the increased rate for any period covered by your renewal. Improvements in the paper will continue. Time is valuable. You cannot afford to read cheap papers.

THE AUTOMOBILE, Flatiron Building, NEW YORK

Nov. 21, 1907.

THE AUTOMOBILE

877

876

VOL. XVII

NEW YORK—THURSDAY, DECEMBER 12, 1907—CHICAGO

No. 24

WHAT SAVANNAH OFFERS FOR A ROAD COURSE

SAVANNAH, GA., Dec. 9.—The Savannah Automobile Club is thoroughly in earnest in its efforts to have the availability and desirability of this city made known as the proper place for the holding of one of the big automobile road races. President F. C. Battey and his associates intend to leave no stone unturned to bring about the holding of an automobile event some time during the winter. According to information printed in the Savannah papers and given out by members of the club, the aid of the American Automobile Association has been solicited in the undertaking. The Mayor and other city officials and prominent citizens are greatly interested in the project, and it would appear that the Savannah club will be successful in its efforts to bring about a big road race.

In the near future the club will effect the organization of the Georgia State Automobile Association of the national body, and it is not improbable that should any profits accrue from the race intended to be held, it will be divided between the local club and the State body and used for the general good of all autoists.

Ten miles of almost perfect road are available for the course, the disposition being an east and west stretch, each four miles long and almost straight, joined by a north and a south road, each a mile in length. The starting and finishing point would be at the north end of the course, at Dale road or Forty-second street, just on the limits of the city of Savannah. At no point is the course crossed by other roads, and the only traffic intersecting it is a car line, the management of which has agreed to suspend operations during the meet. Road surface throughout is excellent macadam, the soil being of such a nature that even heavy rains only affect it for a few hours. The country being exceptionally level, and the roads unusually straight, the fastest speed would be possible with safety.

The climate of the district is one of the most equable in the country, the weather in January being usually very good, so that there would be little danger of rain interfering with the meet. From the viewpoint of picturesqueness, the course has few equals, the beautiful overhanging foliage forming a charm-



ALONG THE VERNON ROAD THERE IS A MOST PICTURESQUE CANOPY OF ANCIENT LIVE OAKS AND DROOPING SPANISH MOSS.

Photographs by M. Edward Wilson, Savannah, Ga.



CAUSEWAY ON LA ROCHE AVENUE, A MODEL ROAD SURFACE.

ing setting. Probably the only objection which could be brought against the course is its shortness. From the spectators' standpoint, however, ten miles is an advantage, for it will give frequent passage of the racers; policing and guarding of the course would, in addition, be simplified by the short length.

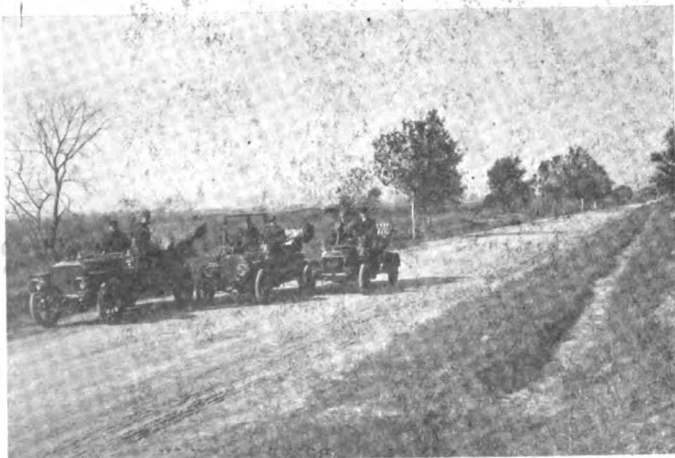
While the ten-mile course is preferred by the local automobilists, should there be a positive demand for a larger circuit, it is possible to arrange for one of twenty-two miles, taking in a couple of roads which are not quite up to the standard, but would be plenty good enough for road racing and perhaps would add to the strenuousness of the event.

Savannah is easily accessible by some of the finest steamships sailing from Baltimore, Philadelphia, Boston and New York.

Savannah Editor Invites the Autoists.

Referring editorially to the project, the *Savannah News* expresses itself in the following terms:

"Bringing the big automobile meet in January to this city will be a good thing for all parties concerned, and we feel confident that it will be the beginning of regular annual meets of the same character here. No section of the country available for winter racing, not excepting California, offers so many advantages as do Savannah and Chatham County. The roads hereabouts are exceptionally fine and almost level, and the character of the soil is such that even heavy rains do not affect them for more than a few hours; and even in the heaviest rains the roads never become impracticable. In January, however, the weather is usually good, so that there is practically no danger of rains interfering with the races. Our climate is the most equable on the continent, so that extremes of weather need not be taken into consideration. When the visiting and competing automobilists have come and seen and driven over our roads, they cannot be otherwise than delighted, and when they go home they will advertise us to their friends, and those friends will wish to come and experience the pleasure themselves. Every effort should be put forward to the end of making this first big meet in Savannah a success in every way."



THUNDERBOLT ROAD HAS A GOOD START AND FINISH PLACE.



ON THE WATERS ROAD IS GREATEST 'HILL' ON ENTIRE ROUTE.

GRAND PRIX MANAGER VISITING AMERICA.

Among the passengers on board the storm-delayed *Touraine* which warped into the French line pier on Monday morning last was Victor Breyer, president of the Board of Management of the Velodrome Buffalo, Paris. Mr. Breyer, who is on a short visit to the United States, is best known to the public on this side of the Atlantic as the manager of the French Grand Prix of the Automobile Club of France, run on the Dieppe circuit last July, and the first road race in France which had been made a financial success. The organization of the race was, in the opinion of all experts, the most perfect the world has ever seen, this excellent result being in great measure due to the efforts of the manager.

A. A. A. BOARD PLANS STOCK CHASSIS RACE.

At the first meeting of the new Technical Board of the A. A. A., with Chairman N. H. Van Sicklen presiding, held in Chicago, December 6, a committee was designated to draft rules for a national stock chassis race which will probably take place early in June, somewhere in the Middle West. A. L. Riker, Edgar Apperson, Henry Souther, E. R. Thomas, and Henry Ford were named. A. C. Newby, Edgar Apperson, and H. O. Smith, all from Indiana, will investigate and find out whether an Indiana course is available.

THE POWER BOAT SHOW IN THE PALACE.

Though they were not all weather beaten sea dogs who entered the Grand Central Palace, on Lexington avenue, New York City, last Saturday night, there was a distinctly nautical air about the building recently occupied by automobiles and now given up for seven days to the manufacturers of power boats.



ISLE OF HOPE ROAD IS ANOTHER TROPICAL STRETCH.

ACTIVE AUTO DOINGS OUT ON THE PACIFIC COAST

SAN FRANCISCO, Dec. 3.—A battle royal threatens to disturb the quiet of "Automobile Row." Once more the question of holding a show in San Francisco this season is being agitated. Several months ago it was definitely decided to hold the event, the date was set, and it was the aim of all the members of the Dealers' Association of California to make the exhibition, to be held from the ninth to the fifteenth of December, one to be proud of, greatly surpassing, in every way, the one of last year. Committees were appointed, the place was chosen for the display of the new models, and extensive preparations were being made, when the conditions of the money market caused some of them to pause and consider. Things looked a little grave, and at one of the meetings, after much discussion, pro and con, the show was called off for the season. This was, however, not unanimous, many of the dealers wishing to exhibit their new cars in a competitive atmosphere, and as the outcome another meeting was held behind closed doors.

Most of the cars are consigned, or sent to the coast, removable from the freight cars only upon the payment of the draft accompanying the bill of lading. The unsettled financial state of the banks made it seem to the dealers impossible to raise the sum of money required to release these show cars. Those who found themselves in this position were, consequently, opposed to accruing indebtedness by holding the exhibition. The result of the meeting was the same as the former one. Fred J. Linz, manager of the Maxwell-Briscoe Company of the Pacific, and vice-president of the Dealers' Association, was absent from the city on a business trip to Oregon and Washington when both meetings were held and decisions were made against the show question. Mr. Linz heard of this in the North, and did not even wait to reach home, but wrote several letters promoting an exhibit. Upon his return he interviewed many of the dealers and found that the forces were almost evenly divided. So the battle is on, for those who desire to exhibit publicly must obtain a sanction from the Dealers' Association. The result is hard to foresee, but there is little doubt but that an event in the nature of a salon will take place some time in February.

Riverside's Annual Hill Climb a Success.

LOS ANGELES, CAL., Dec. 1.—Hill climbs, runs, races and contests always have their surprises and disappointments. This was no exception, but the surprises came mostly with the disappointments. Cars which were expected to show wonders failed to perform, but, as freely predicted, the former record of 5:41 2-5, held by a six-cylinder Stearns, was lowered a fraction less than twenty seconds by a Stoddard-Dayton, driven by Frank Seifert. In the \$2,500 runabout class this car made the four miles in 5:21 1-2. A little bunch of nerves, Paul Derkum, went on a motorcycle up the long hill in 4:21. This is the fastest time ever known over the course, being close to a mile a minute speed for a rise of 700 feet in four miles.

The best time of the day for touring cars was made by a two-cylinder Tourist, driven by George Kussman. The climb was made in 5:42 1-2 in the class for cars costing \$2,000 and under.

In the class for runabouts costing \$3,000 and less, there was but one entry, the Stoddard-Dayton. The climb was in the nature of a warm up, and, after coming up in 5:31 1-2, the car was hurried down the hill to meet the new Haynes roadster in the free-for-all runabout class. The Stoddard-Dayton after its warming-up heat was even better and rolled the distance in 5:23. Frank Seifert drove as fast as the machine would go, and in the third time up, the \$2,500 class, made his record of 5:21 1-2.

The two-cylinder Tourist and the smaller Oldsmobile were the sole starters in the class for touring cars costing \$2,000 and under, and the Tourist was an easy winner in 5:42 1-2.

In the touring car class, \$3,000 and under, P. A. Renton, with the Great Smith, won the cup for the class, his time being 6:43 1-2. Scratches cut the free-for-all touring car class down to four starters, and two of these, the Stearns and the Thomas Detroit, failed to finish. The Gearless went up in 6:17 and the White steamer in 6:27. D. M. Lee's Cadillac proved a winner in the \$2,500 touring car class. The day's sport closed with the \$4,000 touring car class for the Glenwood Inn Cup, a handsome copper masterpiece of the jeweler's art. It was won by an American in 5:56 2-5.

White Steamers Tie in the Del Monte Endurance Run.

There were four contestants in the recent event for the Del Monte endurance run cup, given by the Automobile Club of California. The White Company was represented by two cars, one driven by J. J. Borree and the other by Al. Piepenberg, and opposed to the steamers were two Tourist cars, one driven by



WHITE STEAMER, WHICH TIED FOR THE DEL MONTE CUP.

J. A. Nickrent and the other by E. E. Mason. Friday morning, November 22, at 7 o'clock, the signal was given at Belvedere by Chairman A. B. Watson of the club, and the four cars were sent away at fifteen-minute intervals. The course from Belvedere to Witter was covered by all four cars on schedule time. Then the quartette remained at Witter for the return trip on the following Monday.

In addition to the Del Monte cup was another contest for the Witter trophy, which was won by E. L. Peacock, driving a Mitchell. J. H. Berup, driving a contesting Lambert, protested the award of the Witter trophy, claiming that he had been unable to pass his opponent on account of the narrow road.

The Witter hill climbing contest took place on Saturday afternoon, the course being two miles long and containing many sharp curves and turns. A Buick won the challenge cup in 6:21, and was also successful in the free-for-all.

Monday morning the quartette of strivers for the Del Monte cup again resumed their struggle. Ten miles out of Middletown the Tourist had a narrow escape from going over the edge of an embankment and was rescued from the perilous position by one of the White steamers. The conclusion of the run resulted in a tie between the two White steamers.

BRITAIN WILL COMPETE CONTINENTALLY AND AT HOME

By JOSEPH F. MACKLE.

LONDON, Dec. 3.—Since the death of the Gordon Bennett contest the British attitude towards Continental races has been one of indifference, and, with the exception of the two unlucky eight-cylinder Weigels, no British car has shown its paces in French or Italian contests during the past two years. Mature consideration would seem to show that this has not been altogether the wisest of policies. The popularity of the big European races has suffered not one whit from the absence of British participants and without doubt much business has accrued to the winners of these races from British buyers.

The coming season will see a reversal of this stand-off policy. Many of the leading makers have announced their intention of competing for the Grand Prix race, and both the Ariel and the Deasy concerns have their cars on the road already. Napier will build special cars to suit the conditions of every European race of note, and S. F. Edge is confident of adding to the big speed reputation which Napiers have lately won at Brooklands and Gaillon. From other firms, as well, come indications of renewed activity for the racing game, and quite possibly the French will find Britain following in the steps of the Italians and wresting their laurels from them during the coming season.

Conditions for Tourist Trophy Event.

For events at home the new season's plans are already cut and dried. The Tourist Trophy race has served its purpose. It demonstrated the big speed possibilities of the moderate-powered light car, and at the same time brought about big improvements in petrol economy—improvements which show to advantage in the stock models of competing firms. Hardly anything was to be gained by the continuance of this race, and so, like the Gordon Bennett of good memory, it has given place to a new contest. This is to have no fuel limit, but will be a race pure and simple, open to cars of four or more cylinders, whose D·N dimensions (D being the diameter of the cylinders in inches and N

the number of cylinders) do not exceed 64. For four-cylinder engines, this gives a maximum bore of four inches, whence the event is popularly styled the "four-inch" race. The minimum weight will be 1,800 pounds, exclusive of driver, mechanic, tools, and spares. The distance proposed is about 350 miles, and the race will take place in the Isle of Man about next May.

Reliability Run Considers Time Alone.

The reliability trial side of the program has been looked after by the Society of Motor Manufacturers and Traders, and rules have been drawn up for an event bearing the imposing title of "The International Motor Contest, United Kingdom, 1908." The contest is to consist of a 2,000-mile observed reliability run in daily stages of about 200 miles, the tour starting and finishing at London. On the journey there will be some 20 miles of timed hill-climbs, and at the end a 200-mile speed race will be held at Brooklands.

A novel and good point about this event will be the absence of arbitrary or complicated methods of judging. The record will be by time alone, that is, time taken to climb the hills and at Brooklands, time spent in adjustments and repairs, and time lost in filling petrol tanks, this last being counted at one minute for each gallon. The cars will be started for the final 200-mile race in each class according to their respective time records at their arrival at Brooklands. Therefore, the first car past the post in each class will be the winner.

No attention has been paid to such qualities as silence, springing or absence of vibration, the committee responsible for the rules rightly agreeing that such points as these can easily be judged by a potential purchaser in the course of a trial run, leaving the more important points, which cannot be so readily judged, to be settled by the big contest. This general proposal has met with much approval, and in all probability the event will be well supported by the trade.

AN AMERICAN BROOKLANDS TO BE NEAR PHILADELPHIA?

PHILADELPHIA, Dec. 9.—In the multiplicity of projects now going the rounds for the establishment of an American Brooklands in the East, the average automobilist is apt to take the announcement of a new one *cum grano salis*. But the scheme outlined for the American Autodrome, to be laid down within 15 minutes' drive of the Philadelphia City Hall, bears all the earmarks of being a go, backed as it is by some of the Quaker City's most prominent business men, with practically unlimited capital behind them.

The new track, which is to be a two-mile concrete and cinder oval, 100 feet wide, except on the turns, where it will be 125 feet, will be built at Llanerch, on the West Chester pike, about two miles west of the Sixty-ninth street terminal of the Market street elevated road. With the schedule now in force Llanerch is about 25 minutes from City Hall by trolley. On race days expresses can do the distance in 20 minutes or less.

The motordrome scheme is an idea of W. F. Magraw, a

prominent real estate man, who succeeded in interesting Louis Bergdoll, the millionaire brewer and automobilist, in the project. The ground upon which the track will be built lies high and can be banked and graded at comparatively small expense. There are about 225 acres in the plot, and the engineers who are now at work staking the oval will arrange for several entrances from the surrounding roads, under the track, and into the infield. In many other respects the ideas incorporated into the Brooklands track will be followed, Mr. Magraw having made a special trip to England to study the details of that record-breaker. An expenditure of half a million dollars will be required to complete the track and all its appurtenances, but just at present all the promoters' energies will be devoted to building the track and entrances, which will be completed before July 4, if present plans do not go awry. In connection with the track it is proposed to form an automobile club, which shall eventually take over the entire plant.

Berlin now possesses a certificated woman aeronaut in the person of Frau la Quiante, an officer's wife, who has successfully passed her examination in both the theoretical and practical branches.

As the German Emperor's travels have upset all previous arrangements, he will not be able to open the Berlin show on December 5. The Crown Prince will assume this duty, as he did last year, and both he and Prince Henry of Prussia have promised to attend the banquet at night.

At the Paris congress the dates for the 2,400-kilometer Prince Henry tour were fixed for June 9 to 17, while the Kiel Week takes place from June 22 to 29.

A motordrome on the Brooklands idea is being proposed for Berlin, the site to be probably at Tetlow.

Austria's motor regulations have been unpleasantly enhanced by a decree of the Home Office, fixing the highest speed permissible on the open road at 30 kilometers. Until now this limit referred only to towns and villages.

WHAT TWO AMERICANS FOUND AT THE SALON

BY ALFRED REEVES, GENERAL MANAGER AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION.

PARIS, Dec. 1.—After all is said and done in the matter of automobile shows, the present exhibition in the Grand Palais, which closed to-night, must be considered the last word. Because of a mammoth and beautiful building, built originally for the Paris Exhibition, it is possible here to house an exhibition of automobiles which is without doubt the finest industrial show ever held anywhere. To Americans the show is nothing short of dazzling, even though they are trained to some pretty good affairs at home. In company with Howard C. Marmon, of Indianapolis, who is a member of the Technical Committee of the A. M. C. M. A., I spent almost a week over the exhibits, finding new and interesting things at every turn.



HOWARD C. MARMON,
Technical Committee A.M.C.M.A.

No word artist can attempt to paint the decorative and electrical features that surround the finest productions of the motor car industry of France, Italy, Germany, Belgium, Holland, Switzerland, Spain, England and America. Under the glass roof of the wonderful Grand Palais, a building probably six times as large as Madison Square Garden or Grand Central Palace, are shown the glittering automobiles of the world's greatest factories. Thousands of variegated colored incandescent lamps, outside and inside the building, set off by two score of

giant searchlights (the whole lighting system costing \$600 an hour for current alone), produced a veritable fairyland setting that dazzled and astonished even the artistic Frenchmen, to say nothing of its effect on Americans visiting the show for the first time.

Imagine a great hall almost 1,000 feet long and about 500 feet wide, with a dome of solid massed electric lights; imagine four solid supporting columns of fire, of the most graceful lines, rising to the centerpiece, showing a sunburst that seemed striving to overcome the glow of sixteen searchlights, the whole being surrounded with gold and white draperies of light; imagine a sky of shimmering silver cloth, accentuated by a score of flashing searchlights, with side decorations of glowing club shields and borders of fleurs-de-lys.

Imagine a floor almost a quarter-mile square carrying hundreds of polished cars and decorated with electric signs of an infinite variety ranging from reproductions of fruits, flags, flowers, and arches in lights of every known color and form to the gigantic Darraq illuminated globe in the center; imagine the aisles and booths crowded with bejeweled women whose gems vied with the electric lights that flashed back defiance, and with silk-hatted men as escorts. Then imagine outside the building half a dozen boulevards



ALFRED REEVES,
Gen. Manager of the A.M.C.M.A.



SCENE OUTSIDE THE GRAND PALAIS DURING THE HEIGHT OF THE GREAT EXHIBITION PRESENTED BY THE FRENCH INDUSTRY.

wards leading to the Palais being strung with thousands of electric lights in flower form, attached to majestic columns or hidden among sculpture work. Add to this a dozen or more electrically colored fountains, a horde of slow-moving autos with honking horns and staccato-like exhaust taking people to and from the show. Above, the majestic Eiffel tower casting a searchlight over all and a dozen revolving lights in front of the building. Finally, imagine the tale of the Arabian Nights or of a Roman spectacle, and you will have a faint idea of the brilliancy, richness, and perfection of what is unquestionably the world's greatest automobile show.

The Greatest of Automobile Shows.

Every effort was made to have this the greatest of all shows, and the efforts proved successful. From the band of 100 pieces to the very smallest detail, the public was impressed with the importance of the automobile, particularly with the position of France in the industry, and the public has shown its appreciation by attending in record numbers, there being 60,000 paid admissions last Sunday, with an average attendance each day of about 30,000. While there is some talk among the few of making this the last show because of the expense, which is very much greater than falls on exhibitors at American shows, yet it is admitted that shows can profitably be held for two or three years more, especially if a uniform style of decoration is followed out that will decrease the cost of individual exhibitors, some of whom at this show expended between \$8,000 and \$9,000.

While, of course, the exhibitors from France were in the great majority, there was an excellent representation from other countries, including an exhibit of the Ford Motor Company, the only one from America. The Ford made a big hit at the show, the stand being constantly surrounded by visitors, and many retail sales being made, besides arranging for agencies. Mr. Lockwood, who represented the Ford Company, says that with the exception of Turkey, where all motor cars have been barred, Ford machines are now used in every civilized country.

It was rather a novel thing here to see the show close at 7 o'clock in the evening. It opened at about 9 o'clock in the morning, but from 12 to 2 the building was practically deserted, as every good Frenchman takes at least two hours for *dejeuner* as against the American custom, where a light meal is considered the proper thing at midday. Great crowds attended in the afternoon, with the select element arriving at about 5 o'clock and remaining until the close. The admission was only a franc, but there were several days when it was 5 francs.

While there are no very radical changes in construction, there are many improvements in minor details that make for the perfect car. Generally speaking, prices have been reduced anywhere from 10 to 20 per cent., and special reductions are being made where cars are being sent to America, so that in many cases complete French cars of good reputation will be sold in 1908 on a price level with some of our best makes.

As might be expected, the business this year has been in small cars, and almost every maker exhibited cars of from 10 to 20 horsepower. Some of these have one cylinder in the case of runabouts; others two, but most of them four. The trade in big cars this year has not been good. The tendency of the makers and dealers is to be a little conservative next year. Prices of the small cars do not compare with ours, and there seems a fair field over here for cars for the masses.

Some of Mr. Marmon's Technical Impressions.

In my judgment, Howard C. Marmon, my associate on this trip, is one of the closest students of motor car construction that we have, and his opinions as obtained from a review of the show, are well worth considering. Of course, to our A. M. C. M. A. members will be given an exhaustive report of our investigations in Europe, but certain points are worth noting publicly for the benefit of the trade as a whole. In conversation regarding the impressions of an American engineer at the Paris show, Mr. Marmon said:

"The present exhibition discloses the general feeling of dissatisfaction among designers as to detail points that had come to be regarded as conventional, and the details in the cars show here every possible variation that well or ill directed ingenuity can suggest.

"Motor designs in general show a tendency to increase the number of cylinders in one casting. Small four-cylinder motors of from 10 to 18 horsepower are cast *en bloc*. Six-cylinder motors are usually in two sets of three cylinders.

"The greatest possible diversity is shown in mounting motors. The crankcases may have four separate arms cast on each side and carried out to the main frame, or may be made without arms and bolted directly to pressed steel or cast cross frame members or a very narrow sub-frame running parallel with the crankshaft. They are mounted with two crankcase arms near the flywheel, and a single point in front, or vice versa. This list only indicates some of the more common methods. Not many ball-bearing motors are shown. The circulating oil system of flood lubrication has been largely adopted.

"High-tension magneto ignition is gaining ground, as some of the most prominent advocates of make-and-break show either part or all their models fitted with a high-tension magneto.

"In heavy cars a number of examples of electric transmission are shown. The dynamo and motor may be mounted in the frame and used as an ordinary change-speed device, or the motors may be placed either in the front wheels or in the rear wheel hubs. Among the small cars of the two-passenger variety—of which many new varieties are shown—there are disk friction drives, flat belt drives, and V-belt drives on expansible pulleys, in addition to slip and planetary gear transmission. The small runabout is usually a one-cylinder vertical.

Some Self-starting Devices in Evidence.

"The most largely used starting device consists of a compressed air tank, a small air compressor driven either off the camshaft or the layshaft of the transmission, and a gear-driven air distributor to admit air to the cylinders in rotation at the top of their compression stroke through a check valve. As soon as the compressed air is turning the motor over at the necessary speed, it automatically takes up its normal functions and the air valve is closed by hand.

"The most noticeable innovation in rear-axle construction is the placing of the differential gear on the propeller shaft and driving through two sets of beveled wheels. When this is done the rear wheels are cambered.

"Great variety is shown in springing the rear end of the chassis frame. Semi-elliptic, three-quarter elliptic, full elliptic with solid ends, full elliptic with scroll ends, platform springs, a modified form of full-elliptic in which the upper half is one-half the length of the lower half, spiral springs, reach springs, and "C" springs are among those on view. The three-quarter elliptic is mostly used. Complete town cars are shown in which the inclosed part of the body is mounted on four "C" springs and swung by them above the chassis frame.

"Two extremes of practice are shown in frame construction. Some makers choose to adopt very light and flexible frames, while other makers, in an effort to get extreme rigidity, carry the sides of the pressed steel frames up sufficiently high to form the lower half of the body. Straight line bodies are very rare. The closed body is slightly convex, and the open body either slightly convex or a restrained King of Belgians type.

Although well used to seeing streets full of automobiles in New York and elsewhere, one cannot fail to be impressed with the standing of automobiles in Paris. It is simply full of them, and honking horns are heard every hour of the day and many hours of the night. Your Frenchman uses his car a great deal in business, and everybody else uses the taxicabs or the horse-drawn cabs, for other than these for transportation there are only a couple of steam trams and an underground system of rather limited capacity. Taxicabs have been in evidence for about two years and there are now about 3,000 in circulation.

E. V. COMPANY PLACED IN RECEIVERS' HANDS.

Inability, either to borrow or to collect what was due it, owing to the present stringent conditions, is given as the cause of the failure of the Electric Vehicle Company, Hartford, Conn., for which Halsey M. Barrett, of Newark, N. J., and Henry W. Nuckles, an officer of the company, were appointed receivers for the State of New Jersey by Judge Cross, of the United States Circuit Court in Newark, on Tuesday last. William S. Montgomery was also appointed at the same time by Judge Ward, of the United States Circuit Court in New York City, to serve with Mr. Barrett as ancillary receivers for the State of New York. It had been reported that the company was in financial straits recently, and action was precipitated by its default of payment of an issue of \$2,500,000 of 6 per cent. gold bonds due November 1, as well as other obligations maturing since then. The business will be continued by the receivers and an attempt to reorganize undertaken in the near future.

The total liabilities reach a substantial figure, of which, in addition to the bond issue already referred to, \$2,016,000 is said to be past due. Among the company's obligations are demand promissory notes to the extent of \$591,043.32; a note for \$300,000 due December 3, and smaller notes aggregating about \$8,000. Included in the assets are the plant, valued at \$717,498.16; finished vehicles, \$173,087.73; consigned vehicles and merchandise, \$90,387.51; patents and patent licenses, \$11,447,537.28; materials, supplies and parts in process of manufacture, \$770,474.20; stocks of other companies, \$358,002; accounts receivable, \$132,000, and cash, \$12,000, all except the last two being merely book values. Under the head of assets are also listed the "good will" of the concern and the trade name, "Columbia." No mention is made of the company's interest in the Selden patent as such.

Isaac L. Rice was the organizer of the company, but shortly afterward transferred it to the Whitney-Ryan syndicate and the Elkins-Widener interests in Philadelphia, a deal that caused speculation in the company's stock to run rife during 1899-1900, when shares sold as high as 150, being quoted just before the failure at three and five, with nothing bid. The company organized subsidiary companies in several large cities and sold or leased them the vehicles it built. The Electric Storage Battery Company, which is another Whitney-Ryan concern, is said to hold a large block of the stock.

During recent months there have been several changes in the directorate and officers. M. J. Budlong resigned as president to assume the management of the A. L. A. M., H. H. Vreeland and Grant B. Schley, Jr., resigned as directors, and Hiram Percy Maxim, who had been chief engineer of the company for the past five years, also severed his connection with it.

MERCEDES PRODUCT TO BE MARKETED DIRECT.

It has just been announced that the Daimler Motoren Gesellschaft, Canstatt, Germany—the parent plant of the makers of the Mercedes cars—have turned their Austrian works over to the manufacture of a car to be known as the Maja, which is new in name, but which in construction and design is a replica of the well-known Mercedes. As a matter of fact, this is a sister car of the Mercedes with all the improvements and refinements that the designers of the latter found possible, the new thing in connection with its production being the fact that it will henceforth be known as the chief output of this famous German house, and will be marketed direct in all parts of the world by a London firm. This is the Maja Company, Ltd., and with the exception of the cars sold in Germany, it will handle the entire output, the main offices being in London, with direct branches in Paris, Stuttgart, Hamburg, St. Petersburg and New York, and these branches are fully organized and already in possession of the first models, which are offered, either complete with body or as chassis alone. The New York branch is located at 230 West Fifty-eighth street, and will have an exhibit at the Importers' Salon in Madison Square Garden.

SIXTEEN SCORE IN SEALED BONNET CONTEST.

WASHINGTON, D. C., Dec. 10.—The sealed bonnet contest promoted by the Automobile Club of Washington and run to-day over a 118-mile course in a heavy rainstorm was by long odds the best automobile event this city has ever had. Twenty-nine cars were entered and all but three were on hand when Starter Mark gave the signal. Twenty-two cars finished within the time limit, and of this number sixteen had perfect scores. The weather conditions were enough to dampen the ardor of the most enthusiastic automobilist, as rain had been falling steadily for two days, leaving the roads in very bad condition and making fast time out of the question. To a two-cylinder Buick, driven by S. A. Luttrell, fell the honor of making the fastest time, Luttrell covering the course in 8 hours 1 minute. Notwithstanding the bad road conditions, mechanical and tire troubles were few. There were no untoward incidents to mark the contest, which was handled in a very clever manner by the committee designated by President Caverly, who was "on the job" himself.

Some portions of the route were almost impassable and required the most careful driving to bring the cars through.

Owing to the great publicity given the contest it is sure to give the trade and sport a decided impetus, particularly as there was not a single protest lodged with the contest committee. In the order of finishing, the clean-score cars and drivers were very closely placed, checking in at the final as follows:

Thomas Flyer, W. C. Hood; Franklin, E. Hart; Buick, S. A. Luttrell; Oldsmobile, J. A. Lutz; Ford, C. E. Miller; Cadillac, R. Jose; Maryland, J. M. Rife; Franklin, F. S. Bliven; Locomobile, J. Florida; Packard, I. Freund; Wayne, John Hartman; Columbia, F. P. Hall; Mitchell, P. M. Smart; Mitchell, F. I. Flynn; Corbin, E. D. Harrison; Maxwell, J. R. Thomas.

TO REJUVENATE PHILA-BALTIMORE "CANAL."

MEDIA, PA., Dec. 9.—The crying need of a more direct route between Philadelphia and Baltimore than the present roundabout way through Lancaster and York was the burden of the plaint at a banquet given by the Automobile Club of Delaware County to the road supervisors and the councilmen of the several towns and boroughs of the county located along the old Baltimore, last Saturday night at the Collonade Hotel, in Media. This old road, which in the dim and misty past was macadamized, is now and has been for many years a veritable mudhole. One of the speakers, Judge Isaac Johnson, of Media, jokingly referred to the old road as a "canal," and the appellation will not come far from holding good during and after a rainy spell, frequently for many days at a time.

It was to create a sentiment in favor of an immediate improvement of the old road, which in Revolutionary days was the direct post road to the South, that the Delaware County Club gathered the supervisors and the law makers together and told them what they wanted. The seed evidently fell on fertile soil, for the club's guests were convinced that the appeal for the road's improvement was not based on a mere desire to make easy going for automobiles, but that in its present condition the highway was a detriment to the county's best interests. Besides setting the ball rolling in their own county, the Delaware Countians took steps to interest the Chester County officials in the effort to secure the rebuilding of the road as far as the State line, meanwhile working up the Marylanders to do their share in putting the road in shape up to the gates of their metropolis, as co-operation is essential to the success of the project.

As a means to the end nearest their hearts, the automobilists launched the Good Roads Association of Delaware County, and every one present pledged himself to become an active member.

The number thus enrolled in the good cause at the outset is considerable, and includes many of the most prominent autoists in the territory affected. That the most direct route between two large centers of population should have ever been permitted to fall into such ruin is inconceivable.

DETROIT'S FIRST SHOW NOTABLE AND SUCCESSFUL

DETROIT, MICH., Dec. 10.—From an artistic standpoint the first show of the Detroit Automobile Dealers' Association, in progress at Riverview Park Auditorium this week, is an emphatic success. What it may total financially is yet to be determined, but from the attendance and the enthusiasm exhibited it is certain to prove anything but a failure.

Upwards of a score of dealers are members of the association, organized but a few months ago, and approximately twice that number of standard cars are to be seen at Riverview Park. Following as it did the national show at Chicago, Detroit got the cream of the exhibits there. In few cities is the competition keener than Detroit. In the first place it is the recognized center of automobile manufacturing, several of the largest and best known concerns in the business being located here. Outsiders were not slow to appreciate the fact that passiveness on their part would give Detroit manufacturers a decided advantage, and they have backed up their local representatives.

Many of the Chicago exhibits were sent here practically intact. Others were augmented by the factories, and, numbers considered, it would be difficult to plan a more comprehensive exhibit.

Several new features not shown elsewhere were saved for Detroit, among them being the new Ford line, including a landaulet and a five-passenger light touring car with the same chassis as the runabout. Another newcomer was an electric machine put out by the Anderson Carriage Co., of Detroit, and which made its bow to the local public Monday evening.

Manager LeRoy Pelletier was given a free hand in the decorations, and the result was a distinct surprise, surpassing any previous effort of its nature. Running entirely around the immense auditorium was a border of mammoth posters done in colors by Detroit newspaper artists, depicting humorously the experiences of motorists from the first attack of automobilitis

to the final stages of motorphobia. Green, gold and white were the colors employed in its decorations.

The show was thrown open to members of the Detroit Automobile Club for preliminary inspection Monday evening, Thursday evening being designated as society night, with the customary boost in prices. The show proved a strong drawing card, and with the final outcome yet to be determined the dealers express themselves as well satisfied.

Gasoline Cars.

J. H. Brady Auto Co.—Peerless, Pope-Hartford and Autocar.
Winton Motor Carriage Co.—Winton.
Maxwell, Briscoe, McLeod Co.—Maxwell, Mitchell and Brush runabout.
J. P. Schneider—Pierce, Stevens-Duryea, Franklin, Pope-Toledo and Columbia.
Wm. F. V. Neumann & Co.—Welch, Stoddard-Dayton and Reo.
Grant Bros. Auto Co.—Thomas Flyer, Thomas Detroit and Buick.
Cadillac Motor Car Co.—Cadillac.
Anderson Electric Agency—American Simplex.
Fee-Bock Co.—Elmore.
Ford Motor Co.—Ford.
Seldler-Miner Automobile Co.—Jackson.
Motor Car Co.—Cartercar.
De Luxe Motor Car Co.—Car De Luxe.
Oldsmobile Co.—Oldsmobile.

Electric Cars.

Maxwell, Briscoe, McLeod Co.—Columbia Electric.
Anderson Electric Agency—Detroit.
Wm. F. V. Neumann & Co.—Rauch-Lang.
Fee-Bock Co.—Pope-Waverly.
Fee-Vincent Co.—Woods Electric.
J. P. Schneider—Columbia.
Seldler-Miner Auto Co.—Babcock.

Steam Cars.

White Sales Co.—White Steamers.

ROADMAKERS TO HEAR BAY STATE AUTOISTS.

SPRINGFIELD, MASS., Dec. 9.—A movement has been started by the Good Roads Committee of the Automobile Club of Springfield which is likely to result in the installation of continuous State road between this city and Warren, the practically sole remaining link of poor road on the trunk line between Boston and New York. A hearing will be held in this city, Thursday, December 19, when the State Highway Commission will hear prominent autoists from the western part of Massachusetts, where the Berkshires are located.

In addition to the completion of the trunk line which will be brought up, the autoists will insist on the completion of at least one of the three routes from Springfield into the heart of the Berkshires, one of the most popular goals for autoists as well as the most beautiful of its kind in New England. Of the three routes from Springfield, via "Jacob's Ladder," Becket, and Northampton, the "Jacob's Ladder" route has only about eight miles of uncompleted road, and this route also Chairman McClintock has signified an intention to complete next spring.

It is the opinion of autoists in this part of the State that this immediate section has been neglected by the State Highway Commission for the last year or two, and for this reason Chairman McClintock announced at the Good Roads convention, held here in September, that he proposed to remember it in the road construction next year.

The committee of the Automobile Club which has the details of the hearing in charge consists of Willis A. Ford, chairman; Superintendent of Streets Arthur A. Adams, and W. T. Helfer. The visiting autoists and the members of the Commission will be entertained here by the Automobile Club.

MOTORPHOBE JUSTICE OVERSTEPS HIMSELF.

ALBANY, N. Y., Dec. 10.—That a too zealous upholder of the speed laws may defeat his own ends by imposing limit sentences, has seldom been better illustrated than in the case of Howard A. De Graaf, who was arrested for overspeeding in Rensselaer county, and taken before Justice J. P. Van Ness in the village of East Greenbush, N. Y. He pleaded not guilty and was fined \$100, from which decision he appealed. The action, known as *People vs. De Graaf*, was defended by Bender & Hinman, of Albany, and was carried to the County Court, which recently handed down a decision that not alone reverses the lower court, but effectively puts an end to any further proceedings. A justice's court is not one of record, and, as such, its jurisdiction is limited to imposing fines not exceeding \$50 nor terms of imprisonment not exceeding six months, so that in fining Mr. De Graaf \$100, Justice Van Ness, who has achieved quite a reputation as a motorphobe, exceeded his authority, notwithstanding the fact that the Motor Vehicle law provides for a maximum fine of that amount. In similar cases of error the appellate court has the power to remit the record to the trial court for correction, but the statute does not include courts not of record, so that the action can go no further.

POPE RECEIVERS HAVE POWER.

TOLEDO, O., Dec. 9.—Judge Tayler, of the United States Circuit Court, has come to the assistance of A. L. Pope and G. A. Yule, receivers for the Pope Motor Car Company, of this city. Upon application by the receivers, in re the case of MacManuskelly company, the court granted the privilege to borrow additional money, issue more receivers' certificates on a changed basis and to renew the certificates issued August 18.

AUTOMOBILE LAMPS AND THEIR LENSES

By VICTOR LOUGHEED.

THE average purchaser of an automobile lamp makes his selection more on the lamp manufacturer's reputation than he does on any knowledge of his own concerning lamps. Indeed, more often than not it is the opinion even of the automobile expert that all lamps are pretty much alike and afford little room for the engineering refinements and niceties that are a matter of course with the more complicated car itself. Finish and workmanship, as well as the price, are expected to vary, but such nice optical distinctions as the difference between a "parabolens" and a "paraboloid" might as well be non-existent for all the attention they attract from the people most interested in their merits and applications, while the seemingly trivial difference between a short-focus and a long-focus lens mirror is almost never appraised at its full value. Yet a very cursory incursion into the field of the lamp maker is sufficient to convince the discerning layman that there is an XYZ as well as an ABC to the apparently simple proposition of providing a source of light and directing the illumination in a desired direction.

ities, and the incandescent gas lamp, which by the use of the new hard mantles, in conjunction with gasoline-vapor burners, should even now be capable of giving as good service on automobiles as it is giving in railway coaches and in other commercial uses.

The value of a light is usually expressed as so many "candlepower"—one candlepower being the light photometrically determined as that given by a sperm candle of certain standard size and construction. With most lights the illumination is radiated in all directions, though not necessarily with uniform intensity. This condition has given rise to the term "mean spherical candlepower," by which is meant the total of the light from a given source which will fall on the interior of a hollow sphere of a given size, as suggested by the cross section of *B*, Fig. 1, the source of light being at *A*. The necessity for basing figures upon a sphere of standard size is easily perceived when it is considered that to make the sphere larger or smaller will increase or decrease the surface and thus correspondingly increase or decrease the illumination to a given unit of area. Thus, to

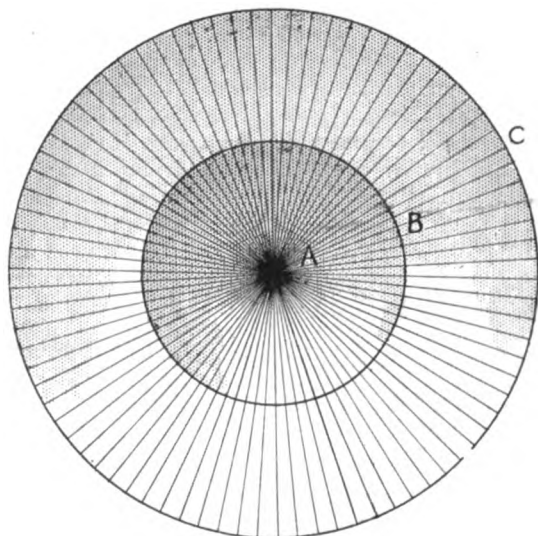


FIG. 1.—Illustrating the method of measuring "mean spherical candlepower," the light being placed at *A*, while the standard sphere through which the light is thrown is represented by *B C*, in the form of a hollow truncated cone.

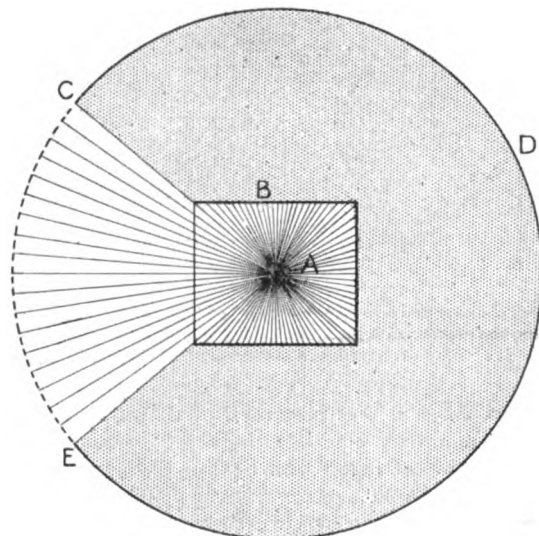


FIG. 2.—Showing how the amount of light available depends upon the form of the container in which it is placed, the box shown here permitting only 12 per cent. of the total light of *A* to be utilized, while 88 per cent. is absorbed and lost.

The illuminants so far developed as practical for automobile lamps are few in number. There is the common kerosene-oil burner—simple, reliable, economical and universally available, which gives good service in a multiplicity of cheaper constructions; there is acetylene—affording a brilliant flame of great power, capable of being readily maintained from either a generator or storage tank; and there is electricity, in the form of the incandescent lamp, giving a light that is more nearly ideal than most others, though the problem of supplying it with current is not as simply and inexpensively solved as with its competitors. In addition to these there is the oxy-acetylene calcium light, which has been developed in a small way, but with considerable success, abroad, and in which a flame of acetylene fed with oxygen from a special storage tank is directed upon a lump of lime, giving a dazzling light similar to the well-known limelight, save for the substitution of acetylene for the hydrogen used in the earlier system. In the way of possibilities that may perhaps be considered as verging on commercial success, though they have not yet achieved it, there are the electric arc lights, developed to a high degree of efficiency for railway car use, the Nernst electric light, possessed of some alluring possibil-

ities, and the incandescent gas lamp, which by the use of the new hard mantles, in conjunction with gasoline-vapor burners, should even now be capable of giving as good service on automobiles as it is giving in railway coaches and in other commercial uses. This law holds good in all possible applications and for parts of spheres as well as whole spheres, so it is the comparatively simple explanation of the fact that the intensity of light decreases in proportion to the square of the distance—being only one-fourth as intense for twice as far, one-ninth as intense for three times as far, one ten-thousandth as intense for one hundred times as far, etc. The last figure is suggestive of the problem encountered in lighting the road in front of an automobile, since to get a given illumination 1,000 feet ahead, ten thousand times as intense a light is necessary as would be required to give the same illumination ten feet ahead.

It is obvious that there are just two ways to overcome the difficulty stated. One is to adopt the absurd policy of actually providing the light of a strength ten thousand times multiplied, with all that this would involve in the way of costly and complicated maintenance, objectionably intense nearby illumination, at the same time cutting off rays falling in undesired directions.

The other method is to utilize a light of more moderate power while intercepting its rays of undesired direction by mirrors and lenses, properly formed to reflect and refract the largest possible proportion of these rays into the direction in which the illumination is required. In this connection it must be understood that light rays always travel in straight lines from their source, unless reflected or refracted, so a lamp consisting of simply a vessel of non-reflecting material, with an opening in one side, would waste a majority of the light just as completely as an entirely closed vessel would waste the whole of it. That is to say, if the opaque, non-reflecting vessel *B*, Fig. 2, is used for a lamp, all of the light from *A* that would have fallen on the spherical surface *C D E* is wasted, only the cone of light *C E*, amounting to only 12 per cent. of the total from *A*, being saved.

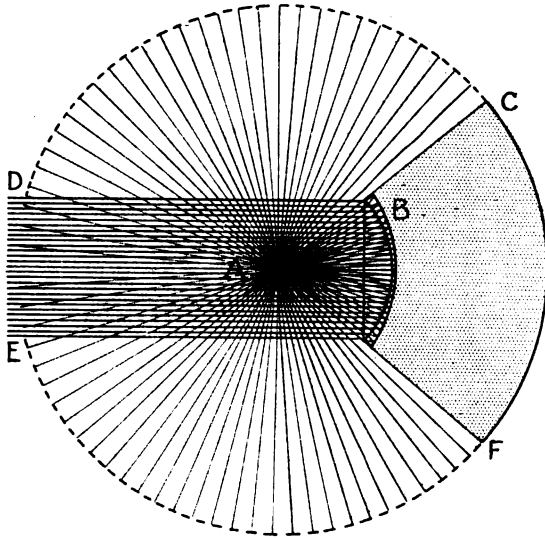


FIG. 3.—Type of characteristic automobile headlight using long-focus mirror lens, showing the manner in which the light given by *A* is concentrated and thrown directly forward in the shape of parallel rays.

And it is projected in diverging rays, producing an illumination of rapidly diminishing intensity, in accordance with the law already stated in connection with lighting objects at a distance.

From what has been explained, it now must clearly appear that for a light to be projected to a distance without exceedingly great loss it must be projected in a beam of rays as nearly as possible parallel. And to give as powerful an initial intensity as possible to the beam all rays from the light source that can be reflected or refracted into it should be intercepted by mirrors or lenses, or by a combination of both. The nearest possible approximations to these ideal requirements are the ends sought by all scientific lamp manufacturers.

Low Efficiency of Typical Auto Headlight.

A characteristic automobile headlight, using a long-focus lens mirror, *B*, is diagramed in Fig. 3, in which *A* is the source of light, *C F* is the cone of rays intercepted and projected by the mirror, and *C D E F* is the amount of light wasted. In this case, with the proportions pictured, the amount of light, *C D*, which is converted in the parallel beam *D E* is only 12 per cent. of the total given by *A*.

A short-focus lens mirror lamp is diagramed in Fig. 4, in which the principal difference from the preceding consists in shaping the lens mirror *B* so that it can be placed closer to the light at *A*, this simple expedient serving to increase the size of the cone of intercepted rays, *C F*, very materially over that of the corresponding cone in the preceding case, 37 per cent. against 12 per cent. of the light now being saved, which amounts to an actual tripling of the forward illumination as represented by the beam *D E*.

Before proceeding further it will be well to explain some of

the considerations involved in the reflection and refraction of light under the conditions that apply in an automobile lamp. To begin with, it must be known that the ideal illumination for projection purposes would be one with all the light proceeding from an infinitely small point, no other condition permitting the realization of a perfect non-diverging beam of maintained intensity. Practically, of course, it is impossible to realize this theoretical ideal, but the best results are had with the lights that nearest approximate its requirements. Incandescent electric lamps, for instance, with closely coiled filaments, and the oxy-acetylene light, with a small button of lime as the source of the illumination, give good results, while the tiny "crater" of an arc light, whence nearly all of its light emanates, is the reason for its universal use in navy searchlights. Reflecting surfaces are invariably metallic, properly polished speculum metal, composed of 70 parts of copper to 30 parts of tin, reflecting a greater percentage of the light than anything else that is in practical use. Next to this comes the amalgams with which the backs of glass mirrors are coated, while pure silver is a close third in its qualities.

Every Surface Absorbs Some of the Light.

No surface, of any material, can reflect all of the light that falls upon it, some certain proportion, varying from very little in the case of a good mirror to almost the whole in the case of a dead black surface, being absorbed. This makes it imperative that reflecting surfaces be kept in a condition of highest possible polish, if a major portion of the light falling upon them is not to be lost by absorption. To keep them so, however, when exposed to dust, soot and the heat of a burner, is no simple problem, for which reason the mirror lens, practically a glass protected film of metal employed as a reflector, has come widely into use, it being comparatively easy to keep the glass clean.

It is a law of optics that a ray of light falling upon a surface is reflected at the same angle as that at which it impinges—the "angle of incidence being equal to the angle of reflection." This

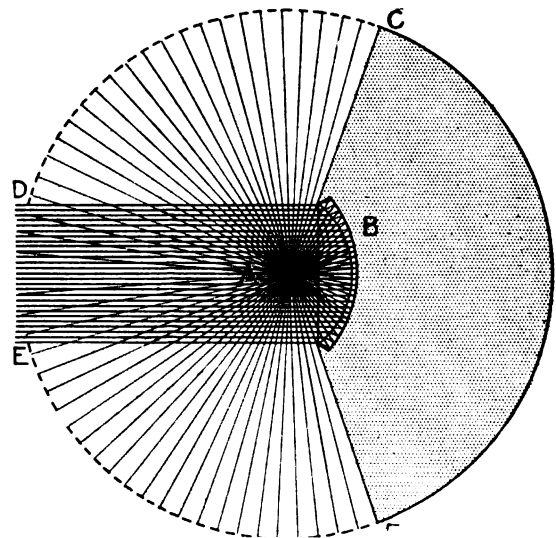


FIG. 4.—Short-focus lamp of type similar to that shown in Fig. 3, illustrating the saving effected by bringing the mirror reflector closer to the source of light, the efficiency of this lamp being more than triple that of the former.

law controls the form of mirrors, and, because of its mathematical properties, a paraboloid—the figure formed by the rotation of a parabola on its axis—with the light at its focus, is the only form of mirror that can project in an absolutely parallel beam all of the rays that fall upon it. A parabola, however, is a curve that can be infinitely extended—being mathematically an ellipse with its other focus at infinity—so it follows that a parabola of any desired size can be used, extended to any desired degree. This makes it practical to use spherical mirrors

with a close approximation to theoretically correct results, provided the pencil or cone of rays intercepted by the mirror does not make too great an angle—the first portion of a parabolic curve conforming very close to an arc of a circle. In fact, the divergence given to the beam of light by the judicious use of a spherical mirror with a full understanding of its limitations is sure to be very much less than that unavoidably occasioned under any circumstances by the size of the light, which always must occupy more space than the theoretically ideal point.

In the use of mirror lenses the phenomenon of refraction, as well as that of reflection, must be taken into account. Refraction is produced whenever a ray of light passes from one transparent medium into another denser or rarer, and consists in a bending of the ray at the point of contact between the two media. The amount of this bending varies with different substances, each having its index of refraction, so by the use of properly shaped lenses of suitable materials refraction affords an important means of collecting or dispersing rays of light. A mirror-lens reflector necessarily has two surfaces—one to which the reflecting coating is applied and one that is left clear. The light striking this latter surface, therefore, undergoes refraction before it is reflected, and is again refracted as it emerges to produce the beam of light. This double refraction of the light rays would seriously disturb the results, even though the reflecting surface were of true parabolic form, were it not taken into account and the refracting surface of the lens given a properly related form. It is this consideration that explains the usual thickening of lens mirrors from their centers to their edges.

Character of the Light Limits the Focus.

Since the possible shortness of focus in an ordinary automobile lamp is limited by the danger of breaking the lens by the heat of the flame, despite the general use of heat resisting lead glasses, it follows the larger the mirror the larger the cone of rays it can intercept and reflect. This is because the minimum possible focus being determined by the heat condition

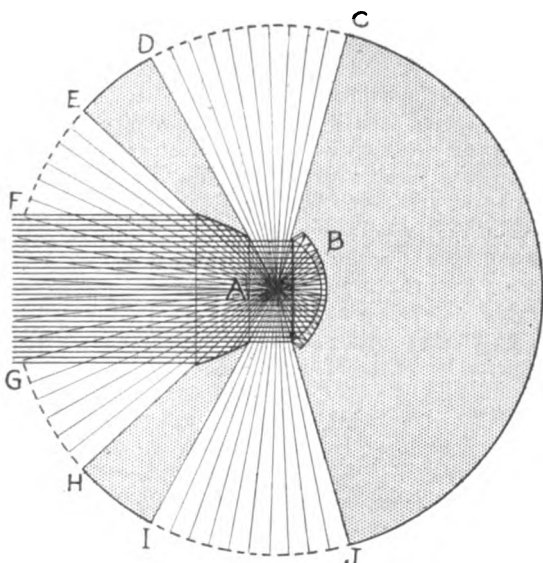


FIG. 5.—Combination of mirror lens with paraboloid reflector, by means of which fully 50 per cent. of the light produced by the burner at A is utilized in the rays thrown directly forward between G and F.

rather than by any optical condition, a given focus is shorter in proportion to a large lens mirror than it is to a small one.

Thus, in Fig. 4, if the lens mirror shown were replaced by one of larger size the cone of light falling upon it would be larger than that from C to E, with a corresponding increase in the light from A reflected to the beam D E. This would, of course, also increase the size of the beam, but in a less proportion than the increase in light reflected, so there is a gain both in intensity and in area illuminated. Evidently, then, it

pays to have as large a mirror lens as can be afforded. With mirror lenses the waste of light C D E F, Figs. 3 and 4, is a serious objection, especially with flames like an acetylene flame, which gives practically equal light in every direction, and many attempts are made to overcome it. With a light like that of the electric arc, from which most of the light proceeds in one direction, the objection is not so pronounced, as by inclining the carbons most of the illumination can be cast on the mirror.

The lamp diagramed in Fig. 5 is a very common combination of mirror lens B with a portion of a paraboloid reflector D E H I. By this combination only the light from E H and I J is lost, the amount saved being increased to 50 per cent. of the whole, against 12 per cent. in Fig. 3 and 37 per cent. in Fig. 4. An objection to it is that the supplemental mirror E D H I

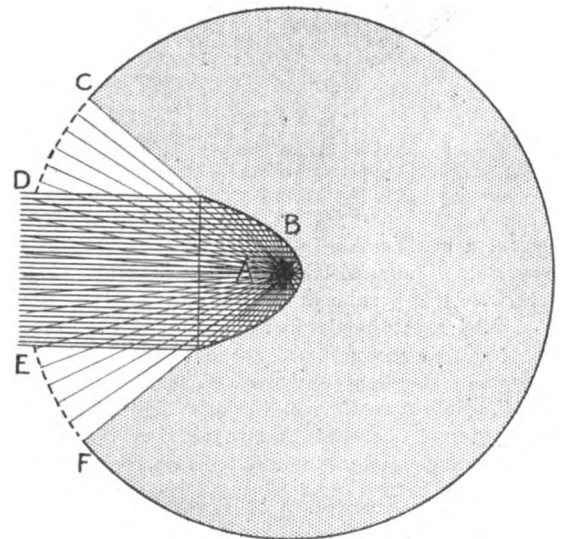


FIG. 6.—Common type of locomotive headlight with metal paraboloid reflector, using no mirror lens, as in automobile headlights. This lamp has a net efficiency of 88 per cent., but the metal reflector condemns it.

must be made of unprotected metal, and that, as such, it will either tarnish to a most inefficient condition or else present all manner of frequently recurring difficulty in the way of keeping it finely and serviceably polished. Moreover, such polishing, even if successfully accomplished—which is scarcely possible outside of a factory—will gradually wear away the exactness of surface that is a first essential to service.

Fig. 6 shows a regulation paraboloid lamp, with metal reflector, to the exclusion of the mirror lens. This type of lamp is used on nearly all locomotive headlights, and projects, with the proportions shown, 88 per cent. of the light—more than in the case of any of the preceding. But with it the objections to metallic reflectors are more than ever present, and especially condemn it for automobile use, which involves carrying it close to the ground, giving dust and moisture every opportunity to cause trouble. Some electric automobile headlights, however, are built on this plan and give a minimum of trouble because of the absence of any flame, but as already outlined the electric is not yet generally available for automobile use.

“Parabolens” Has the Highest Efficiency.

To gather in the rays C F, Fig. 6, which are the only ones that escape reflection in a paraboloid lamp, the “parabolens” lamp, illustrated in Fig. 7, has been devised. This design, which is a good many years old, having been first applied to locomotive headlights, was first adapted to automobile use in Europe. It intercepts 100 per cent. of the light and, were it not for the objections seemingly inseparable from the use of metal reflectors, would be far and away the best of all possible lamps. Its especial feature consists in the use of the lens Q to intercept the cone of light C F that escapes in Fig. 6. The use of the lens

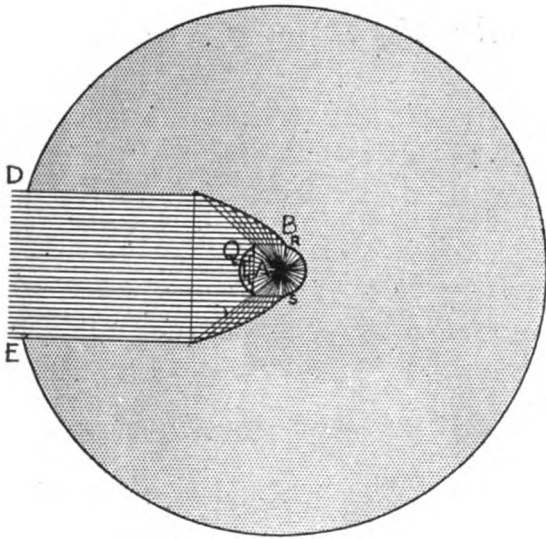
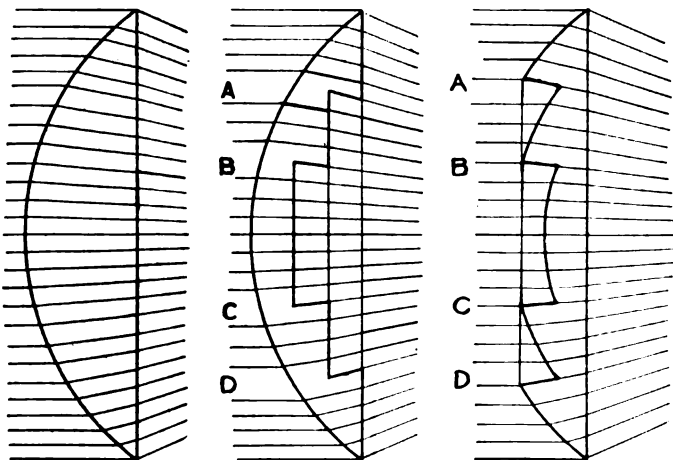


FIG. 7.—"Parabolens" type of lamp, formerly used on locomotives and first successfully adapted to the automobile on the Continent. It consists of a spherical reflector and plano-convex lens.

also requires a modification in the paraboloid reflector, the portion from *R* to *S* immediately behind *Q* being made spherical. This is because this portion of the reflector is not now required to cast parallel rays directly forward, since the only rays that the lens *Q* can project forward are ones that radiate upon it from a focus at the light source *A*. Therefore, by the use of a spherical reflector at *R S* each ray of light falling upon it from *A* is reflected directly back through *A* and thence to *Q* or *B*, just as in the case of the unreflected rays from *A*.

Preventing Absorption of Light by the Lens.

Since the lens *Q* has to be of considerable thickness, if of the ordinary plano-convex form shown in Fig. 8, which results in a considerable portion of the light passing through it being lost by absorption, the expedient of cutting back the plane surface of the lens as shown in Fig. 9 and 10 can be adopted, with the effect of thinning the glass while in no way adversely affecting the optical properties. Because of the difficulty of grinding the mortise-like depressions in Fig. 9, it is more usual to cut back the curved surface, as shown in Fig. 10. Both of these methods possess the minor objection that they give the dark zones at *A*, *B*, *C* and *D*, but there is enough diffusion of the light, because of the size of the flame, to fill up the dark zones before the beam is more than a foot or so from the lamp. Indeed it is difficult to discern their shadow on a sheet of paper unless it is held very close, though theoretically they should be totally black.



FIGS. 8, 9 and 10.—Illustrating the various expedients adopted to prevent loss of light by absorption in the glass of the lens itself when used in connection with the "parabolens" lamp as described here in detail.

Lamps of the parabolens type are best with chimneys surrounding the flame, to protect the reflecting surface as much as possible from heat and soot. Of course, with incandescent electric lights this precaution is especially unnecessary, and it is probable that this type of lamp, with electric light, will become increasingly important in the future. This seems especially likely to become the case in view of the recent developments in the incandescent lamp field, whereby a current consumption as low as one watt to the candlepower suffices for the operation of metallic-filament lamps, against the three-and-one-half-watt consumption of the ordinary carbon-filament lamp. It has even been suggested that with electric lights some method might be found of exhausting the air from parabolens lamp interiors. This certainly would be a means of avoiding the tarnishing of the reflector, but its practical application would involve some means of inserting lamp renewals besides absolute prevention of leakage.

How a Lamp's Candlepower Is Calculated.

It is to be noted, in considering the merits of the parabolens construction, that the lens *Q* will easily intercept as large a cone of rays as is intercepted by the long-focus mirror lens in Fig. 3, for which reason it is better than this type, even with its reflecting surfaces so tarnished as to be practically out of commission. In statements of the quality of projecting lamps it often will be seen asserted that the candlepower is 3,000 or some similarly high figure. In this case it is meant that the normal candlepower of the light, multiplied by the quotient given by dividing the area of a complete sphere by the area of the beam, gives this figure. For example, in Fig. 7 the entire light that normally would fall from *A* on the spherical surface is concentrated, minus absorption losses, into the area *D E*. This area is only one-fiftieth of the total area of the spheres shown, so the intensity at this unit distance is multiplied fifty times. Now, if *A* be a 25-candlepower burner, which is the usual acetylene or electric light standard, 25 times 50 gives 1,250 candlepower as the measure of the intensity of the beam. Front glasses for lamps are best when made of plain circular panes of thin plate glass, but to prevent breakage by expansion it is necessary, in very large lamps, to cut the front glasses into narrow vertical strips, capable of individual adjustment to temperature changes.

Enough has been said, it is hoped, to convince the reader that in the purchase of lamps, as well as of other automobile accessories, one gets about what he pays for, and that behind high prices there may be skill and quality far beyond what can be present in similar appearing goods sold at lower figures. Cheap mirrors and lenses usually are of molded glass, while the better qualities are ground; cheap metal reflectors are stamped, or spun, and roughly polished, while the best ones are finished more accurately by turning; back-opening lamps, to facilitate the cleansing of mirror lenses, are a convenience that can be had if paid for; and stop-cocks to adjust to a nicety the flames of twin headlights cost about what they are worth. The point is, every construction has its merits and serves its purposes, even if these be chiefly the meeting of the various classes of demand that exist. The discriminating buyer, considering his needs and his pocketbook, and knowing what is to be had, purchases accordingly, but, as has already been made plain, there is possibly not one in a hundred, or probably the proportion could more truthfully be lowered to the familiar "one in a thousand," in the ranks of present-day automobilists whose knowledge of lamps or the laws of optics is of sufficient extent to fit him to make such a choice intelligently. In the slang of the day, it is merely a case of "you pay your money and take your choice," but the choice is always influenced by the price set upon the article by the maker, and one of the chief objects of the foregoing has been to indicate that the added cost is by no means merely a matter of finish, or that the buyer is simply paying for the maker's name and nothing more, as has been the case only too frequently with many other lines of automobile accessories in general use on American cars.

LETTERS INTERESTING AND INSTRUCTIVE

TWO WHO THINK THE ACCIDENT AVOIDABLE.

Editor THE AUTOMOBILE:

[1,000].—The accident illustrated and described by A. L. Westgard, in your issue of November 28, was, to my mind, avoidable, and was due to incompetent chauffeurs, particularly the one on the Broadway car, who should have stopped when the street car did and not attempted to cross Sixty-second street, when he had not seen if the way was clear. The fact that the street car stopped on that side of the street showed the way was not clear. It is an axiom of competent chauffeurs not to cross any street or in front of street or other cars without knowing absolutely the way is clear.

New York.

Editor THE AUTOMOBILE:

[1,001].—Referring to Mr. Westgard's letter, No. 986, in your issue of November 28, concerning the accident at corner Broadway and Sixty-second street, I should say that this accident was the fault of "B." It is the common rule of the road that traffic on main thoroughfares and boulevards, and north and south streets have the right of way, and traffic coming in from cross or side streets or roads should approach or cross the thoroughfares cautiously. Certainly Broadway in this case is the main north or south thoroughfare, and any one coming in from Sixty-second street should come in with great care. What does your legal department think of this?

Chicago, Ill.

While not disputing your contention that the accident was avoidable, we might add that the fact that the street car stopped at that side of the intersecting street could not be taken as evidence that the street was not clear, as a municipal ordinance compels all street cars to come to a halt on the near side of a cross street in which a fire department station is located. If the street car had not come to a halt there would have been no accident, as B did not attempt to cross until he saw that the car's stopping left the way clear for him to get over the track.

Regarding the second letter, the statement that the traffic on avenues or other principal thoroughfares has the right of way is quite correct; also that drivers coming in from side streets should exercise greater care to avoid avenue traffic. But this being granted, it does not necessarily follow that B was at fault. In all such cases, when considered from the purely legal point of view, the responsibility for such an accident would depend upon whether the alleged cause of it were guilty of negligence or not. One of the chief elements of negligence is failure to exercise reasonable care, and just what constitutes the latter has been the subject of an endless number of decisions, as it depends entirely upon the circumstances governing the case. Broadway is quite a wide thoroughfare at the point in question, consisting of two roadways and a dividing walk down the center, and as B found it possible to cross two-thirds of the thoroughfare without seeing any other obstruction than the street car, the stopping of which permitted him to pass in front of it, the conclusion that he did not use reasonable care under the circumstances would not appear to be altogether well founded, as reasonable care does not imply the utmost precaution, but what the average man would do under the circumstances.

TWO-CYCLE CRANKCASE VOLUMES.

Editor THE AUTOMOBILE:

[1,002].—In a two-cycle engine, which gives the greater charge in the cylinders—a crankcase of small capacity, or one of large capacity?

ELMER NEWTON.

San Antonio, Texas.

The small volume crankcase, of course, gives the greater charge because it gives the higher crank chamber compression, with the consequent forcing of more fuel through the by-pass. The amount of fuel inspired under the piston is determined by the bore and stroke of the piston, and a large crankcase, therefore, cannot increase the amount inspired, while by lowering the crankcase compression it reduces the volume transferred.

TEMPERATURES AND CYLINDER WALL DAMAGE.

Editor THE AUTOMOBILE:

[1,003].—Kindly advise me through "Letters Interesting and Instructive" at what temperature of the surrounding air will water, contained in jackets of automobile engine cylinders, freeze sufficiently to crack or burst the jackets. Please give me some information regarding water in copper fire-tube boilers, such as used in the Stanley steam automobiles. In both above cases, motor and boiler entirely cold and not receiving any artificial heat. Will water expand any in water-jackets at surrounding air temperature of 32° above? Will water, or ice formed from it, expand any more at temperatures of surrounding air lower than 32° than at 32°? Is it extremely cold water that bursts pipes, or must ice form before bursting occurs? "A SUBSCRIBER."

Newburgh, N. Y.

The same as if it were not contained in the water-jackets of an engine cylinder—i. e., 32 degrees Fahrenheit or zero Centigrade—assuming it to be ordinary fresh water, of course. You neglect to take into consideration the time element, as, assuming the temperature in question, several hours might be required to reduce the surrounding iron and the water itself to that temperature before freezing would take place. It would also require some time for the entire body of water to freeze or become solid to an extent where it would cause the bursting of the water-jackets. The water does not expand of itself, still remaining liquid, but in forming ice occupies 8.55 per cent, greater space than it did in the liquid state, and having once become ice it does not expand to any greater extent, regardless of the drop in temperature. Ice must form before any damage is done, otherwise anti-freezing solutions would be worthless, as it is only their property of remaining liquid at low temperatures that acts as a protection to the cylinder in preventing freezing.

MERITS OF DIFFERENT IGNITION SYSTEMS.

Editor THE AUTOMOBILE:

[1,004].—What is the difference between high tension and low tension? Which is the most expensive to install? Which is the most expensive system to maintain? Which is considered most reliable?

Hartford, Conn.

In the high-tension system the current, when supplied by a battery, is led through a timer, the contacts on which correspond to the different cylinders. As contact is made in the timer the current is sent through the primary winding of an induction coil, which transforms or "steps it up" to a very high potential, thus enabling it to jump the gap of the spark plug, from which the name "jump spark." There is a coil for each cylinder usually, though in what is known as the "synchronized" system a single coil is employed, the primary current being timed and the secondary current distributed synchronously. In brief, the foregoing represents the high-tension system as generally employed, though there are various modifications.

Except for stationary or slow-speed work, it is not practical to use the low-tension or make-and-break ignition with a battery, but when so employed the current is first sent through what was commonly known as a "spark coil" before autoists applied the same term to the now generally used induction coil. The spark coil is merely a plain winding of heavy wire on a large core, and by what is known as self-induction causes a larger spark to take place when the ignitor opens. On automobile work the low-tension system is used with a magneto exclusively, no coil being necessary. The current generated in the magneto is led to an insulated plug inserted in the cylinder, against which a small moving arm makes contact through the medium of a push rod and cam on the camshaft of the motor. The current employed is low-tension, low voltage, or low potential, all of which mean the same thing, and consequently will not jump a gap. Hence in most ignitors, which take the place of the spark

plug in the high-tension system, the circuit is closed until the moment the spark is to take place, when the arm is snapped away from the stationary member, causing the current "to arc" or flash at the rupture of the circuit, the magneto being so timed that the current impulse generated is at its highest value just at that particular moment.

The low-tension system is without doubt the most expensive system to install, despite the fact of its far greater simplicity, as it requires a high-priced magneto and the work on the motor itself is of an expensive nature, the fact that the latter was done cheaply and without due regard to the requirements of the high-speed motor causing this system to be regarded unfavorably in early days. The high-tension system is the most expensive to maintain, particularly where batteries are employed as the source of current. Theoretically, where a high-tension magneto is employed alone this system should have the advantage in cost of upkeep over the low-tension, but we doubt if this proves to be the case in actual practice. The high-tension magneto, particularly of the self-contained type, is far more liable to derangement than the simple low-tension generator, while the cost of spark plug replacements will doubtless considerably exceed the expense of keeping the low-tension ignitors in shape. The question of reliability is one on which there is a great deal of difference of opinion, but we incline toward the low-tension system, owing to its far greater simplicity and corresponding certainty of action.

CONCERNING VARIOUS CHANGES OF GEAR RATIO.

Editor THE AUTOMOBILE:

[1,005.]—I have a two-cylinder machine which was originally geared 10-32, which I considered too high. I had it changed to 10-36, which worked very satisfactorily. Recently I had to order a new rear sprocket and they couldn't furnish the 36, but sent a 38, and, rather than wait, I had the 38 put on, but the machine is too slow. Now, would it not be better to put on a 11-tooth engine sprocket and leave the 38 on? Will you give me the ratio of increase of power between the 10-32 and the 10-36, and the 11-38? Road wheels, 28 inches.

F. P. SNYDER.

Lafayette, Ind.

No matter what changes were made in the gear ratio of the transmission, this would not affect the *power* of the engine in any way, though it naturally has a very important bearing on the engine's ability to move the car, particularly on grades, as well as on the speed. The first gear ratio which you found too high was 3.2 to 1, and the second 3.6 to 1, and the third 3.8 to 1, and as the 28-inch wheels of the car only cover 7.25 feet per turn this last gear ratio would give the car a speed of but little better than twenty miles an hour on the direct drive, assuming that the engine ran at the rate of 1,000 r.p.m., so that we do not wonder you find it rather slow. Using an 11-tooth sprocket forward will give a result between the 10-32 and the 10-36, namely 3.45 to 1, and we should think this would be even more satisfactory than the 10-36 combination.

WHAT CONSTITUTES RUNNING TIME ON ROAD?

Editor THE AUTOMOBILE:

[1,006.]—Being a constant reader of your interesting journal for the past three years, would like to know if you would kindly give me some information in your columns, under the heading "Letters Interesting and Instructive," to settle an argument and wager. What do you consider running time on road? To be delayed by teams or other obstructions or stopping for meals, would you figure this as running time, or not?

G. D. W.

Butte, Mont.

Time consumed in stopping for meals is naturally not *actual* running time and should not be figured as such. With regard to being delayed by obstructions, it would depend somewhat upon the manner in which this was done. If the obstruction were such that the car had to be halted until it was removed, the resulting delay would not ordinarily be included in the actual running time, but where the car is pocketed behind a slow-moving team or something of the kind, but continues to move, though at a greatly reduced rate of speed, this would be figured as running

time. This is our impression of the general usage; on railroads, however, we believe it is customary to term the entire time allowed to make the run, including all regular stops, as a train's running time. In most automobile contests just what shall constitute running time is agreed upon in advance and includes everything but stops for meals and for tire repairs, as a rule.

CREDIT FOR FIRST SIX-CYLINDER MISPLACED.

Editor THE AUTOMOBILE:

[1,007.]—In answer to Mr. Titus' letter in the issue of "The Automobile" of November 7, in regard to the first six-cylinder car offered for sale, I wish to state that in the early part of 1904 the Commission Auto Company, of Boston, Mass., sold to a party in Attleboro a six-cylinder Gasmobile. This car at that time was second-hand and had been run a number of thousand miles and was surely over a year old. This car had a six-cylinder vertical engine, valves and spark plugs in the cylinder heads, leather-faced cone clutch, four-speed Panhard type transmission, and side chain drive. If the Thomas engine was built in 1904 and the Stevens and Napier in 1905, I am very sure that the Gasmobile Company have a very strong claim on building the first six-cylinder engine. This car can undoubtedly be seen to-day in Attleboro. Possibly somebody connected with the Gasmobile Company can give us the exact date that this car was built.

C. T. BATES.

Brockton, Mass.

The car you refer to was built after designs by Fisher & Otto and was exhibited at Madison Square Garden in 1901 or 1902, and as a year or two was a long time in the early history of the automobile, counting by the progress made, the interval elapsing between the exhibition of this first six-cylinder and those of later vintage, was probably sufficient for many to have forgotten the pioneer, while later comers would naturally not be in a position to know of it.

SOME FACTS CONCERNING DENATURED ALCOHOL.

Editor THE AUTOMOBILE:

[1,008.]—Will you kindly advise me through "The Automobile," of which I have been a constant reader for some years, if the duty has been taken off grain alcohol; if so, when, and what is the retail price in New York City?

ARTHUR HENDEY.

Jerome, Ariz.

The bill exempting grain alcohol from internal revenue tax when properly denatured according to government specification went into effect on January 1, 1907, and an amendment to the bill took effect in July last. This, of course, only applies to grain alcohol that is rendered unfit for drinking purposes by the addition of some noxious substance, such as wood alcohol. The retail price in New York City is about 60 cents a gallon upward, according to where it is purchased.

SINGLE COIL SYSTEMS OF IGNITION.

Editor THE AUTOMOBILE:

[1,009.]—Will you please answer, through your "Letters Interesting and Instructive," why a single coil wired so as to supply sparks to each cylinder of a motor is not better than multiple coils, since the spark would be uniform in each cylinder, and hence the motor would run steadier? If you have room, could you also give a diagram for the wiring of a single coil to supply a two-cylinder, two-cycle motor?

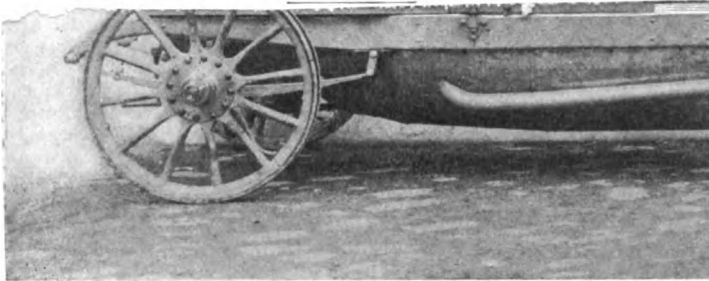
INTERESTED SUBSCRIBER.

Boston, Mass.

The chief difficulties in the past, where the use of a single coil was concerned, were not so much with the coil itself as with the distributor of the secondary current. It was found so hard to properly insulate this that the use of a single coil and distributor, which had been adopted by quite a number of makers several years ago, was almost universally abandoned. Improvements in distributors have caused it to be taken up again, however, and it is now successfully used on quite a few cars. A modification of the idea is also employed, in which the four unit coils are used, but without vibrators, a fifth vibrating coil, or "master vibrator," being utilized to synchronize their action.

The wiring of such a system is so simple as to scarcely call for a diagram. A distributor designed for a two-cylinder, two-cycle motor must be obtained, and taking this as a starting point,

carry two high-tension wires from its secondary terminals, one to each of the spark plugs. Connect the primary and secondary terminals of the distributor with the corresponding posts on the single coil, these terminals usually being marked to enable this to be done without any trouble, in addition to which the manufacturers generally provide explicit directions. One side of the battery should be connected to the primary terminal of the coil and the other side of the battery grounded. As already mentioned, one side of the secondary of the coil is connected to the distributor; the other is grounded.



HOW THE 20-30-HORSEPOWER RENAULT CHASSIS

REGARDED externally only, it would require an expert to distinguish between the models produced by the Renault Frères or the 1908 season and those turned out of the Billancourt factory during the past year. This settling tendency, general throughout the automobile industry, is probably more pronounced in the Renault product than in any other of Europe or America; it is indeed a boast of the firm that between their smallest touring car and their most powerful racer there is no difference other than that of size.

Commencing with the small two-cylinder opposed

WEATHER CONDITIONS FOR EUROPEAN TOUR.

Editor THE AUTOMOBILE:

[1,011.]—Can you give me any information as to the climatic conditions of a tour through Italy and France up to the British Isles, in February and March? JOHN D. HORGAN.

Lynn, Mass.

Throughout the south of France and the lowlands of Italy climatic conditions are favorable for touring from the middle of February. Even along the Mediterranean coast, however, one may expect occasional cold spells until March, and the mountain districts cannot offer many attractions to the automobilist before April. From Paris northward cold weather and considerable rain may be expected during February. Usually towards the end of March climatic conditions have sufficiently improved to make touring agreeable. February and March are invariably disagreeable months for touring in the British Isles. Even in the south of England no vegetation has appeared at the end of March, and in the northern counties and Scotland stormy weather with rain or snow may be looked for until April. To obtain best climatic and touring conditions we would recommend staying in Italy or on the French Riviera until the end of March, visiting the northern part of France in April and the British Isles in May, thus following the warm weather northward.

AN UNUSUAL TYPE OF MANIFOLD.

Editor THE AUTOMOBILE:

[1,012.]—I would like to have you, through "Letters Interesting and Instructive," help me out of my trouble. I have an auto driven by a two-cylinder opposed motor. This motor starts hard. It has to be cranked for some time before it will take a charge. After starting it runs smooth and very slow speed, say 300 r.p.m., but when speeded up to about 500 or 600 it misses badly, but again works well at 800 or 900 r.p.m., and at any time it does not miss when pulling hard. My carbureter is set about four feet from the manifold, the tube leading from the carbureter is 1 1/4-inch iron tube, it goes down from the carbureter about six inches, then on a level, and then straight up to the manifold. There is a drip hole at the lowest place in this pipe, and after running the machine clean gasoline will run out of this drip. Is this caused

by the long pipe that the mixture goes through or by the carbureter being set wrong? The carbureter is a Schebler, and air valve is set as weak as possible and the gas jet about 7-8 of one turn open. I can set the carbureter at the center of the manifold. Do you think this would help? R. H. DOW.

Adrian, Minn.

The position of the carbureter is most unusual and is apparently the cause of the difficulty you detail. The fact that a portion of the manifold is beneath the carbureter level doubtless sets up a siphon action, causing liquid gasoline to flow into the lower part of the manifold, which would account for the erratic running at low speeds or when the demand on the power is light. When the motor is running loaded the manifold becomes heated and the extra suction prevents the gasoline which finds its way into that part of the piping from remaining liquid. Relocating the carbureter at the center of the manifold and placing it so that no part of the piping is below it would doubtless be found to remedy the trouble.

ABOUT THE EMPLOYMENT OF PRESS FITS.

Editor THE AUTOMOBILE:

[1,013.]—Why is it not practicable in automobile construction to fit parts together by tapered shafts and holes, with powerful hydraulic presses, as is done in the building of railway locomotives, marine engines, and similar machinery worked under heavy duty and subject to greater vibration? ELBRIDGE HEWES.

Kewanee, Ill.

There is no question but that the use of press fits, as assembled by the method you refer to is called, could be widely employed in automobile building. To an extent it has been employed and unless our memory serves us ill a number of instances could be found in the automobile industry of flywheels forced onto crankshafts, gearwheels onto gearshafts, cams onto camshafts, etc. And certainly a method that proves satisfactory for holding locomotive driving wheels and railway vehicle wheels generally on their axles, not to speak of crankpins, driving-wheels, rims, etc., held by the same process, is not likely to fall down under the stresses of lesser magnitude involved in automobile service. Certain practical considerations must be borne in mind, nevertheless. Automobiles, though assembled in well-equipped factories, may have to be taken apart on the road or in ill-equipped repair shops, while press fits require facilities like those always available with the locomotive for their assembling. As the necessity for frequent or complete dismounting of automobiles continues to be reduced, we expect the press fits to become more widely recognized as good practice. In the meantime we will be pleased to publish any communications that go to show just what is being done in this direction at the present time by automobile builders in this country.

WHAT PARTICULAR SPRING WHEEL IS THIS?

Editor THE AUTOMOBILE:

[1,014.]—Will you kindly inform me of the construction, or the number of the U. S. patent, of the wheel invented in France that uses springs on the spokes instead of the inflated tire? In case you know the numbers of any other patents on this line, would be pleased to know them, so that I can send to the Patent Office for them. LOUIS BLESSING.

Jackson, Mich.

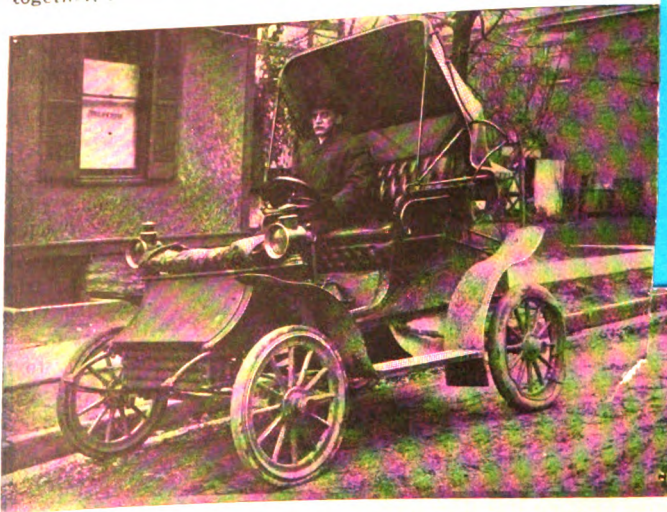
Though you are doubtless unaware of it, you are asking far more than we could possibly give you. There have been scores, if not hundreds, of spring wheels brought out within the past few years in France and England, a few of which have actually been placed on the market and used in isolated instances. The same state of affairs prevails here with regard to the spring wheel, for ever since the early days of the bicycle there have been innumerable patents issued annually, so that probably the total number is well into the thousands by this time. If you have not access to a reference library in which a file of the *Patent Gazette* is to be found, ask any patent attorney to allow you the privilege of consulting his file. This publication is issued weekly by the Patent Office.

ASSASSINATION OF THE CANINE—BY AN EXPERT.

Editor THE AUTOMOBILE:

[1,015.]—The fourth question asked by Fred. D. Clark, of Prattsburg, N. Y., and answered by you in "Letters Interesting and Instructive" in your issue of November 21, interested me not a little, as during the past five or six years I have had considerable experience in running over dogs with my runabout, and not a few of these canines have been of the large variety. From the experience thus gained I would unhesitatingly answer the question as you did, and advise "preference for the immediate assassination of the dog, no matter how large, rather than try conclusions with any ditch, no matter how small."

In the practice of my profession, that of medicine, I have been employing continuously for over six years the same eight-horse power, single-cylinder runabout. Being of an early vintage, my machine is somewhat more noisy in operation than is the present style machine. As a result dogs seem especially to get ruffled up when I come along the highway, and run out at the automobile and bark and—get run over. Something over a year ago I was driving my machine along a dirt road on one side of which was a bank about three feet higher than the road. On the other side was a ditch. A large black dog, of a breed unknown to me, ran out of the yard and along the top of the bank barking at the automobile. From an adjoining yard a good-sized collie dog darted out and sprang upon the black dog. The result was that both dogs, clinched together, rolled down the bank and directly in front of my machine.



DR. COLTER AND HIS DOG-KILLING RUNABOUT

I had either to go over them or into the ditch, and I choose the former. I went over both dogs with both front and rear wheels on the left-hand side. The steering wheels were not in the least deflected, nor was there any bad jolt given to the machine. Strange to say, neither of the dogs was killed or even severely injured. They got up after being run over and ran off in different directions.

On another occasion I was driving along an asphalt street that was wet and very slippery. Suddenly, and without a warning bark, a very large St. Bernard dog ran out at the auto. When he was almost to the machine he braced himself and tried to stop, but the street being slippery his momentum carried him directly in front of the wheels, and over him I went with both front and rear wheels. As in the first instance mentioned, my car was not in the least deflected from its course by the contact with the dog, nor was the dog very badly hurt.

I have had the experience of running over a great many dogs, of all sizes and nationalities. I have never yet killed a dog outright by running over it. Some of them may have died later on as a result of injuries received. It is hard for me to explain this fact of freedom from mortality for the dog. It is certainly not because my machine is a light one. It will weigh over sixteen hundred pounds. I am enclosing you a picture of myself in this old machine. You will note that it is equipped with solid tires. This would seem to make it more than ever likely to deal out death to the unfortunate dog under its wheels, but such has not been the case.

The rather strange appearance of the tire on the rear wheel will need a word of explanation. It looks like a casing out of the clincher of the wheel. So it is, but the rear wheel has a solid tire on its rim, the same as the front ones. The outer casing was put over the solid rubber tire by way of experiment, in order to find out whether or not it would remove some of the jar or jolt in rough places. The outer casing used was an old one that had been damaged beyond repair, and it was held in position over the solid

tire by straps passed through holes cut in side of the casing and then over the wheel felloe. The particular casing shown in the picture has been on that wheel over eight months, and has never come off. The right-hand rear wheel has a similar casing on it, except that straps were not used to hold it in place. It was simply stretched over the solid tire, and it has stayed on the wheel as well as the left one with the straps. The vibration caused by the solid tires was lessened somewhat by these old outer casings used as described.

Cincinnati, Ohio.

L. S. COLTER.

ONE AUTOIST'S DETAILED EXPENSE ACCOUNT.

Editor THE AUTOMOBILE:



stated below. The year under consideration began September 1, 1906, and ended August 31, 1907, within which period the car was driven 8,545 miles, mainly in the business districts of San Francisco, but incidentally making tours to San Jose, Santa Cruz, Del Monte, and Lake Tahoe; the account shows as follows:

	Cost.	Cost in cents per car mile.
Tires: Casings	\$224.35	2.625
" Inner tubes	65.25	.784
" Repairs to casings and tubes.....	58.68	.687
" Anti-skid devices	36.00	.421
Power: Gasoline	221.50	2.592
" Oil and grease.....	41.26	.482
Ignition: Dry batteries and charging storage.	22.08	.258
" Spark plugs	18.00	.210
Repairs: Miscellaneous, ordinary.....	95.25	1.114
" Due to accidents.....	131.03	1.533
Lights: Carbide and coal oil.....	8.20	.096
Cleaning: Cotton waste.....	10.00	.117
" Garage clothing, chamois, sponges, etc.	14.95	.175
" Sundry materials	7.95	.093
Miscellaneous: Garage rent.....	165.00	1.931
" Replacing lost and damaged tools	14.35	.166
" Sundry items	20.75	.243

The foregoing classed under main heads shows as follows:

	Total Cost.	Cents per Car Mile.
Tires, tubes, etc.	\$384.26	4.49
Power	262.76	3.08
Ignition	40.08	.47
Repairs	226.28	2.64
Lights	8.20	.09
Cleaning	32.90	.40
Sundries	200.10	2.34
Total	\$1,154.68	13.51

During the year 884 gallons of gasoline were used, costing from twenty to thirty-five cents per gallon and averaging out very nearly to twenty-five cents. The car miles per gallon were 9.666, some day's running on fair country roads showing as high as 16.63 miles per gallon, while other days in the city have shown as low as 8.82.

The foregoing accounts do not include attachments bought, i.e., top, speedometer, storage batteries, etc., costing in the aggregate \$317.93, nor anything for a chauffeur, whose wages alone would have doubled the total cost given and would have increased the car mile cost to above twenty-five cents. The car is in superb condition and of fine appearance, but the inevitable conclusion, in San Francisco at least, is that the motor car of to-day is not a poor man's vehicle.

B. N. C.

San Francisco, Cal.



HOW THE 20-30-HORSEPOWER RENAULT CHASSIS APPEARS AFTER BEING REFINED FOR 1908.

REGARDED externally only, it would require an expert to distinguish between the models produced by the Renault Frères for the 1908 season and those turned out of the Billancourt factory during the past year. This settling tendency, general throughout the automobile industry, is probably more pronounced in the Renault product than in any other of Europe or America; it is indeed a boast of the firm that between their smallest touring car and their most powerful racer there is no difference other than that of size.

Commencing with the small two-cylinder car used extensively in Europe or taxicab work and as a small town vehicle the series is a 10-14 four-cylinder, a 14-20, a 20-30 and a 35-45-horsepower car, all with four-cylinder engine. The only new model is a 50-60-horsepower six-cylinder chassis, built to meet a demand for a powerful and flexible automobile.

In the four models comprising the series of four-cylinder cars no changes have been made in general design, but a number of details have been perfected as suggested by experience. Except in the matter of suspension there is a uniformity of design throughout the series, the four-cylinder engine in each case being cast in pairs, thermo-siphon water circulation being adopted with plain tubular radiator behind the engine, thus giving the maximum of accessibility, and high-tension Simms-Bosch magneto as sole source of ignition supply. Transmission on all models is of the progressive type, giving four speeds forward and reverse, and drive is by propeller shaft to rear live axle. Three-quarter elliptic springs, adopted last year for the first time, are retained for all but the smallest models, on which the platform type is adopted. Shock absorbers on both front and rear springs are a standard equipment on all cars above 20 horsepower.

Some little change has been made on the gear box, the progressive type being retained, but the reverse clash gear being changed for a straight sliding type. In all other respects the gears remain as before, a feature of the Renault being that, although a progressive type, the arrangement is such that overall space is no greater than the majority of boxes on the selective principle.

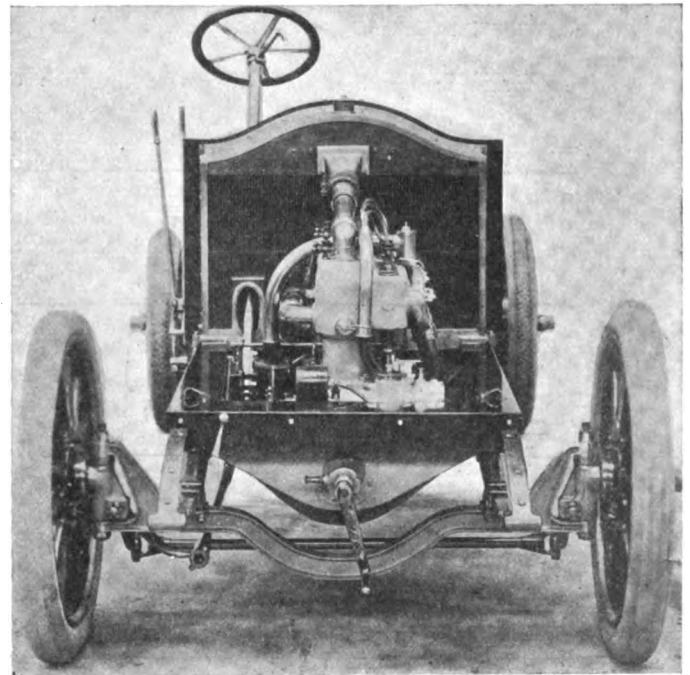
Radiator design remains as on the 1907 models, but here again details have been perfected to allow of very easy dismantling and examination of the tubes. The base of the radiator fits into slots on the side frame and is held at each side by a single bolt, by the withdrawal of which and the inlet and outlet pipes the radiator can be removed as a unit. In this particular the maximum of simplicity appears to have been attained, there

being no pump and no other connection than the retaining bolts and the inlet and outlet piping from the cylinders.

Improvements in the lubrication of the engine comprise a device for regulating the amount of oil in the crank chamber and more accurately controlling the flow from the lubricator. An attachment, fixed at the right-hand side of the forward cylinder, provides for reducing or draining off entirely the amount of oil in the crankcase, shutting off the supply or turning it on; the device has the virtue of perfect accessibility.

In the six-cylinder model, produced this year for the first time, cylinders are cast in pairs, dimensions being 4.7 by 5.5 bore and stroke. Excepting a slight change in the carbureter, designed to give a richer charge for starting the engine, the six-cylinder model is a case of adding another unit, clutch, transmission, final drive and suspension being exactly as on the four-cylinder cars. Wheelbase has been increased several inches.

The real novelty of the season from the Renault factory is



FRONT VIEW, SHOWING ACCESSIBILITY OF ENGINE.

the production of a self-starter on all models. In reality they are two, the large cars being fitted with a device of the compressed air type, and the smaller ones with a purely mechanical arrangement allowing of starting the motor from the driver's seat. In all the four-cylinder models and on the six there is a small air pump compressing air into a tank and delivering it in correct sequence to the cylinders at what would be under ordinary circumstances the firing point. The pump, which is carried at the forward end of the motor and driven direct from the two-to-one shaft, has a single air-cooled cylinder with independent head. The method of attachment has been so simplified that by taking off a couple of nuts and withdrawing two bolts the cylinder head or the entire cylinder may be dismantled. Inlet and outlet valves are both in the cylinder head, the latter communicating by means of a by-pass with the metal tank attached to one of the side members of the frame. When a pressure of ninety pounds has been attained a membrane in the compression chamber is deformed to prevent the closing of the inlet valve on the compression stroke, the pump thus working free. The pump shaft is mounted on ball bearings.

About twenty liters of air are contained in the compressed air tank, this quantity being sufficient to start the largest four-cylinder model seven or eight times. Communication from the tank to the cylinders is through suitable piping connected up to a petcock on the dashboard and passing from there to a distributor above the engine. When the petcock, which is operated by a hand lever, is closed, no air can pass, and pressure is retained indefinitely in the tank. From the distributor mounted on the cylinders air is carried to each cylinder by independent leads, correct sequence being insured by a rotary distributing valve driven by an inclined spindle from the camshaft, and so set that air is admitted at what would ordinarily be the firing stroke. Ease of inspection of the automatic inlet valve in each cylinder has been assured by attaching the inlet pipe to the housing of each valve by means of a simple socket screw, a few turns of which will allow the pipe to be withdrawn vertically. The attachment of the distributor is of the same simple nature. For the six-cylinder motor the apparatus is the same with the exception that, instead of two openings at 90 degrees in the distributor, there are three at 120 degrees, admitting a charge of compressed air in the order 1, 5, 3, 6, 2, 4. Although the self starter is an extra, it has been specially designed to fit all 1908 models with the least encumbrance and in the most accessible manner.

On the smallest models the motor is started up from the driver's seat by an ingenious but simple mechanical contrivance, the operation of which consists in withdrawing the clutch, placing the gears at neutral point and pressing down a foot pedal similar to those used for clutch and brake, thereby giving an impulsion to the crankshaft. The starting pedal, mounted free on the same shaft as the clutch and brake pedals, carries a sector gearing with a rack mounted on the gear box and sliding within a bronze casing. By means of suitable gearing from a pinion driven off the rack, a free wheel, and a ratchet, the motor shaft is vigorously propelled on each depression of the starting pedal, full provision being made to prevent the effects of a backfire reaching the pedal, and this latter always being brought into position for starting up again by means of a spiral spring and guide. As with the compressed air starter, this device is fitted as an extra, but both the 10-14-horsepower four-cylinder car and the two-cylinder models are designed to receive it.

Considerable attention is now being paid by the Renault firm to the production of engines for motor boats and for electric generating plants, as well as the construction of light delivery vehicles. This year a couple of eight-cylinder engines have also been produced, both with the cylinders placed in V, one of them being of the air-cooled type designed to secure extreme lightness for aeronautical purposes, and the other being water-cooled and following more general Renault design.

THE AUTOMOBILE CALENDAR. AMERICAN.

Shows and Meetings.

- Dec. 9-14.....—Detroit, Riverview Park Auditorium, Detroit Automobile Dealers' Association. LeRoy Pelletier, manager.
- Dec. 14-21.....—St. Louis, Mo., Jai Alai Building, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association. D. M. Strauss, manager.
- Dec. 28-Jan. 4.....—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, manager.
- Jan. 14-18.....—Hartford, Conn., Foot Guard Hall, Hartford Automobile Dealers' Association.
- Feb. 1-8.....—Providence, State Armory, Automobile Show. Frank M. Prescott, manager.
- Feb. 10-15.....—Detroit, Light Guard Armory, Tri-State Automobile and Sporting Goods Association, Seventh Annual Show.
- Feb. 17-22.....—Cleveland, Central Armory, Annual Show, Cleveland Automobile Dealers' Association. George Collister, manager.
- Mar. 7-14.....—Boston, Mechanics' Building and Horticultural Hall, Boston Automobile Dealers' Association. Chester I. Campbell, manager, 5 Park Square.
- Mar. 9-14.....—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dai H. Lewis, manager.
- Mar. 21-28.....—Toronto, Canada, St. Lawrence Arena, Automobile Show. R. M. Jaffray, manager.
- Apr. 5-12.....—Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Motor Boat Shows.

- Dec. 7-14.....—New York City, Grand Central Palace, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 1-8.....—Chicago, Coliseum, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 25-Feb. 1.....—Boston, Mechanics' Building, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Feb. 3-8.....—Buffalo, Convention Hall, First Annual Power Boat and Sportsman's Show, auspices of Buffalo Launch Club. Dai H. Lewis, manager.
- Feb. 20-Mar. 7.....—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsman's Show.

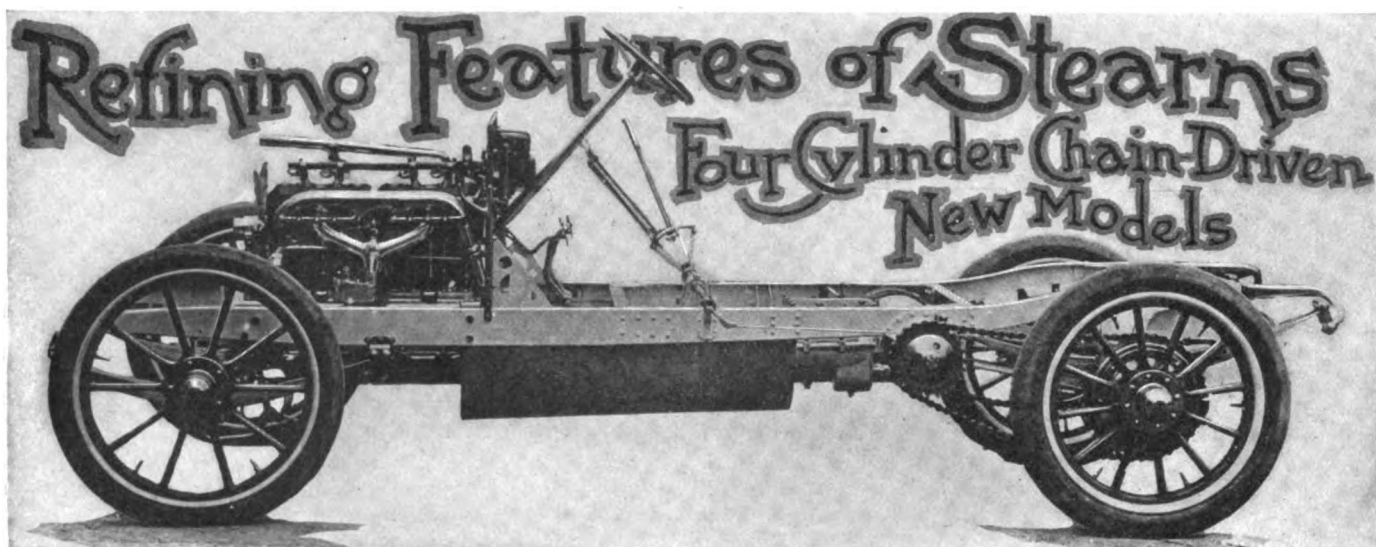
FOREIGN.

Shows.

- Dec. 5-22.....—Berlin, Germany, Automobile Show.
- Dec. 21-Jan. 2.....—Brussels, Show, Palace of the Cinquanteenaire.
- Jan. 18-Feb. 2, '08.....—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.
- Mar. 21-28.....—London, Agricultural Hall, Cordingley's Show.
- May 6-20.....—Moscow, Russia, International Automobile Exposition, Automobile Club of Moscow.

Races, Hill-Climbs, Etc.

- April 1-13.....—Monaco Motor Boat Races and Motor Boat Exhibition, International Sporting Club of Monaco.
- April 25-June 25.....—Industrial Vehicle Competition, Automobile Club of France.
- May, 1908.....—Paris, Competition for Agricultural Automobiles, auspices of "L'Auto." (Exact date to be announced.)
- May 10.....—Sicily, Targa Florio, Automobile Club of Italy.
- June 1-18.....—Reliability Trials for Pleasure Cars, Automobile Club of Great Britain.
- June 9-17.....—Touring Competition for the Prince Henry of Prussia prize, Germany, Imperial Automobile Club of Germany.
- June 20-July 5.....—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
- July 13-17.....—Ostend, Belgium, International Race Week, Automobile Club of Ostend.
- July 20-30.....—Ardennes Circuit Races and Coupe de Liedederke, Automobile Club of Belgium.
- August, 1908.....—France, Coupe de la Presse, Automobile Club of France. (Exact date to be announced.)



STEARNS FOUR-CYLINDER MODEL, SHOWING CONTINUANCE OF MAIN FEATURES, BUT REFINEMENT OF MANY DETAILS.

FOR practically all the leading constructors of automobiles the 1908 season will stand out as the year of refinements. Main features of design have been fixed upon, tried out and proved so satisfactory that designers have wisely resolved to continue on the same broad lines, devoting all their attention to the perfection of details as suggested by experience.

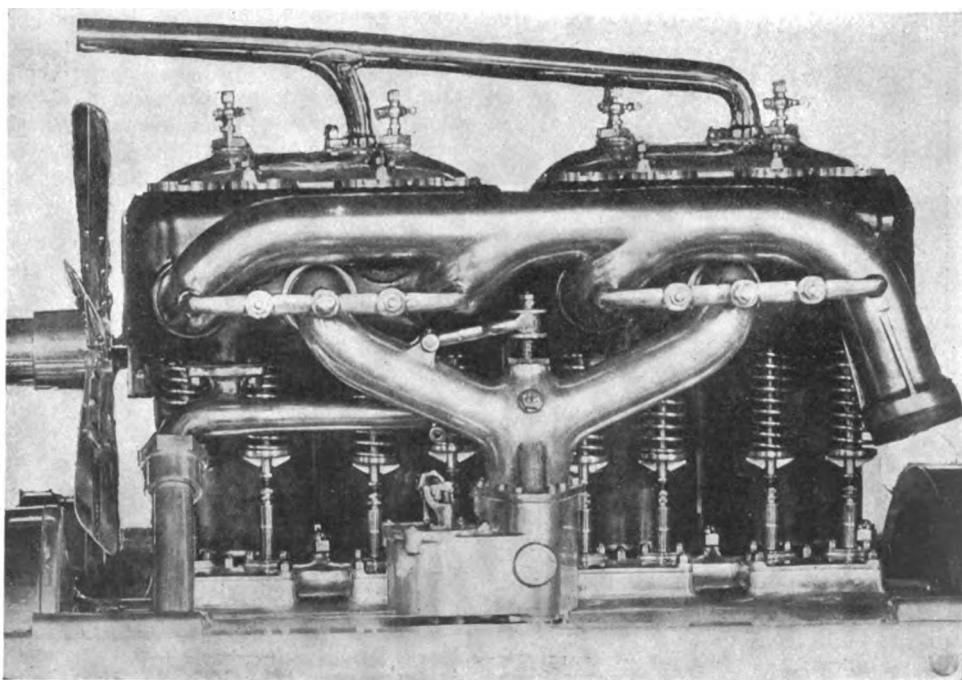
The product of the F. B. Stearns Company, of Cleveland, O., is an excellent example of this line of development. There is nothing in the 1908 car which cannot be found on the model of the previous year, yet the work of refining is noticeable in every feature of the machine; to put it in other words, all distinctive features were fully decided upon for the 1907 models and the same features have been refined and improved for 1908.

Two models only are produced, a 30-horsepower four-cylinder and a 45-horsepower six-cylinder chassis, the two chassis being fitted with different bodies varying from a two-passenger run-about to a seven-passenger limousine. The four-cylinder car retains its predominating position, the six being built only in limited numbers, the Stearns people being of the opinion that this type of engine is valuable only where an excess of power is required above what can be safely produced from four cylinders.

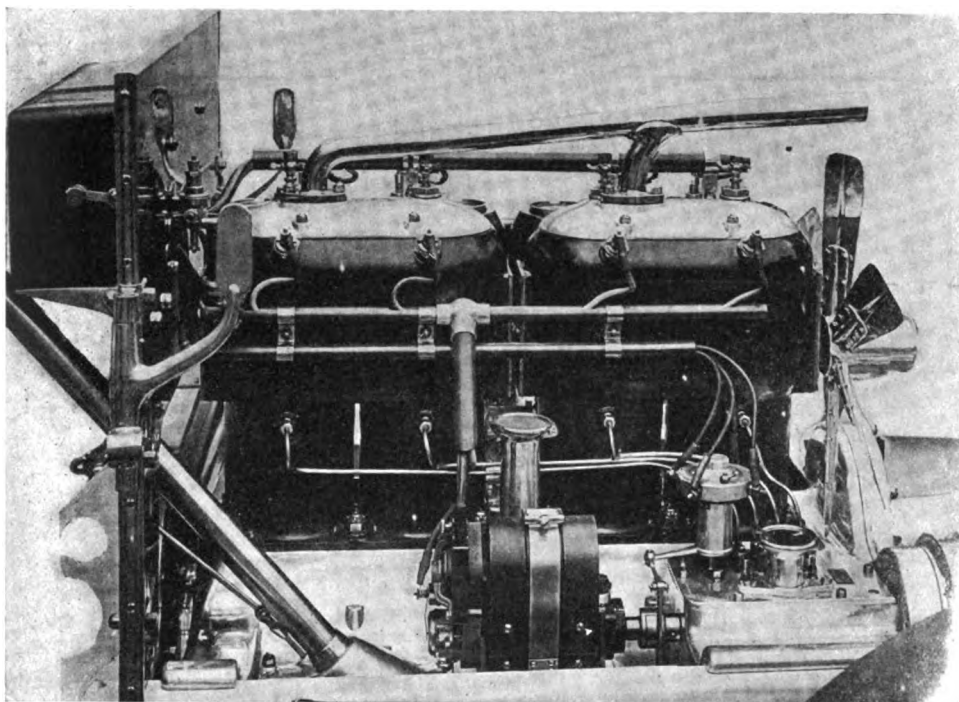
Though given in the catalogue as of 30 horsepower, the four-cylinder engine with its cylinders cast in pairs probably would give on a brake test almost twice that amount, for its bore and stroke is 5 3-8 by 5 7-8. As on the previous models, the twin cylinders have aluminum heads and are mounted on a crankcase attached direct to the side frame. A feature of the engine arrangement is that the entire power plant, including the radiator, ignition, carbureter, lubricator and steering gear is mounted on the crankcase. Valve arrangement on the Stearns follows the now generally adopted practice of placing intake and exhaust on one side, the valves themselves being interchangeable, and employing a single camshaft, gears being inclosed by an aluminum housing. This arrangement leaves the right hand side of the engine free for the ignition system, which in this case consists of a high-tension Bosch magneto driven from the same shaft as the lubricator,

through inclosed gears. This is one of the few points in which last year's practice has been departed from. The high-tension plugs being placed on the same side of the motor as the magneto, a neat arrangement of encased wiring is possible between the two. Ignition by storage battery and a four-unit coil is also provided for, with separate plugs placed over the inlet valves.

Stearns has always been an upholder of ball bearings and on the new models uses them throughout not only the transmission but for the crankshaft, magneto-shaft, camshaft, pumpshaft and even the aluminum fan behind the cellular radiator. The well-known D. W. F. imported bearings are used exclusively. By reason of the numerous minor improvements carried out on each part of the engine a saving of no less than 300 pounds in weight has been effected on the chassis. The overall length of the motor, too, has been shortened, permitting its location three inches to the rear of the axle without increasing the wheelbase. Not only are the lines of the car improved by this disposition, but there is a better distribution of weight and a consequent economy in tires, but 3 1-2-inch tread being fitted on the lighter models. Engine control has been included in the improving process, spark and throttle levers now being placed above the

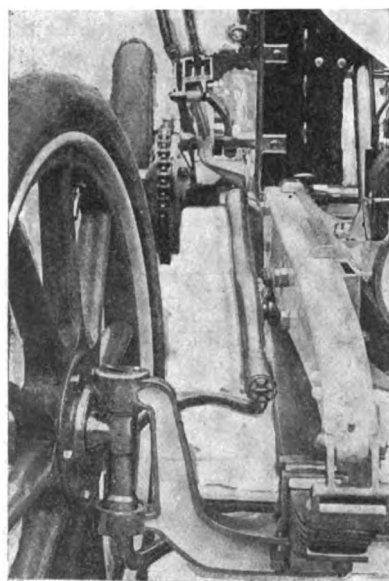


INTAKE SIDE OF FOUR-CYLINDER STEARNS MOTOR WITH 1908 IMPROVEMENTS.



SHOWING ACCESSIBILITY OF THE STEARNS DOUBLE IGNITION SYSTEM.

wheel, thus giving more knee room for the operator. Pedals are the same—clutch and brake, with accelerator pedal on the extreme right. Dashboard arrangement has also been simplified, the coil, pressure pump, manometer and auxiliary feed tank being all that is carried on the one-piece veneered mahogany dash, coil and tank casing being made to match same. One of the minor improvements is a toe switch, making it possible to switch over from storage batteries to magneto, or cut out altogether without changing position.



DISTINCTIVE STEERING GEAR.

The steering gear of the Stearns, which is of the worm and sector type, has as its distinctive features the use of ball bearings and the arrangement of the connection from the box to the knuckle. As will be seen from illustration, the drag link ascends instead of descends, as is usually the case, the connecting bar running forward close to the side frame, the transverse connecting rod of course being behind the front axle. Not only is ease of steering obtained, but all vital organs are well protected against road obstacles, the ensemble being one calculated to give entire confidence.

Transmission, as last year, is of the selective type, with final drive from countershaft to rear wheels by side chains. In the first of the organs transmitting power from the engine to road

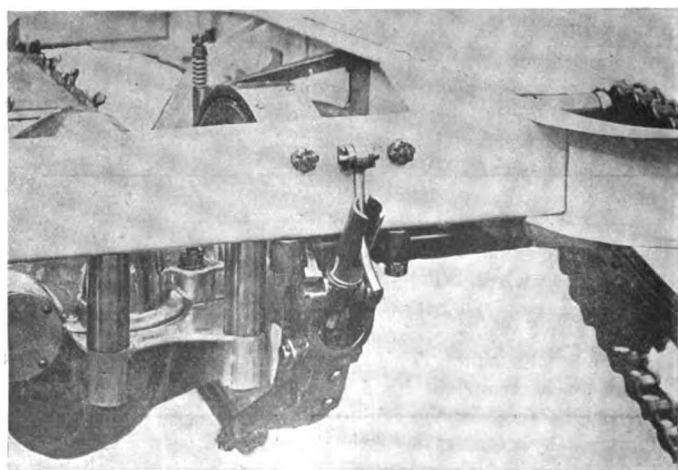
wheels some changes have been made, the flat-faced band clutch being entirely disconnected from the brake mechanism, in accordance with best European practice. Considerable strengthening has been effected in the transmission, the gear box being attached to cross members and providing four speeds forward and reverse on the selective principle. Chrome-nickel steel is employed for shafts and gears and D. W. F. ball bearings are used throughout.

Semi-elliptic springs front and rear have been retained, but have been lengthened three inches in front and six inches in the rear, the back end of the rear springs being supported on dump irons. The channel-section pressed steel frame is dropped to lower the center of gravity without interfering with the road clearance and is narrowed in front to give a wider steering angle. Braking surface has been somewhat increased and the emergency brakes, operated by the side lever with cable connection, are equalized. The powerful,

metal-to-metal brakes on the countershaft have been provided with an improved method of adjusting, whereby the slack can be taken up in a few seconds and the bands securely locked. Fender construction has been somewhat improved and the lines slightly modified, with a view to completely protecting passengers from mud, no matter how fast the car is traveling or how dirty the road. The running and footboards are of cork linoleum, held by a brass molding instead of aluminum.

Body design for the coming season will comprise two full touring cars—a five-passenger standard car and a seven-passenger Pullman. In addition, a four-passenger roadster will be produced for those desiring a light, speedy car carrying this number of people. Limousine and landaulet, by the leading body makers of the country, will be supplied for the four-cylinder chassis when desired. A runabout body will be the standard equipment for the six-cylinder car.

In the six-cylinder model, nominally rated at 45 horsepower, but actually producing 90 horsepower on a brake test, all the distinctive features of the "four" are to be found. The same double ignition system is used, ball bearings are employed throughout and the carbureter is the regular multiple jet type, with a unique arrangement of inlet pipes. In transmission and drive the fours and the sixes are identical.



BRAKE ADJUSTMENT A FEATURE OF NEW STEARNS MODELS.



THE Touring Club de France has for its prime end the development of "le tourisme" in France in all its forms—on foot, à cheval, by carriage, automobile, railway or steamboat. Its badge is to-day as common throughout France as was the palmer's shell in the days of the Crusades, and is recognized by thousands, while the "delegates" of the club—to the number of something like three thousand—are found all over the country and are ever ready to help the traveler, gratis, with all manner of information concerning sights and scenes, roads and routes and hotels, etc., and to enroll new adherents.

Members are provided with a "carte d'identité," bearing a miniature photograph of the holder, and with the monthly magazine, *La Revue Mensuelle*. This publication contains valuable information for tourists of all ranks in France, and is made up of exceedingly ably written and illustrated articles on many subjects relating not only to touring, but with references to historic sights, local fêtes and celebrations and what not, and the whole is so put together that it is of great practical value and not as dry as dusty archæological reports or unattractive like a railway time table. The stranger tourist, none the less than the habitant of France, will hardly be able to get the maximum of comfort and satisfaction out of French travel without becoming a member of this most excellent institution.

The "annuaire," or hotel list, of the association is also a valuable aid to travel in the French provinces, and the club also publishes a series of specially designed and printed touring maps and plans which are marvels of the cartographer's art. There are now neighboring upon 120,000 members of this great and growing association, which itself is under the direct patronage of the President of the Republic, with M. Jacques Baliff as president of the club.

Of its great resources, 125,000 francs or more per year are set apart for the general refecton or repair of roads in unfrequented localities where perhaps the regular traffic would not stand this extra charge, as the railway managers say. Another fund provides for the placing of frequent landing stages for pleasure boats along the banks of the Seine and Marne and Oise and other navigable rivers, and for the posting of road signs up and down the length of very nearly all the routes nationales of France.

Within the parent body there is a special section known as the "Comité Technique," whose functions are purely advisory with regard to improvements in road-making, dust-laying, the installation of modern sanitary conveniences, etc. There is also a Comité de Protection des Sites et Monuments Pittoresques, a Comité Nautique, and even a Comité Hippique—for the horse, though rapidly giving up the ghost, is not wholly extinct as yet. Perhaps this committee will some day be supplanted by an-

other devoted to the affairs of submarines, when these unstable craft shall have become the vogue of the world of sportsmen.

All this is something; it's a good deal, in fact; and when there is the added attraction of a magnificently equipped headquarters in Paris—on the Avenue de la Grande Armée, in the heart of the Parisian automobile world—the importance and value of becoming a member of this omnific association

will be apparent to everyone who is interested in pleasurable travel.

Besides all this, the automobilist may deposit the customs duty on his automobile on entering France with the club and get back the sum intact again on leaving, instead of having to go through annoying money transactions at the frontier or the port of debarkation. Of course, the thing has to be arranged beforehand, but the procedure is a simple one. The same facilities are offered to one who would take his automobile across the French frontier into Germany, Holland, Belgium, Italy or Switzerland.

How Entrance to Foreign Countries Is Facilitated.

All this machinery, with reference to the importation and exportation of automobiles in and out of France, is put into motion by a system which is built up in the form of a "triptyque." There's a "triptyque" by Rubens in Antwerp's cathedral, which is the best known to tourists in general, but this automobilist's "triptyque" is built on the same plan—a central panel, or leaf, and two outer or folding leaves, one on either side. To most automobilists this latter is likely to become as well known as that earlier and more artistic, if less practical, work of Rubens.



SLOW, DOWN GRADE

This automobile "triptyque" consists merely of three joined-together leaflets, one of which is given up on passing the customs house on entering, another on leaving, whilst the third, or last (endorsed by the officials of the customs house passed on leaving France), is held as a draw-back check, upon the surrender of which the original deposit will be paid over by the Touring Club de France—always provided that the formalities (which are not onerous) have been properly complied with at the respective Bureaux de Douane. Forms of application and further particulars may be had from the club direct.

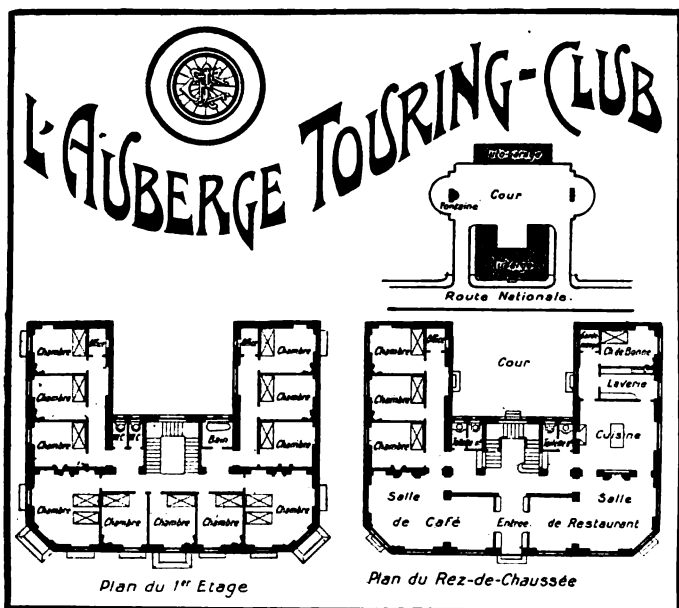
Before the bubbles in the casserole which brewed the unsavory "Affaire Humbert" (that



T. C. F. SIGNPOST FOR WATERWAYS.



MAIN ENTRANCE ON AVENUE DE LA GRANDE ARMEE.

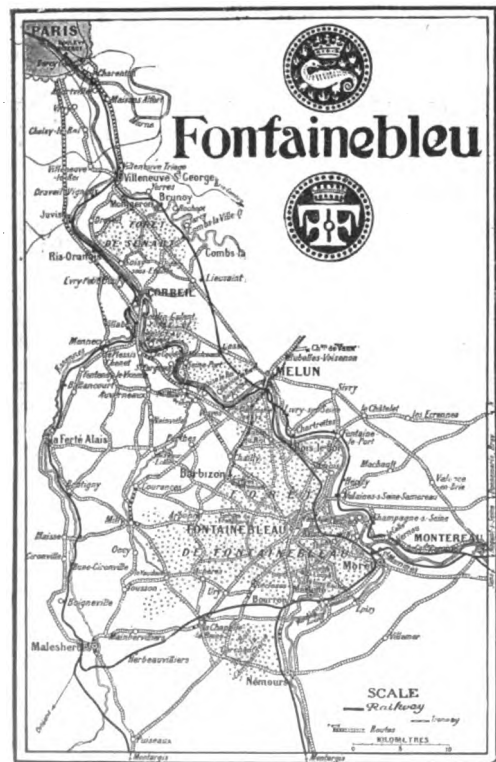


THIS FOR OUR COUNTRY INN, SAYS AUTHORITY T. C. F.

of the mythical millions) a few years ago had quieted down, the Touring Club de France, with the ready money right in its inside pocket, stepped in and bought of the liquidator of the affairs of "la Therèse magnifique" her fine *hôtel privé* on Paris' Avenue de la Grande Armée, just beyond the Arc de Triomphe, and near the Porte Maillot entrance to the Bois.

A half a million quick cash was the price put upon the property by the administrator of the courts, and so the Touring Club de France came to be housed so magnificently. Previously its hundred thousand members had been catered to from a dingy apartment on the third and fourth floors of a nondescript structure in the Place de la Bourse.

To-day the Touring Club de France is as splendidly installed as any club or cercle in Paris, and all for practically a dollar a year, which is the cost to members. To be sure, this elegant



PARIS TO FONTAINEBLEAU ROAD MAP.

establishment at the gates of the Bois does not give you the opportunity of eating or drinking or playing cards within its walls, but still you may stalk majestically up its monumental *escalier* with an air of petty proprietorship if you will; you may consult its library of maps and guides — which the tourist will greatly appreciate, for there is no other collection, in Paris or out of it, so accessible or up-to-date; you may write your letters here, may

get full and free information on roads, routes, hotels, and even railway fares, and may attend conferences on such subjects as the "Deforestation of Mountains," "The Building and Upkeep of Good Roads," "Historic Pilgrimages," "Aeronautiques," and what not.

The scope of the club is very great, but it is by no means for tourists alone that it exists and does its great work; it is for all Frenchmen and all the world at large who have a care for historic and artistic souvenirs. If some historic or romantic shrine is in danger of being torn down or being made over into a gas works or something of the sort, the club, at the suggestion of its local delegate, comes forward and does a little organizing of public clamor and saves the day. This was the case with respect to that flower of the French Renaissance, the Chateau of Azay le Rideau, a few years since. The dastardly desecration which in this particular case came so near to being consummated, was no less than the possibility of this gem of a Touraine chateau being pulled down and transported block by block to the banks of the Allegheny or the shores of Puget Sound or some other equally inappropriate spot. Finally the French nation came to the rescue and bought it of its proprietors and proclaimed it a public *monument historique*, upon which vandal hands should never fall. And all this was brought about by the demarches made by the T. C. F.



A CORNER OF THE WELL-STOCKED CLUB LIBRARY.

The Chateau de Josselin, in Bretagne, now the private residence of the de Rohans, was opened to visitors through the solicitation of the club. It is an ideal mediæval monument, every whit as grand as many in Touraine, and its doors and gates might ever have been closed to the public of all nations but for the solicitude of this great touring association.

If some great tree at Fontainebleau—standing on some historic spot—is to be felled, the T. C. F. comes forward again and the woodman's ax doesn't fall, nor is the stick of dynamite exploded which would blast open some narrow gorge of rock and bereave it of its picturesqueness. So, too, when it comes to modern improvements, the all-powerful society gets some eminent scientist or engineer to map out a project for a new bit of roadway, the restoration of an old bridge, or the erection of some memorial monument on a historic site. The Touring Club, usually, pays the bills, too, if not entire at least in part.

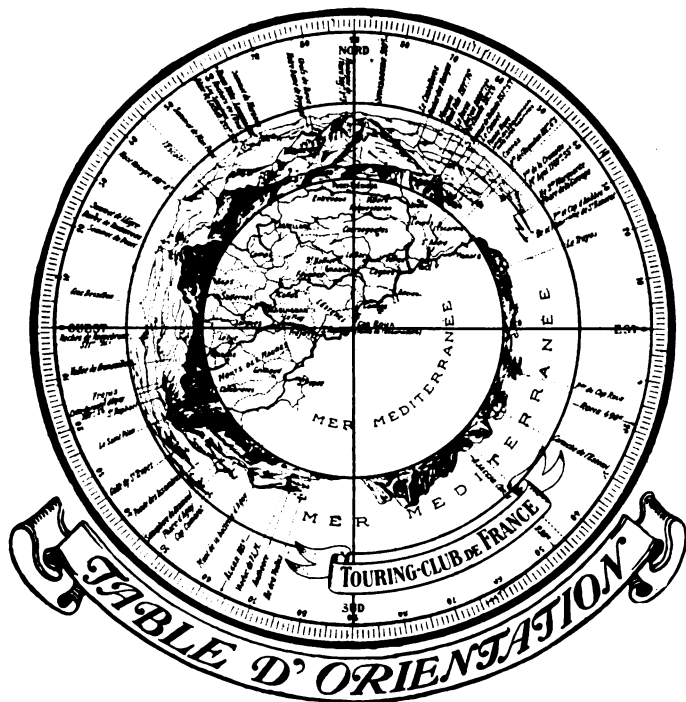
Road Signs and Road Menders Receive Club's Care.

The best system of road-signs ever planted above ground were thought out, produced and put into place through the energies of the club, and it has recently instituted a fund to buy waterproof clothing and rubber boots for the road-menders who do so much to keep French roads what they are. This is better than giving them a six-penny packet of stale tobacco and a pint of beer, as an analogous institution does in England. It costs more, to be sure, but it produces better results, and good roads are worth paying

for, as we are now just beginning to find out. What a pioneer Napoleon was, to be sure, and what an impetus he would give to automobilism if he lived to-day!

The *Tables d'Orientation* erected by the Touring Club at commanding viewpoints in France are a unique expression of initiative, and an admirable one. A *table d'orientation* shows a sort of circumferential birdseye view of everything roundabout, and is designed mathematically and topographically correct and reproduced in the form of a great circular enamelled table, and placed horizontally three or four feet above the ground. That recently erected at Cap Roux on the Riviera corniche is the latest of these innovations, but there are many others already in place, and many more projected, at various seacoast points, in the Pyrenees and in Dauphiné and Savoie. If some Rockefeller, Carnegie, or a Roosevelt wants to inaugurate a good idea in America, a land of magnificent birdseye views, let him endow a series of these admirable accessories. The accompanying plan will show how it is to be carried out in the most successful manner.

At still other commanding sites the Touring Club has erected benches (*with backs to them*), always facing some ravishing vista or a smiling prospect. The initials T. C. F. are deeply carved and

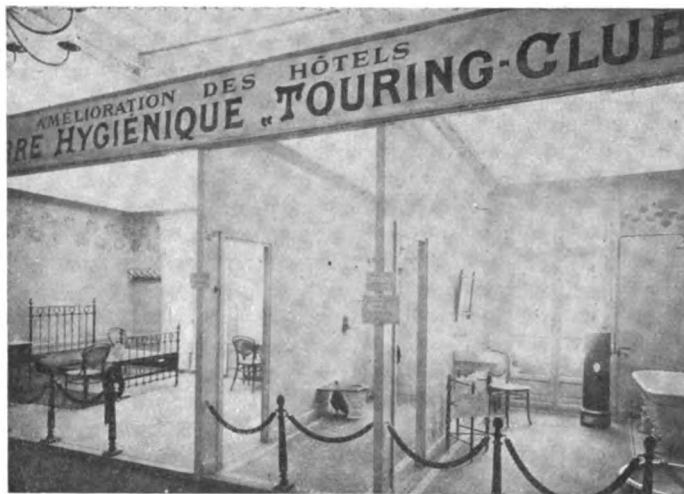


TO ENABLE THE WANDERER TO GET HIS BEARINGS.

blazoned thereon and there are hundreds of these all over France. There are no other amateur carvings thereon; the craze for writing or carving one's name, or that of their sweetheart, does not get a foothold here. The conveniences of the T. C. F. are apparently a public trust which is never betrayed.

The "*annuaire*," or hotel list, published by the club contains the names of many thousands of French hotels, with prices of the various accommodations offered. Sometimes, too, there is a special 5, 10 or 15 per cent. to be had in the way of a discount, freely given to members when their membership card is presented upon demanding one's bill. It is a real discount, too; there is no fake about it, with prices made out accordingly. These specially affiliated hotels are so marked in the "*annuaire*," which also, in addition to the name and population of the town, gives a note as to whether or no it is a telegraph or telephone office or a railway station, and whether there is a drugstore or not—in case you need it. It also indicates the hotels that have "running water" W. Cs. (this is really worth knowing), and as to whether there is a darkroom for kodakists—this, too, is worth knowing.

The *chambre hygiénique* instituted by the T. C. F., and now



THESE ARE T. C. F. IDEAL TOURISTS' BEDROOMS.

finding a place in so many French hotels, is simply a sane, sanitary sleeping-room, with iron or brass bedsteads, lacquered walls, tiled or waxed-wood floors, and a want of heavy draperies at the windows or woolly, mangy rugs on the floor. The craze for this sort of thing, replacing the stuffy sleeping-rooms of the French hotels of only a generation ago, is fast sweeping all over the country, as also the desire for the traveling automobilist to have a towel a little larger and thicker than a handkerchief and a wash basin something larger than a coffee cup. These things as well are changing for the better. Again the T. C. F.! This amelioration of the French country hotel has been one of the greatest triumphs of the club, for it is to its initiative that it has been due.

As a member of this great Touring Club you are furnished with a little pamphlet of blank forms, which you are expected to fill up from time to time as you find a hotel well or ill appointed, and with this information at hand the editor of next year's "*annuaire*" will be able to keep his list up to date. When it is stated that this desired information comprehends such details as the following, its great value will be readily appreciated: Cleanliness and lighting of sleeping-rooms; quality and abundance of the table; general aspect of the hotel and its appointments; nature of its clientele; general impressions of the landlord and the personnel; is the hotel provided with detailed maps of the region? are there means for the proper care, storage and repairs of automobiles? is there a darkroom? etc. In addition to this you are asked to give comments on the outlook and accessibility of the house and the length of your stay.



MAIN STAIRCASE IS NOT LACKING IN ELEGANCE

From all this is boiled down certain pertinent facts that are of inestimable value to travelers. This is real, valuable coöperation such as does credit to the brotherhood of stranger automobile nomads, now more numerous in France than in any other country on the globe. This is because the French know how to cater to travelers of this class without boring you stiff by overdoing the thing, and without overcharging for the accommodations offered. There is a written or unwritten law in France which frowns down any radical overcharging, though not many seem to know this. It takes time to get satisfaction, if you think you are being held up in some hotel or garage, and in many cases the thing will not be worth following up. But there is that pretty generally recognized law, nevertheless, which prohibits "unfair trading," and its platform is a pretty broad one.

Another new idea of the Touring Club is the installation of country inns, or châteaux, or auberges in likely places, where, perhaps, the local traffic would not support a more pretentious establishment. This will probably lead to the birth of many incipient resorts, but what matter, the traveler of to-day expects to find accommodation for himself and his modern beast of burden, the automobile, wherever he chooses to cut off the gas.

The club will furnish any prospective *aubergiste* plans and particulars as to how he may install a modest inn and will even make arrangements whereby he may get his material at inside figures. This, too, is an idea worthy of great development. The diagram herewith gives an idea of the simplicity and convenience of the small hotel known as the *Auberge du Touring Club*. It's worth being tried in America. Heaven knows, some of our "road-houses" are awful enough, and infrequent enough, too. The idea is susceptible of being worked up into something very important and run on the same grandly organized scale as Pullman cars are run on the railways. Here's a chance for the capitalist looking for a new industry to exploit.

Now for a few facts of practical information. To become a member of the Touring Club de France fill in the application form and forward it to M. le President du Touring Club de

France, 65 Avenue de la Grande Armée, Paris, with a sum equal to six francs (say a dollar and a quarter) in the form of an international money order or an American Express Company's "foreign cheque." It's worth the doing, at any rate, whether one actually makes use of all the facilities offered or not. When wanted, the able services of this grand institution, to be had practically for nothing, will be worth all the trouble that has been taken to acquire the right to them.

An arrangement in existence between the American Automobile Association, which has the headquarters for its national secretary, F. H. Elliott, at 437 Fifth avenue, New York City, and the Touring Club makes it possible for members of that association to secure immediate membership upon presentation of their tickets at the Paris offices of the Touring Club. The same results can be obtained by mail by inclosing with the application blank the A. A. A. ticket, which, of course, is returned with the Touring Club ticket. Membership in the American organization is recognized as a sufficient introduction for immediate attention by the French body. In like manner the Touring Club members who visit America are accepted by the A. A. A., though it must be admitted that few Europeans have elected to tour extensively in the United States, which is just beginning to really awaken in the matter of roads building.

SEVEN MODEL HIGHWAYS INTO CITY OF PARIS.

PARIS, Dec. 2.—Although the roads of France are so uniformly good as to earn universal commendation, the outlets from Paris are, without exception, in a poor condition. M. Barthou, minister of public works, has just declared in an official communication to M. Ballif, president of the Touring Club, and M. Chaix, of the Touring Board of the A. C. F., that during the next ten years all the main roads out of the capital will be entirely reconstructed on improved principles. It is intended to lay out seven main roads, paved with small cobblestones on a bed of cement, thus providing easy access to the city from any point of the compass.

2,152,000 MILES OF PUBLIC ROAD—7.14 PER CENT. IMPROVED

WASHINGTON, D. C., Dec. 9.—Some interesting facts and figures regarding the road question in this country are contained in the eleventh annual report of the Secretary of Agriculture, recently submitted to President Roosevelt. As the question is one of absorbing interest to automobilists throughout the country, the following excerpts from the report are not without interest:

The close of the year marked the completion of the first census ever made to determine the road mileage, revenues and expenditures in this country. This investigation was begun early in 1905. Information covering the calendar year 1904 was obtained from carefully selected correspondents in every county in the United States, from State Highway Departments, State geologists, city and county officials, employees of the Office of Public Roads on field duty, commercial and agricultural associations, and newspapers—in fact, every possible source of information was used. The bulletin recently issued on the subject shows the enormous total of nearly 2,152,000 miles of public road; that 7.14 per cent. of this mileage has been improved, and that the total expenditures for 1904 were approximately \$30,000,000. Considering the fact that our improved roads have been in process of construction for a number of years, it becomes evident that the results which we are obtaining are totally inadequate to the amount of money expended, and that the mileage is so great that we must of necessity classify our roads according to their importance, bearing in mind the fact that by far the largest proportion of our earth roads must be maintained as such for many years to come.

The construction of object-lesson roads in co-operation with local authorities was continued during the year along the same lines as in previous years, excepting that greater attention was given to the building of earth, sand-clay, and gravel roads.

The trend of public opinion with reference to our public roads is indicated by the requests which have been received during the past

year for the detail of men to lecture on road improvements. In former years the demand for lectures on road improvement came largely from road organizations, but during the past year requests have been received from agricultural, industrial, scientific, and commercial organizations which are taking up the subject.

In recent years perhaps the most important, and certainly the most difficult, problem which has engaged the attention of highway engineers is the prevention of dust. Until the general introduction of automobiles, dust was considered as neither more nor less than a nuisance. The problem has now, however, assumed a more serious aspect. The existence of our macadam roads depends upon the retention of the rock dust formed by the wearing of the surface. Under ordinary traffic conditions this dust remains on the road and consolidates to form a fresh wearing surface. But a heavy rubber-tired automobile moving at a high rate of speed produces a partial vacuum behind each wheel which sucks up the dust from the road surface and throws it into the air, to be carried off by the wind. This action soon strips the macadam road of all fine material, the result being that it soon disintegrates.

France, both by reason of her mileage of macadam roads and the general use of automobiles, has given this subject the earliest and most thorough consideration. Investigations and experiments have also been conducted in England, and to some extent in this country. During the past year a thorough investigation was made of the systems in use both in France and in England. Experiments with tar and oil were conducted during the past summer in Kentucky and Massachusetts with a number of materials and preparations designed to preserve macadam road surfaces.

This is a subject which should engage the earnest attention of the National Government at once. No matter how important we may deem the building of good roads, we cannot but consider it even more important to preserve those which have already been constructed. Investigations of dust preventives and road preservatives will be conducted by the Office of Public Roads during this and the next fiscal year as far as its facilities will permit.

EARLY WINTER DOINGS OF THE AUTO CLUBS

SIGNBOARDING BY LIVE MASSACHUSETTS CLUB.

SPRINGFIELD, MASS., Dec. 9.—The extensive mileage of excellent highways radiating from Springfield is now being posted with cautionary signs on all dangerous points, under the auspices of the Automobile Club of Springfield, with signs furnished by the Massachusetts State Automobile Association. One hundred signs have been furnished the club for this purpose under the terms of a special offer made to the clubs by the State organization, and the Springfield club is the first to avail itself of the offer and to actively undertake the work.

The signs are made of enameled tin with "Drive Carefully—Sound Horn" in white display letters on a blue background. The club guarantees to furnish a durable mount for the signs where they are in plain sight of passing tourists, and also furnishes the State organization with a catalog of the exact locations. The signs will be posted on roads from this city to Huntington, Northampton, Palmer, and State Line, and another 100 to be received later will be posted on less frequented roads. The signs will be placed both sides of curves, hills, and underpasses, where accidents are likely to occur from careless driving or ignorance of local highway conditions.

TOLEDOANS PROMOTE AN AUTOMOBILE CLUB.

TOLEDO, O., Dec. 9.—Plans for the organization of the Automobile Club of Toledo were formulated at a dinner given at the Toledo club recently by Edward D. Libbey. Mr. Libbey invited a number of well-known autoists resident in this city, and the members of the club to be were addressed by President F. T. Sholes, of the Ohio State Automobile Association, and President E. S. George, of the Detroit Automobile Club, both of the speakers outlining the advantages to be gained by organizing. A committee consisting of E. J. Marshall, A. L. Spitzer, George S. Mills, Marshall Sheppey, and J. M. Steenberg, was appointed to draft a constitution and by-laws and to arrange for the incorporation of the club. Next spring, it is the intention of the newly formed club to have several of its members appointed as special policemen to aid in the suppression of illegal speeding. E. D. Libbey was appointed temporary chairman of the organization, pending incorporation, and G. S. Mills, secretary *pro tem*.

SOCIAL FEATURES OF THE A. C. OF AMERICA.

NEW YORK, Dec. 10.—Next Tuesday will be ladies' day at the Automobile Club of America, on which occasion tea will be served from 4 to 6, and music provided. The regular Tuesday evening club dinner will be held the same day, at 7:30 instead of 6:30, as heretofore, and will be followed by an illustrated lecture by O. P. Austin, chief of the Bureau of Statistics, Department of Commerce and Labor, Washington, D. C., on "Queer Methods of Travel in Curious Corners of the World." Announcement is made that the annual banquet will be held in the Assembly room of the clubhouse, Saturday, January 25, 1908.

CHAIRMAN HOWER TO HEAD A. C. OF BUFFALO.

BUFFALO, N. Y., Dec. 9.—The annual meeting and election of officers of the Automobile Club of Buffalo will take place at the club headquarters on next Monday evening, December 16. The nominees are as follows: For president, Frank B. Hower, chairman of the Touring Board of the American Automobile Association; vice-president, John M. Satterfield; treasurer, Laurens Enos; secretary, Dai H. Lewis. The members proposed for the new board of directors are Edward H. Butler, Edward R. Thomas, Charles Clifton, James N. Beyers and George C. Diehl. The total membership of the club is now 1,127.

QUAKER CITY MOTOR CLUB MAY HAVE A HOME.

PHILADELPHIA, PA., Dec. 9.—If the enthusiasm manifested at last Thursday night's meeting of the Quaker City Motor Club is a criterion, that organization will have a home of its own before many moons. The membership has been growing by leaps and bounds recently, until the cozy but small quarters in the Hotel Majestic have become much too restricted for comfort. Especially on meeting nights has the lack of room been felt. Besides, the Majestic is too far away from the fumes of "Gasoline Row" to be an ideal home for the club, despite its many comforts. When, therefore, a proposal was laid before the club whereby a whole building in the neighborhood of Broad and Walnut streets was offered at a rental very little, if any, in excess of what is paid now, the members took hold with avidity. The building in question has been used as a club for several years, and but very little money need be spent to adapt it to the needs of the growing membership list of the Quakers.

If the proposed deal materializes—and it is almost certain that it will—a café will be installed, in charge of a well-known caterer, and all the requisites of an up-to-date club put in. Later a swimming pool may be added to the attractions of the new home. Final action on the matter will probably be taken at the January meeting and a special committee appointed.

Five cars, carrying a score of passengers, made up of officials, newspaper men and photographers, took a two-day jaunt, last Saturday and Sunday, over the route of the Quaker City Motor Club's endurance run, which is scheduled for January 1 and 2 next. Besides "spying out the land" preparatory to the adoption of a schedule, Chairman E. C. Johnson, of the club's contest committee, made hotel and garage arrangements at Allentown, where the run will stop over night, and selected points along the route where checkers will be located.

The first day's run, to Allentown, via Doylestown, Easton, and Nazareth, is about 79 miles, while the return route, via Kutztown and Reading, is a trifle longer. A technical committee of three will examine all of the cars after their return, and in the event of ties, the machines which are in the best condition will be awarded the cups in their respective classes.

DOINGS OF THE CLUB AT WORCESTER, MASS.

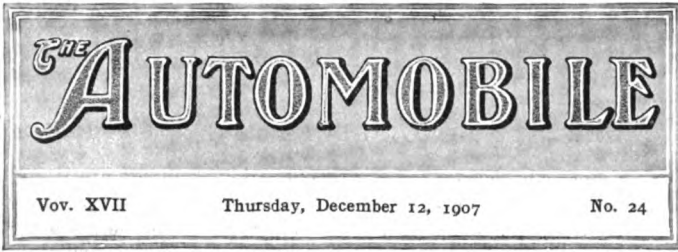
WORCESTER, MASS., Dec. 9.—The Worcester Automobile Club will have its second smoke talk of this season to-morrow night. Alfred Thomas will tell of his 3,500-mile tour of Europe last summer in his Pierce car.

J. J. Quinn has returned from a trip to Great Britain and France. While in Paris he attended the Salon and comes back to Worcester with praises for the Salon, but his preference for American cars stronger than ever.

M. P. Whittall, of the Worcester club, has been deprived of his license rights for a term ending March 27, 1908. This was on the initiative of the Massachusetts Safe Roads Association, and the State Highway Commission suspended the license. Mr. Whittall was driving a car which struck a child in Worcester last summer and the action by the association was taken while there is a civil suit pending against him brought by the parents of the child.

EDWARDS NOW AT LONG ISLAND CLUB'S WHEEL.

BROOKLYN, N. Y., Dec. 9.—The Long Island Automobile Club has elected these officers for the coming year: President, Charles Jerome Edwards; vice-president, C. B. Barker; secretary, Russell A. Field; treasurer, Louis T. Weiss. Governors for two years, William Payson Richardson, Dr. T. H. Sharpe, and J. H. Emanuel; membership committee, Samuel F. Burns and F. G. Jahn.



THE CLASS JOURNAL COMPANY

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT

A. G. BATCHELDER, Managing Editor

R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager

LOUIS R. SMITH FRANK B. BARNETT

W. I. RALPH, 1035 Old South Building, Boston, Mass.

C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES:

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order, or Registrar your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hilffe & Sons, Limited, 20 Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor
Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903,
and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905	- - - - -	730,000
“ “ in 1906	- - - - -	791,000
“ “ this issue	- - - - -	18,000
“ “ since January 1	- - - - -	834,900

What Will Another Year Bring Forth in Shows? It is with a sigh of relief that the automobile manufacturer, dealer, and everyone down through the long list of those whom shows affect more or less directly, view the closing of the “big show” season. There are still two events of some importance: the Importers’ Salon in Madison Square Garden and the Boston show in March, to take place before the season can finally be said to wind up. But the first holds no great interest for the American industry, while the second is something for which the dealer is largely responsible, and next March is still somewhat in the future. Looking back on what has taken place during the past two months, it would seem as if this first trial of early show dates can definitely be put down as the last, at least under similar conditions, and by this is not meant times of financial depression, as they were something that could not be foreseen.

The first New York show felt the full brunt of this unfortunate period, while the second exhibition happily occurred at a time when it did a great deal of good, but neither succeeded in demonstrating the necessity or expediency of holding shows so far in advance of the dates that have come to be regarded as more or less fixed in this country. The maker could have profited by early show dates in past years when new models were made ready just in time for exhibition and deliveries did not begin until a month or two later, but that time is long since past and conditions have undergone a complete change in the interim. What the next year will bring forth in the way of a show situ-

ation is somewhat problematical at the moment, though it seems safe to predict, even now, that there will be some radical changes both in dates as well as other important features, not the least of which concern the sponsors of the different shows.

It is definitely understood that the A. M. C. M. A. and the M. and A. M. will promote an affair entirely of their own planning in New York, and the Chicago show has assumed such proportions that a split is anticipated there also. It is to be presumed that the Licensed interests will continue the even tenor of their way in both cities, where shows are concerned, though there is more or less talk of an open-air event on novel lines.



Why So Difficult to Evolve Sensible Rules?

One of the strangest anomalies in connection with automobile contests of almost every nature included in the long category of events of past years, is to be found in the fact that rules, which should at once be sensible and practical, have been found almost impossible of attainment. Lack of experience could easily be cited as the cause in earlier days, but, as an excuse, this should have lost most of its potency by now. The new attitude assumed toward road racing by British interests furnishes two striking examples—the first, a commendable one that could have been adopted at the outset with equal facility, and the second, a hopeless right-about-face movement that can only serve to further delay the adoption of common-sense standards.

The former of these is the new Tourist Trophy, which will henceforth be a road race, pure and simple, and in which a low maximum weight limit formerly produced such absurdities as *papier maché* bonnets, perforated frames, and, in short, anything but touring cars. Instead, there is now to be a maximum cylinder bore and a minimum weight limit. But in the new 2,000-mile reliability trial, everything has been subordinated to time of performance, this term being held to cover even such details as replenishing fuel tanks. Hair-splitting niceties are ridiculous, as we have had occasion to note very recently, but sweeping them away with one hand and putting them on with the other does not provide the solution desired. Club committees generally have proved themselves woefully incompetent in this respect, and, sad to relate, only an occasional gleam of encouragement shows that better things may come in the fullness of time. A National Committee, like the new Technical Board of the A. A. A., should, and probably will, provide rules for standard kinds of technical contests.



Enforcing Blue Laws Was Physically Beneficial.

It may have been a mere coincidence, but it was plainly evident to any observer that on the first day Commissioner Bingham put into force the regulations designed to give New Yorkers a greater respect for the sanctity of the Sabbath the weekly automobile parade should have more participants than usual. Riverside Drive, Broadway and Central Park, from the breakfast hour till sunset, were much more animated than usual with every class of machine from a noisy single cylinder carrying a full load of passengers—the rule appears to be that the smaller the machine the greater the number of people to be crowded into it—to the handsome limousine with liveried men on the front seat. But the majority of those taking the air in this fashion were people owning moderate-powered cars, and who were out for the pleasure of the outing, the owner in nearly every case being at the wheel. The supporters of the new city regulations would probably be surprised to find themselves joined by automobilists in the cry for the “lid down,” for so long as weather conditions are satisfactory few of those who opened the garage door when the theater door had been bolted will object to a continuance of the experiment. But the powers-that-be might have care for the hereafter of the taxicab man and suggest more bolting down—then there would be another story to tell.

A. A. A. AND AUTO MAKERS WILL WORK FOR COMMON GOOD

THE first meeting of the new executive committee of the American Automobile Association was held in the First Regiment Armory, Chicago, December 6, a majority of the board comprising seventeen members being present.

President Hotchkiss presented a report concerning the policies and plans of the association for the ensuing year, which was unanimously adopted.

Reports were received from the chairmen of the various boards, including an announcement from the Vanderbilt Cup Commission, stating that at a meeting held in New York, November 27, it was definitely decided to hold the Vanderbilt Cup race in the fall of 1908, and that the time, place and conditions for this contest would be announced as soon as possible.

The recommendations contained in a communication from Chairman Terry, of the Legislative Board, suggesting that the automobile manufacturing associations, through their members, enlist the support of the Federal bill by their agents throughout the United States, and the outline of a publicity campaign through the manufacturing organizations, were approved.

President Hotchkiss, as chairman of the Special Committee on Sanctions, recently appointed by the association to take into consideration the motor racing situation as intensified by the large number of accidents to spectators and participants during the past year, reported that this committee, at a meeting held on December 5, adopted the recommendations which had tentatively been agreed upon at a previous meeting held in New York, and it was stated that the restrictions and recommendations had been unanimously approved by the representatives of the several automobile manufacturing organizations, and that the association would be supported by the manufacturers of the country in their enforcement.

President Hotchkiss also reported on behalf of the Central Conference Committee that the association had received assurances from the various bodies represented on such committee that it would be supported to the limit in the enforcement of the sanctioning power as to all classes of automobile contests, also that at such conference a working basis was arrived at between the various associations interested in and working for desirable automobile legislation and the furtherance of the good roads movement in the State and nation.

The chairmen of the racing and technical boards were instructed to investigate and report at a meeting of the executive committee of the American Automobile Association to be held early in January as to whether the association should hold under its own auspices a stock chassis touring car contest in the spring of 1908, and if such contest seems desirable to suggest the time, place and conditions thereof.

A resolution was unanimously adopted directing that the national boards at once take under consideration the advisability of holding a great national convention of the association at some convenient point during the summer of 1908.

In addition to a considerable number of individual members, the following organizations were elected to membership: Savannah Automobile Club, Savannah, Ga.; Automobile Club of Hawaii; California State Automobile Association.

Contained in President Hotchkiss' Plans.

IN GENERAL.—A continuance of the general policy previously followed, including a progressive increase in membership and a substantial increase in the work and functions of the various national boards.

To that end, (a) the adoption of a plan whereby the individual membership of the association in all of the States will be much increased; (b) the organization of additional clubs in all cities of more than 10,000 population, and the federation of such clubs into State associations, where the latter do not now exist;

Also, the stimulation from national headquarters of (a) club activities, through correspondence and ample publicity touching the work of the national body, as well as through monthly printed

bulletins issued by the clubs, frequent meetings, and carefully conducted campaigns looking to new members; and (b) State association work, not merely by correspondence, but by visitation and suggestion.

MEETINGS.—As an example in service, regular monthly meetings of the board of directors, or its executive committee, held, perhaps, in different parts of the country and attended, if possible—at least, executive committee meetings—by a majority of the members;

Also, frequent and regular meetings of the various boards, or, in case this is impracticable, of their executive committees, thus enlisting the services of many men and not placing reliance entirely on the enthusiasm or sacrifice of one;

Also, a national convention of the association, with particular reference to legislation and good roads, at some central point, during the summer season.

BOARDS.—Real activity by each board; co-operation and consultation between boards whose functions in any way overlap; as, for instance, those of the racing and technical boards; vice-chairmen and secretaries in each of the boards seeming to require them.

In legislation, a continuance of present agitation looking toward the adoption of a federal registration bill, and, if possible, sufficient demand and pressure to secure the passage of such bill at the present session of the sixtieth Congress; also, and more important, active co-operation between the legislative board and the corresponding committees in the various States whose legislatures meet in 1908, to the end that in several of them the association's proposed uniform motor vehicle bill will become a law ere the touring season begins.

In touring, increased activity both in the touring board and in the corresponding committees of the State associations and clubs, looking to the aggregation and analysis of touring information available to all members, without charge, on application to the secretary of the association or the chairman of the touring board; also, a plan whereby, in those sections of the country where trunk touring routes are found, there shall be a geographical distribution of road sign work among the clubs in such territory, to the end that all such roads will be marked by signs, bearing the emblem of the association, and clearly indicating directions and distances; and—but of lesser importance—the conduct of the association's annual tour in 1908, perhaps, from some central point and in conjunction with the national convention, previously mentioned, instead of across the country from one center to another.

SANCTIONS.—Sanctions to be granted only by the racing and technical boards, on application made through national headquarters, to club or State association members only, on payment of ample fees—the amount to be regulated by (a) whether for national or international contests, and (b) for contests of minor importance—on an agreement on the part of the applicant, made in the application, to strictly observe the rules of the board granting the sanction, and the terms thereof; penalties and disqualifications to be promptly and rigorously administered.

In short, sanction, supervision and responsibility, or neither; no promoters, other than clubs or State associations; no graft.

MANUFACTURERS.—Hearty co-operation between the association and its contest boards, on the one hand, and the national associations of manufacturers, on the other, both to prevent a multiplicity of contests, and to make the results reliable and valuable.

THE PRESS.—Co-operation with all publicity agencies, by furnishing not merely news announcements as to the activities of the association and its boards, but, all proper information as to the management, policies and finances of the association; and, in return from the press, assistance in preventing publicity concerning fake promotions, uncertain contests, or unsanctioned events.

FINANCES.—A rigorous insistence on the part of the national body that the State associations and clubs perform their financial obligations to the association; sanction and entrance fees and advertising rates sufficiently large to make the racing, technical, touring and publications boards at least self-sustaining; and a complete revision of the fiscal policy of the association before the end of the present fiscal year.

I am not such an idealist as to believe that all of these things can be accomplished, or that even a part of them can be done without some friction and, perhaps, criticism. It may be safely said, however, that, with some such outline of policy before them, the enthusiastic members who now form the executive body and captain the various boards may be able the better to work together for the perfection and efficiency of the association, the maintenance of its prestige and the ultimate achievement of, at least, some of the ideals of the present executive.

WILLIAM H. HOTCHKISS,

December 6, 1907.

President.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

NEWS AND TRADE MENTION.

If the proposed automobile race from New York to Paris is carried out, according to plans now being discussed, the H. H. Franklin Company declares that one of their air-cooled cars will be entered.

Manager Gaston Plaintiff, of the Ford Motor Company, is enthusiastic over the results obtained by his company with delinquent accounts which have been placed in the hands of the collection department of the New York Automobile Trade Association.

Announcement is made from Syracuse that a novel town vehicle has been added to the Franklin line. The new model is fitted with a brougham body on the chassis of the Model G 16-horse-power runabout, and will have inside steering. Wheelbase being only 92 inches, the new model can be easily handled in narrow and crowded thoroughfares. Total weight is only 1,700 pounds.

Announcement is made by Paul La-croix, general manager of the Renault Frères Selling Branch, that it has been decided to open new branches for the sale of Renault cars in various cities in the United States. For Chicago and San Francisco arrangements have already been completed for the immediate opening of branch houses. As an indication of the growth of the Renault firm, it is declared that in 1898 six cars were produced by six workmen, in a plant covering 27,000 square feet; for 1908 orders have been booked for 4,600 cars, workmen number 2,600, and the works cover an area of 450,000 square feet.

"Don't run your car to the limit of its power," says M. B. Hatch, sales manager of the Thomas. "Any car, one, two, four or six cylinders, will run better and longer if its power is not taxed to its utmost. An example of this was recently shown when one of our older models was brought to the factory for overhauling. Although the car had been run many thousands of miles, the entire mechanism of the car was found to be in perfect condition. When complimented on his driving, the chauffeur said: 'It's easy; I take the steep hills on third speed.' The Thomas Company early recognized the truth of this, and were the first in America to use four speeds forward. It is not that the car can't take the steep hills on direct drive, but a driver will use the Thomas third speed when he will not use the intermediate of cars provided with a three-speed transmission."

"Some people cannot get out of doing things from force of habit, it seems," says the Binghamton (N. Y.) *Herald*. "This morning a man riding in one of those fussy little gasoline motor runabouts that hold two people 'fussed' into Collier street and stopped his 'fussy' at the curb alongside the Court House green. Then he uncovered his legs by taking off a heavy fur robe, and threw the robe over the business end of the car in front. Now, maybe that man had been in the habit of driving a horse, and being careful of his beast in cold weather, always covered him with the robe whenever he

stopped. The bonnet being in the front like a horse, perhaps the man thought he would carry out his plan of being kind to his mode of propulsion. Bystanders looked on, expecting him to pat the bonnet on the 'nose' or take out a weight and strap and 'hitch' the car to a telegraph pole or do something else." Phillip Bellows, secretary of the Aluminum Solder and Refining Company, Oswego, N. Y., who was amused at the above, thought it would be an act of charity to call the editor's attention to the fact that water freezes in winter.

The Swinehart Clincher Tire and Rubber Company, of Akron, O., has issued a notice of the Auto Truck Owners' Amalgamated Association comprising the following resolutions: (1) That they will employ only chauffeurs who will exercise good judgment in the handling of their auto trucks. (2) Realizing that truck owners are liable for heavy damages on account of trucks side sluing, striking other vehicles and endangering life and property, they have decided that they will only buy tires corrugated on the tread, provided with a central groove in which a hardened chain can be placed, when conditions demand its use. (3) That they will exercise due care in selecting chauffeurs who know the difference between a good tire and a poor one.

Among the principal exhibits of commercial motor cars at the second annual automobile show of the Dealers' Association of St. Louis, December 14 to 21, will be that of the Logan Construction Company, of Chillicothe, Ohio, which will show a full line of its 1908 product. The exhibit will occupy one of the principal spaces on the main floor and will be made by the company in conjunction with its distributors for Missouri, the Logan Motor Despatch of St. Louis. One of the biggest single shipments of commercial cars ever made in this country will be made at the same time by the Logan company, consisting of fourteen four-cylinder delivery wagons, for the use of the St. Louis *Post Despatch*, which will inaugurate motor delivery throughout the city and its suburbs. The shipment of a train load of commercial trucks to a single company is something unique in the history of the business and will attract wide attention. It proves conclusively the rapidity with which the motor truck business is increasing, and the experience of the *Post Despatch* with motor delivery will no doubt be watched with close attention by all the other big newspapers of the country. The cars are the regular Model "R" delivery wagons, equipped with a 20-horse-power four-cylinder, air-cooled motor, and with a capacity of 1,500 pounds paying load.

NEW AGENCIES ESTABLISHED.

The Dupont Garage Company, 2020 M street, N. W., Washington, D. C., agents for the Columbia and Corbin cars, has taken up the Lozier line for the District of Columbia.

Owing to increasing business, the National Battery Company has taken possession of the entire building at 236 West Fifty-fourth street, New York, one

door west of Broadway. Floor space has been trebled by the change.

The Harrington Garage Company, at Worcester, Mass., has taken over the premises formerly occupied by the Harrington Auto Station, now defunct, and will undertake extensive alterations with a view to increased business. G. H. Phelps, former agent for the Corbin automobile in Worcester County, and F. L. Stanford, are the proprietors.

PERSONAL TRADE MENTION.

E. R. Benson, for some years prominently connected with the Hartford Rubber Works Company, and lately secretary of that concern, has resigned to accept an important position in the sales department of the Cadillac Motor Car Company, Detroit.

From the first day of January, E. Ralph Estep will devote himself exclusively to the Packard Motor Car Company, having accepted the position of advertising manager. From Chicago, where Mr. Estep has plied his facile pen for the past few months in successful publicity efforts for the Detroit firm, a move will be made to factory headquarters.

NEW TRADE PUBLICATIONS.

The car that has no valves has its virtues extolled in the 1908 catalogue of the Elmore Manufacturing Company, Clyde, O. The three models for the coming season are presented in full page illustrations and numerous arguments advanced to prove the two-cycle superiority over the four.

What the manufacturers think of the Richmond car, what makers say of it, and how it should be kept and maintained, is told in the catalogue received from the Wayne Works, Richmond, Ind., where the Richmond car is constructed. Three models are produced, all with four-cylinder air-cooled engines.

United under the same outside wrapper, a couple of elegant booklets have been sent forth from the Electric Vehicle Company's publicity department, at Hartford, Conn., one dealing with gasoline and the other with electric cars. Both are excellent examples of the typographical art, and are further enhanced in value by a colored frontispiece signed by Wildhack.

Eighteen models, from a small four-cylinder town vehicle to a six-cylinder car with limousine body, are included in the large and handsomely produced catalogue of the E. R. Thomas Company, Buffalo, New York. The big series includes, in addition to the output of the Buffalo factory, all the models of the Thomas-Detroit concern, the two being marketed together.

In a sixteen-page illustrated catalogue the George N. Pierce Company presents its models for next season, showing the two six-cylinder models, and the four complete and in detail. Main lines of construction and detail improvements are described and illustrated, and the booklet is embellished by a number of excellent colored engravings of the firm's touring and inclosed cars.

THE AUTOMOBILE

VOL. XVII

NEW YORK—THURSDAY, DECEMBER 19, 1907—CHICAGO

No. 25



IN the transition from the pleasure to the commercial phase of automobiling, naturally slow at first, but destined to develop with increasing rapidity, the taximeter cab comes as the

natural forerunner. Despite numerous points of similarity between the touring pleasure car and the public service vehicle, there are still numerous lessons to be learned by constructors and operators in this line of commercialism. Europe plunged in nearly three years ago with gasoline taximeter cab services which, if not always the most profitable of ventures, have certainly given their promoters valuable experience and useful data for future developments. New York really only became interested in the taxicab movement this year, for though an electric cab service has been in operation for a long time it was not until 1907 that an electric company adopted gasoline and the first company was formed to operate gasoline cabs exclusively.

In the operations of the New York Taxicab Company, which, being the only one in the United States to operate gasoline cabs exclusively, and having 150 in use already and 150 more promised for May 1, may claim to be the most important, there are plenty of interesting features for the ordinary automobilist. The gray uniformed drivers who sit behind the steering wheel of the handy little Darracq cabs now so familiar on the streets of the city have been admitted into a sort of partnership with the directors of the company. The driver receives no wages, his remuneration being 20 per cent. of the net earnings of his cab, the amount being paid to him at the end of each day. In Europe taxicab drivers are generally paid a small wage, then given a percentage on a sliding scale basis, the percentage increasing with the amount of the earnings. The American plan is simpler, and is believed to work better than the foreign one by more completely uniting the interests of driver and controlling company. The method of control by means of the taximeter is too well known to need much explanation. Passengers are called upon to pay the amount registered on the dial of the instrument, the rate of fare being 30 cents for the first half mile, 10 cents every

additional quarter mile, and 10 cents for every six minutes' waiting. The only extras are return fare when the cab is taken above One Hundred and Twenty-fifth street and left, or when the Hudson or

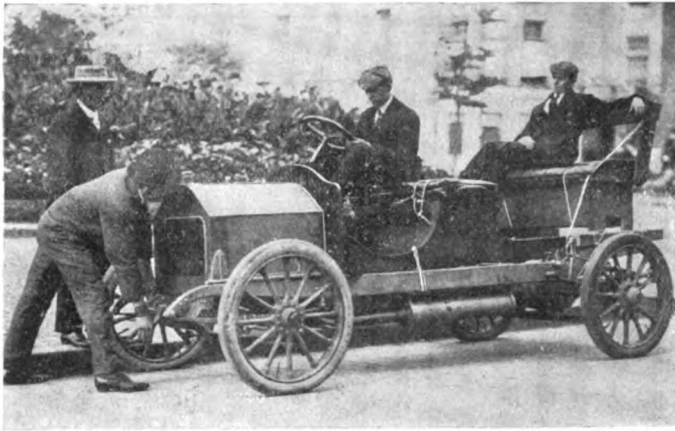
East rivers are crossed. These extras have to be rung up on the dial before being collected, so that overcharging of the public is practically an impossibility, and disputes are unknown.

Naturally, there have been attempts in New York, just as in European cities, to cheat either the passenger or the company, or both; but he is a clever man who can dodge the taximeter. All that the passenger is called upon to pay is the fare indicated on the dial, and as every cent charged thereon is permanently recorded by the instrument and must be accounted for to the company, nothing is to be gained by overcharging, even if that were possible. The only way in which it would be possible to cheat the company would be for the driver and passenger to be in collusion, and for the former to accept an agreed sum without putting his recording instrument into operation. It is a dangerous proceeding, however, for the passenger might be an inspector of the company; further, too great a discrepancy between the total distance covered and the fares received would reveal itself automatically on the tell-tale indicator.

Work and Pay of the Taxicab Driver.

At the Taxicab Company's temporary station on Sixty-second street, Manager Alfred F. Camacho and his assistants have a busy time from 6 to 11 A.M. The first batch of cabs is sent out at 7 o'clock, each driver being given a measured quantity of gasoline, supplied with a daily report sheet, and allotted to a station at some hotel or railroad depot, to which he must report at the end of each journey. At intervals up to 11 o'clock other groups are sent out with a spick and span vehicle, a clean sheet, and a truth-telling recording instrument.

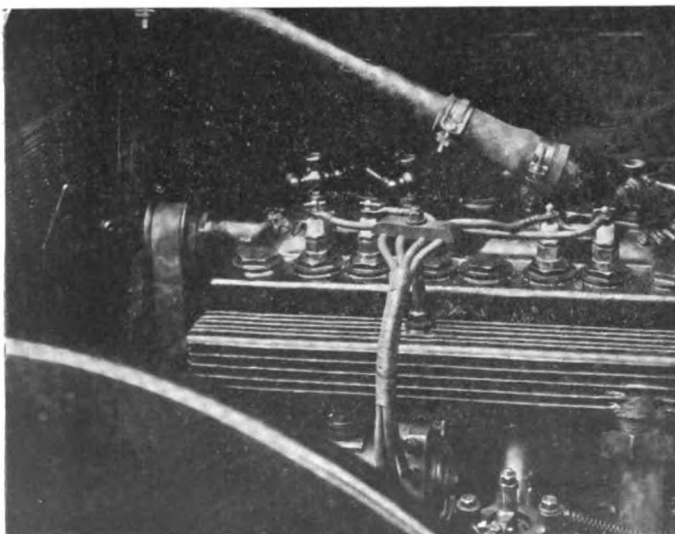
There is a freedom about the life of a taxicab driver which, together with the fairly liberal earnings, makes the profession a popular one, as is evidenced by the long waiting list. Each



"PROFESSOR" CAMACHO DRILLING WOULD-BE DRIVERS.

driver must be on hand to take charge of his cab on the appointed starting hour, must always report to the inspector at the hotel station he is attached to, but is not otherwise bothered with restrictions and regulations. As a newcomer, he is given one of the poorer stations, and gradually advanced to the better ones as he proves his ability. Some system of rotation is observed, so that the same men shall not always monopolize the stations where business is usually brisk. There are no regulations fixing the number of hours a man shall work, though naturally the company would find little need for the services of a man who habitually returned to the central station after three or four hours on the streets. Should he select, however, to go out early in the morning and not return until midnight, no objection would be made, providing he was on hand for the next day's run at his appointed hour.

Immediately on returning to the central station the driver turns in his daily report sheet, showing total takings, and is given 20 per cent. of that sum, minus the amount charged against him for gasoline supplied at cost price. As each cab covers on an average eighty miles a day, though as shown by the records there are some which attain as high as 150 miles in one day, 20 per cent. must give a very satisfactory day's wage, even when allowance is made for returning empty to the hotel station. By only being called upon to pay for the amount of gasoline consumed, economical driving is more directly encouraged than by the European system, under which an allowance of fuel is made on what the company considers to be average running, and is infinitely better than one wasteful London system under which the drivers are supplied free any quantity of gasoline they require. It is found that on an average eighteen miles to the gallon can



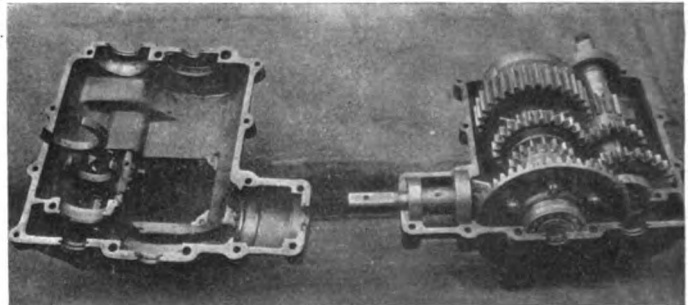
EIGHTEEN HORSEPOWER FROM THIS COMPACT POWER PLANT

be obtained from the four-cylinder engines, each vehicle consuming between four and five gallons per day. Considering the frequent stops and restarts occasioned by city traffic, this is a very satisfactory performance.

Adding tips to the percentages earned, there is probably a good deal of truth in the assertion of some drivers that they have netted \$50 in one week. Even \$5 a day, which is probably not much above the average, is sufficiently good earning for a driver of whom no mechanical experience is required to attract a reliable class of men. Should any defects have been noted during the day's running, they are reported on entering the station and attended to by the repair department; otherwise the cabs receive their ordinary toilette and have oil and gasoline tanks filled in readiness for the next day's business.

How One Tire Maker Vouches for His Product.

There is a valuable lesson which will not be lost upon the private automobilist in the system of payment for tires. Instead of buying tires for all their cars and maintaining stocks, the Taxicab Company has a contract with the Goodrich Tire Company by which payment is made for tires according to mileage. This relieves the Taxicab Company of much responsibility, for whether the tires give long service or break down after a short life, payment is only made on the mileage they furnish. It proves too that tires, erroneously supposed to be the most unreliable



DIFFERENTIAL AND TRANSMISSION IN ONE CASING ON FIXED AXLE.

part of the automobile, can be guaranteed on a perfect commercial basis. What might at first sight appear a complicated system is in reality exceedingly simple. An employee of the Goodrich Company is maintained at the Taxicab depot, every tire is numbered, and a complete record kept of its mileage performance. Naturally this would not be possible without the use of the taximeter. As all the cars have been put into circulation since the spring, it is too early yet to obtain figures regarding their tire mileage, no shoes having yet retired from active service, despite the rough usage the rear ones necessarily have to support through poor driving.

Punctures have no terrors for the taxicab man. If a tire fizzes out, he takes down the Stepney from its brackets on his right hand side, attaches it to the spokes of the wheel by clamps provided for that purpose, leaves the deflated tire in position, and in two minutes is off again. The Stepney, a British contrivance over which Manager Camacho is enthusiastic, consists of a tire mounted on a special rim with lugs for attaching it to the spokes of the road wheel. If a puncture or blow-out occurs when a passenger is in the car, the driver takes him to his destination on the Stepney, then, acting on instructions from the management, hurries to the Sixty-second street station, where the Goodrich man is in attendance. There is nothing, however, in the wheel to prevent it being run with perfect safety for any distance on either front or rear wheels.

The recording instruments are handled in a similar manner, each of the little clockwork boxes being hired from the Popp Company of Paris and maintained by a French expert always in attendance at the central station. In this branch of the taxicab business, also, foreigners have at present a monopoly, all the in-

struments used in this country being either of French or German origin, the former largely predominating.

"Green" Drivers Are the Curse of Taxicab Companies.

In any automobile cab undertaking the operating company is largely dependent on the skill or otherwise of its drivers, particularly during the first few months of operation. Even in France, where every driver of an automobile must hold a government certificate, the shareholders have had to bear the loss of scores of ruined gears and damaged cars due to reckless driving. Manager Camacho can tell stories which would be laughable, if they were not so costly, of young men provided with a badge from Albany and a hackman's license, who could be fooled with advice on crankshaft valve lubrication, and had the ability to put sets of gears out of business in much less time than any machine shop could produce them.

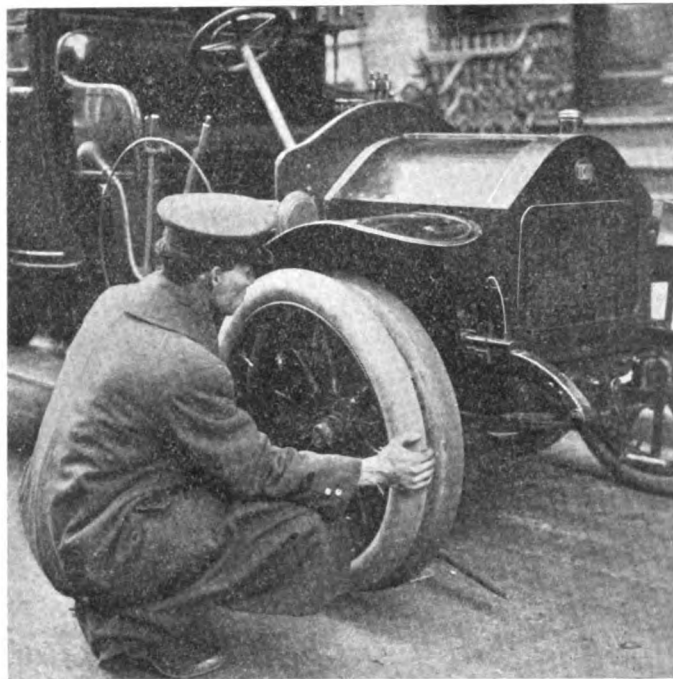
When the model station has been completed at Fifty-seventh street, between Eleventh and Twelfth avenues, a more complete system of breaking in green hands will be adopted than is possible now. Meanwhile, elimination is being carried on, those drivers who run out of the garage with a grinding clash of gears, or who fail to keep out of accidents, being asked to tender their resignation. Lubrication, simple as it is on the Darracq taxicab, appears to be beyond the comprehension of a few of the novices who are elevated to the seat behind a steering wheel, with the result that the engine suffers. One of the driving rules declares that the men must keep their engines smoking, and as there is, fortunately for the company, no law in New York against smoky exhausts, the majority of the drivers are generous in the use of lubricating oil.

Though a taxicab might do good service as a touring machine, the latter is not the best type for economical exploitation in city work. Either because they failed to realize the limitations of the average touring car for this special work, or because they were too busy to pay attention to the development of a new type, American firms have allowed the foreigners to obtain a considerable lead in the matter of taximeter cabs, with the result that both the New York Taxicab Company and the New York Transportation Company have gone abroad for their vehicles. The former company employs the special Darracq cab exclusively, importing them complete with body and recording instrument.

Compactness, ease of handling, and interchangeability have been sought in the new design. By producing the four cylinders, of 3.3 by 3.9 bore and stroke, in one casting it has been possible to obtain one of the most compact power plants on the market; the arrangement, too, allows of considerable simplification of the inlet, exhaust, and water piping, the exhaust manifold being cast integral with the cylinder block and equipped with radiating flanges. Water connection merely calls for two pipes, one connecting to the head and the other to the base of the cylinders. Ignition is by high tension Bosch magneto carried in an accessible but out-of-the-way position on the crankcase under the exhaust manifold. Sparking point is fixed, but may be retarded for starting by means of a trigger near the cranking handle.

Driving thus reduces itself to the action of steering, operating a clutch, brake and accelerator pedal and a throttle on the steering wheel. Gear changing is by means of a side lever operating in a gate sector. In addition to the switch and the pressure feed lubricator on the dashboard, there is a small lever by means of which the exhaust gases can be made to pass through a foot-warmer in the floor of the cab before reaching the open air. By reason of the short wheelbase and the narrowing of the chassis in front, the cabs are exceptionally easy to handle in traffic, and can turn around in an ordinary crosstown street of New York City without use of the reverse. When this series was designed, turning had to be given particular attention on account of the rigorous regulations of the London police on this matter.

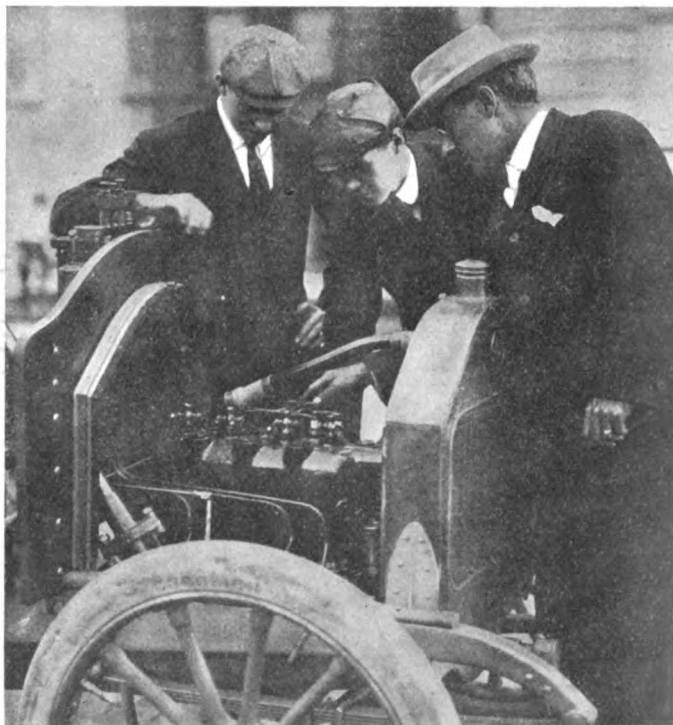
Simplicity and interchangeability are believed to have been attained by uniting the differential and gearset in one housing carried on a solid fixed axle. The live axles, from each end of the gearcase, pass through the bored ends of the fixed axle to the



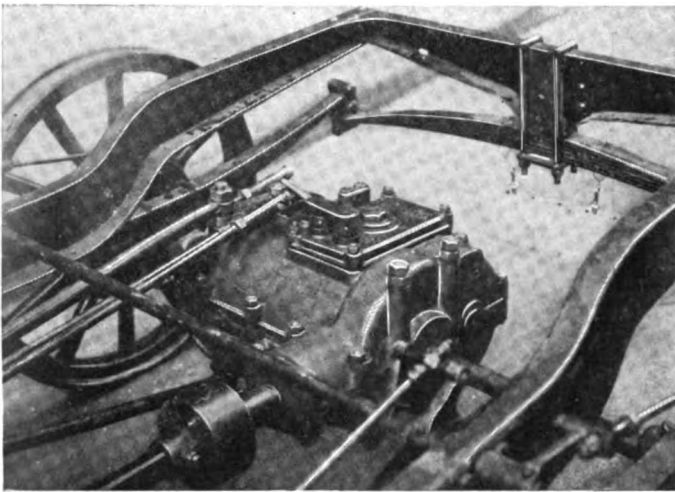
A PUNCTURE, TWO MINUTES' DELAY, AND OFF AGAIN.

road wheels. Dismounting the live axles is quickly accomplished by taking off six nuts on the hub of the road wheel and drawing the shafts out; to dismount the casing it is disconnected from the driving shaft, the three changespeed and one brake connecting rods are disconnected and the four retaining bolts by which it is secured to the fixed axle are withdrawn. When it is necessary to make repairs on the transmission the case can be taken down and another one put in its place with a loss of probably less than an hour. Three speeds forward and one reverse are provided, with direct drive on the high. The internal expanding foot brake is carried on an extension of the lay shaft outside the casing. The emergency brakes, operated by a side lever, are also of the internal expanding type on the road wheels.

Immunity from repairs, or at any rate a reasonable freedom



EXPLAINING SOME OF THE ELEMENTS OF IGNITION.

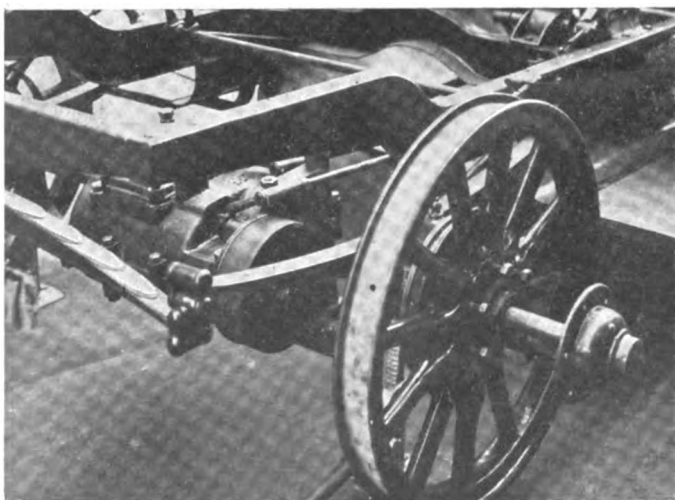


TRANSMISSION, DRIVE AND BRAKES ALL GROUPED TOGETHER.

from breakdowns, is of such vital importance that it will be interesting to note the experience of cab companies in this respect. It is rather early to form an opinion, for the New York Taxicab Company only commenced operations this year, but their report is that the vehicles are thoroughly satisfactory and will not entail unreasonable repair expenditure when undesirable drivers have been weeded out. A glance round the temporary repair shop at Sixtieth street shows plainly that unskilled driving is chiefly responsible for laying up cabs. A few of the more serious accidents have been caused by collisions with trolley cars and other vehicles—it is declared that all the users of the streets are not lovers of the taxicab, and will gladly take the opportunity of putting the small automobiles in a tight corner—but the majority are out of running through gears ground down as the result of the most unskilled handling. When all arrangements are completed for the importation of parts and the company is installed in its model station now under consideration, it is calculated that never more than 5 per cent. of the cabs will be held up for repairs, this including cases of accident.

HORSE DRIVERS FEEL AUTO COMPETITION.

New York's horsecab drivers went on strike for a period of twenty-four hours this week. They had demanded an increase of wages to \$15 a week for seven days' work, with twelve hours a day off duty. The officials of the men's unions finally agreed to accept \$15 with ten hours off out of each twenty-four and two additional hours for dinner and supper. Taxicab competition is declared to have made the horsecab business unprofitable.



SHOWING HOW LIVE AXLE IS WITHDRAWN FROM GEAR BOX.

NO CHAINS IN GREATER NEW YORK PARKS.

"Can't come on here with them chains on," said the bicycle policeman on duty last Monday morning at the entrance to Riverside Drive to an astonished automobilist who was bound uptown. There was some show of remonstrance at first, but the man at the wheel was soon made to see that resistance was useless, for the edict had gone forth by the Department of Parks that from that day forth automobiles equipped with tire chains must keep off many of the roads they most liked to frequent.

The Board of Parks had been struck with the fact that the highways under its control were in a deteriorating condition and immediately sent out the following order:

"No automobile or horseless or other vehicle wearing chains over the tires of their wheels shall enter the public parks or the traffic roads under the jurisdiction of the Board of Parks, without permission of the commission having jurisdiction. This rule and regulation shall take effect December 16, 1907."

As the commissioners' jurisdiction covers Central Park and nine of the most popular drives in Manhattan, thirteen parkways and drives in the Bronx, and all the important drives and macadam roads in Brooklyn, its effect on automobilists was considerable. Those who were unaware of the new order until



C. H. TANGEMAN IN THE NEW HOL-TAN RUNABOUT.

they were peremptorily told to stop—and they appeared to be many—had to choose between continuing on the selected highways without chains or choosing another route; the latter was more generally adopted.

One well-known automobilist, commenting on the regulation of the Board of Parks, appears to have voiced the sentiments of the vast majority of those owning and driving cars when he declared as follows: "The action of the authorities in barring tire chains from practically all the parkways in Greater New York is preposterous. I maintain that a half-inch toe calk on a horse driven into the pavement under the momentum of the weight of a 1,200-pound horse is necessarily of much greater damage to the roadway than the continuous tread of an automobile. Apart from the debatable question of damage done, what is a parkway for—to look at or to use? If it is built for use, then there is no reason or any justice in an arbitrary discrimination in favor of the horse. Why not put mufflers on the horses and require pedestrians to use tennis shoes or close the park entirely except for the use of city officials?"

It will be noticed that no mention is made in the regulations of any other anti-skidding device than chains. Steel studded tires and the numerous other appliances used on the automobiles with a view to overcome the tendency to skid on greasy surfaces are left unmolested.



GENERAL VIEW OF THE BERLIN "AUTOMOBIL-AUSTELLUNG," OPENED OFFICIALLY BY PRINCE HENRY ON DECEMBER 5.

GERMANY'S NATIONAL SHOW.

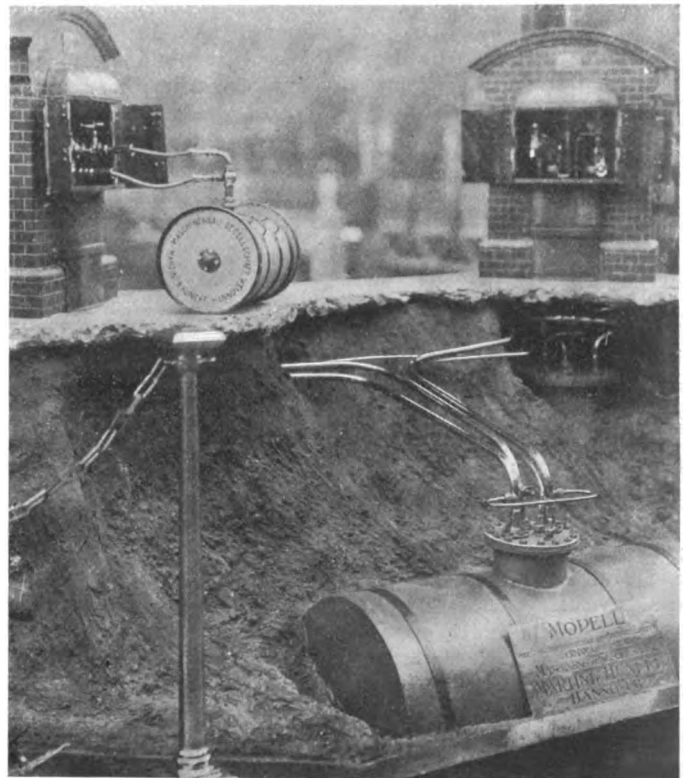
BERLIN, Dec. 5.—In keeping with its aggressive policy of fostering the industry in every possible way, the German Government has always officially recognized the automobile show and royalty's gloved hand usually presses the button which nominally throws the brilliant collection of the best that the Fatherland and many of its competitors can show in the way of automobiles and accessories open to all who have the price of admission. No less a personage than the Kaiser himself inaugurated this custom, but for the past two years his place has been taken by his personal representative, Prince Henry, who did the customary honors to-day. The ceremony took place at 11 o'clock this morning, when the show was officially declared open.

The exhibits are located in "Exposition Hall"—a large building that lends itself to the purpose well and which is situated close to the Zoological Garden, in the very best quarter of the city. While German makers, as well as a German flavor, predominate, foreign cars are well represented, exhibits both from the Paris Salon and Olympia having been sent here intact. This is responsible for much of the striking contrast that is evident among the exhibits, for as a rule the home manufacturers have not gone to the expense of preparing elaborate booths. One of the chief distinguishing features of the Salon exhibits was their lighting effects, and, transplanted to this atmosphere, they are almost glaring in their brilliancy by comparison with those among which they are found.

But as a whole the show is representative of the German industry, as well as of the extent to which France, Belgium, Italy and England are interested in Germany as a market for their surplus products. Most of the prominent makes from each of the countries in question is represented, but there seems to be more or less of a feeling that competition is getting very keen for the Continental outsider. This, however, has not discouraged the American maker, and the Ford cars, which are becoming equally as well known abroad as at home, have been the object of as much attention here since the opening as they are said to have attracted at the Paris Salon a few weeks ago.

Details expresses in a word the technical end of the show, for

changes are confined practically without exception to those small matters of design and construction that generally escape any but the trained eye, and it would require a volume to attempt to describe the many small changes here, most of them of no particular moment, and some of them probably of doubtful value. An excellent example of the thoroughness of the Teuton is shown in the preparation of one of the exhibits of a safety system of fuel handling, which is illustrated by one of the photographs.



MODEL EXHIBIT, SHOWING MANNER OF INSTALLING FUEL SYSTEM.

"SHALL SALON BE HELD ANNUALLY OR EVERY OTHER YEAR?"

PARIS, Dec. 10.—Shall there be a Salon in 1908? is the question which is agitating automobile France. Immediately the doors of the Grand Palais had been closed the Committee of the Chambre Syndicale de l'Automobile, which with the Automobile Club of France is responsible for the annual demonstration, met in Paris and decided to put the following question to all its members: "Shall the Automobile Salon be held annually or every two years?"

It will be several weeks before a decision is arrived at, but meantime those most interested are keenly discussing the pros and cons of the question, and public opinion is being turned into fixed channels. The enormous expense of annual shows as at present organized, their unsettling influence on trade, and the necessity for creating annual models, whether there is any room for improvement or need of change or not, have caused manufacturers to ask if it is not possible to break away from the annual exposition.

The Marquis de Dion, vice-president of the Automobile Club of France, declares that annual shows are a necessary evil, and that their burden is especially heavy upon the more important firms. Judging it from a sporting standpoint, or the viewpoint of the automobile user, it must continue to be held. To abandon it for one year would simply be to transport the automobile market to another country.

Rene de Knyff, of the Panhard Levassor firm, is strongly against a show in 1908, if an agreement can be arrived at with

the Royal Automobile Club for the suppression of the British show also. This he believes to be quite possible, for English firms are no more enamored of an annual exhibition than are the leading French houses.

Emile Mors, of the Mors firm, is of practically the same opinion. If a determined effort is made by French makers to obtain an automobile show at intervals of two years, he believes that the British authorities will join them.

Henry Brasier declares emphatically that the industry is too advanced and types too well developed for there to be any necessity for an annual show.

It will probably be found that the question will resolve itself into obtaining an agreement with England, either for alternate shows in Paris and London or for shows every two years in both capitals, dates being arranged so as not to clash. Considerable rivalry has sprung up between London and Paris during the past three years, the former city, while admitting her inability to organize such a spectacular display as that at Paris, making every effort to wrest the business supremacy from her rival. If only the best interests of the industry were considered, doubtless some agreement would be arrived at whereby the Grand Palais and Olympia would be closed in 1908; but international jealousies must be reckoned with, and should the national body decide to remain idle next year it might not be easy to prevent some less responsible body uniting sufficient makers to hold a small but mischievous exhibition.

TOURING RULES MORE DIFFICULT THAN RACING CONDITIONS.

PARIS, Dec. 7.—An international formula for touring competitions appears to be more difficult of attainment than the same thing for racing events. At the meeting of the International Association of Recognized Automobile Clubs, held at the Automobile Club of France, recently, the matter was discussed, but no other result arrived at than to refer the matter to a special committee. The international racing rules, adopted at the conference at Ostend in July, were confirmed, and the suggestion put forth, but apparently not acted upon, that they should be made obligatory.

The Ostend meeting, attended by representatives of the national clubs of England, France, Germany, Hungary, Italy, Spain, Sweden, Switzerland, Holland, Portugal, Roumania, Belgium, Denmark and Austria decided on a maximum bore of 155 millimeters for four-cylinder engines and a minimum weight of 1,100 kilos, without oil, gasoline, tools and spars tires.

As this has been confirmed by every nation except America, the Italian delegates are of opinion that its application should be made obligatory and not optional. European automobilists are at a loss to understand why America was not represented at the Ostend and Paris conferences. One of the two foreign A. C. A. delegates attended the meeting held after the French Grand Prix of 1906, but since then the United States has been dead to international automobile deliberations.

A project is now before the International Committee to appoint an International Racing Board from its members, to deal exclusively with the regulations for and conduct of international speed events.

Although England has not adopted for her only speed event the international rule she was so largely instrumental in framing, and America, according to cable reports received, practically adheres to the obsolete Gordon Bennett conditions, races under the 155 millimeter rule will be the feature of the coming season. Doubtless the adoption of a four-inch bore by the Royal Automobile Club of Great Britain can be accounted for by the strong

feeling existing in England against racing on the highways. Britishers have always tried to convince themselves that the Tourist Trophy competition was a touring event; when they abandoned the fuel consumption rules for a limited bore they endeavored to keep to vehicles of about the same power. To have adopted the international rules would have announced the race as a pure speed test, and doubtless diminished the chances of obtaining a course in the Isle of Man. Their policy will make the race a local and not an international event.

In addition to all the French firms making a practice of competing in international races, this year several who have not been at the starting line for some time will build cars under the 155 millimeter rule. Among them are mentioned Mors and Charron, one of the cars of the latter firm to be handled by Venus, mechanic of the late Albert Clement.

Belgium and England will help to increase the ranks, while Germany will be represented by Benz, in addition to Mercedes. All three Fiat cars are already on the road, and at least half a dozen French firms are sufficiently advanced to be able to test out very early in the year.

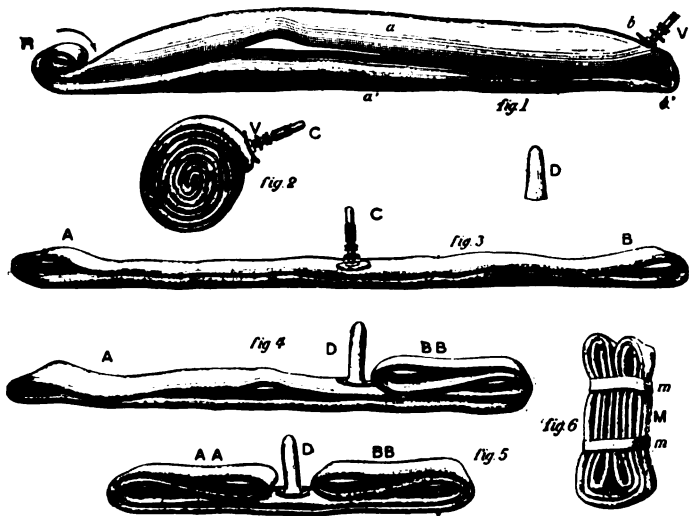
Contrary to previous years, the Ariel firm of England has produced its Grand Prix racers already and commenced road tests. The cars have four-cylinder engines of 150 millimeters bore, which it is calculated will give 125 horsepower at 1,500 revolutions. Other features are high-tension magneto, disk clutch, four speeds and reverse by sliding gear transmission, and shaft drive. Deasey, another Britisher building under the 155 millimeter rule, is declared to have his cars ready, but particulars are not available. Continental makers are not anxious to give details.

A meeting has been held between the Racing Board and the municipal authorities of Dieppe regarding the adoption of the Dieppe circuit for next year's Grand Prix. No official decision has been arrived at, but it is looked upon as almost certain that the same course will be used, the Dieppe district being willing to give a subsidy of \$10,000.

CORRECT MANNER OF FOLDING AN INNER TUBE

NUMBERS of automobilists, especially among beginners, do not know how to pack inner tubes or how to carry them on their cars, writes Baudry de Saunier in *Omnia*. To fold a tube in the most satisfactory manner the valve should first of all be removed in order that the air may easily escape during the later operations; it is impossible to fold with valve in.

The tube should then be arranged, as shown in Figure 1, the operator placing himself at R. This work should be done on a table, a plank, or any flat surface, providing it is free from oil



SHOWING THE VARIOUS STEPS IN THE PROCESS OF FOLDING.

or any liquid, and especially from gravel or grit. If no table is available, it can be done by holding the tube against one's chest, but the operation is then more difficult and the operator's clothes are not improved.

Whatever may be the support, the tube should be rolled up as tightly as possible, beginning at the end farthest removed from the valve. The air is thus partly driven out through the open valve tube; the emptying of the tube, however, is not complete, owing to the bending of the tube at *bb* at the foot of the valve. While holding tightly the rolled part, *R*, with the left hand, draw to the rear from time to time the opposite end, *V*, to allow the imprisoned air to escape. Continue to do this until the tube is completely rolled, as shown in Figure 2.

Still holding the tube as tightly as possible, insert the valve and put on the cap *C*, screwing up as tightly as possible with the fingers, but not on any account using the pliers. The inner tube is now completely flattened, and it should always be brought into this condition (if it is not so already) every time it is desired to mount it on a wheel. When perfectly flattened the mounting of a tire is enormously simplified and at the same time it is largely preserved from nipping or blows from a lever or other tire tool. The results are well worth the little labor.

Next open the tube out again, as shown in Figure 3, the valve being in the center and uppermost. If you have any real care for your tires you will cover the valve with a rubber finger, *D*, similar to the rubber fingers sold at all drug stores. If one of these is not available you will make one out of a piece of cloth. This covering protects the tire against the ill effects sure to arise when the valve is allowed to rub against the rubber.

Now fold each end of the tube inwards towards the valve, as shown in Figures 4 and 5, forming the flat package, *M*, which should be secured by a couple of tapes, or, better still, by a couple of rubber bands made out of strips of an old tube.

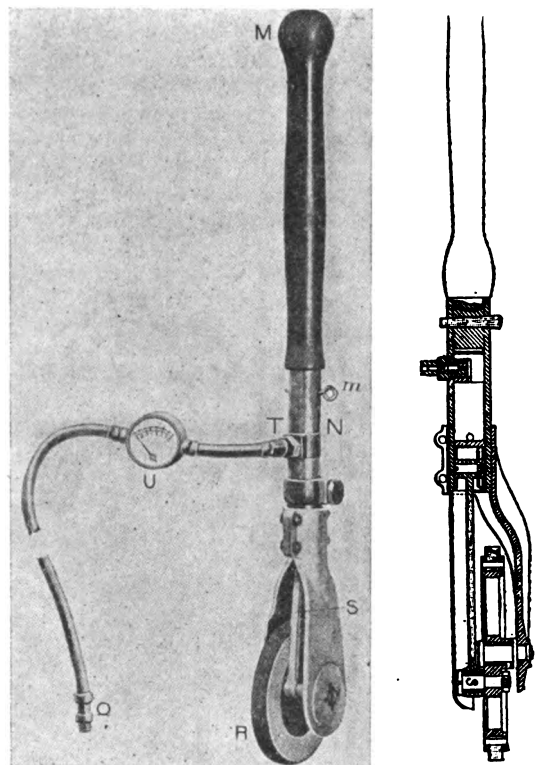
If the tire is punctured or without valve, it is useless to attempt

to fold it, for although you may drive out the air it will enter again by the hole or through the valve as soon as pressure is removed. Thus, as soon as it has been rolled as shown in Figure 2, fasten it securely with tape in order that it may not lose its shape, and leave it in that condition. The particular advantage of this is that it enables at a glance to distinguish between perfect and imperfect tubes, the perfect ones being folded and the punctured ones rolled.

Each tube should be placed in one of the waterproof bags specially made for that purpose. This is only a detail, but it is a very important one. The bag protects the tube better than any other kind of packing, preserving it from contact with tools, or other rough objects, and keeping it out of the way of oil and water. If a handful of French chalk is thrown into the bag the tube automatically chinks itself and prepares itself for being mounted within the tire. If no bag is available, the tube should be wrapped in a piece of clean cloth and secured with a string. When on the road carry your packed tubes in a separate box and not in the common compartment where oil cans and tools struggle for the most comfortable position.

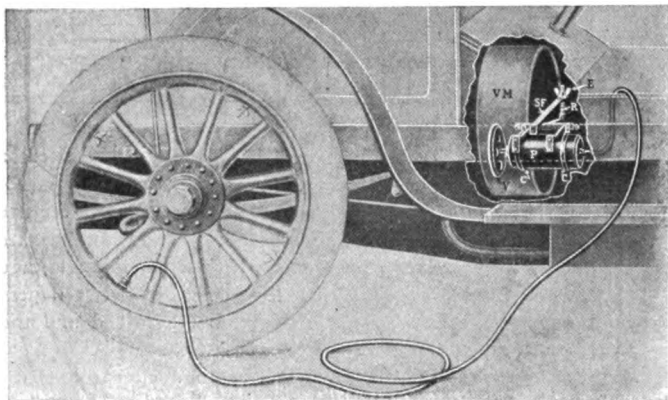
TWO SUBSTITUTES FOR THE TIRE PUMP.

Substitutes for the tire pump have generally been put on the market in the form of mechanical devices designed to be operated by the engine; their success has only been partial, users as a rule being unwilling to accept the responsibility of the extra complication. Compressed air tanks have met with some success, and doubtless will come into general use when minimum weight has been attained. A new principle has been adopted



PORTABLE TIRE PUMP OPERATED FROM ENGINE FLYWHEEL

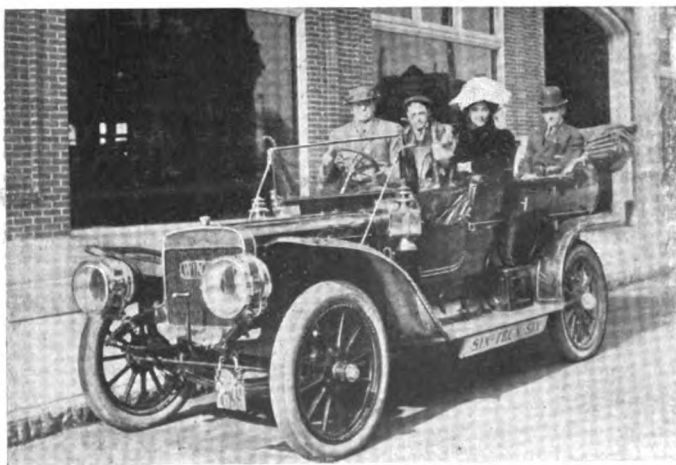
in an automatic inflator produced by Grovelle & Arquembourg, the French firm of radiator makers. Here the engine is employed for inflation, but there is no extra fixed mechanism on the chassis and simplicity is carried out to a fine degree.



FIXED TIRE PUMP DRIVEN BY FRICTION FROM FLYWHEEL.

In the illustration, which has been reproduced from *Omnia*, the complete apparatus is shown ready for use. It consists of a small portable pump, the piston of which is united to the leather faced flywheel *R* by the connecting rod *S*. *M* is merely a wooden handle connected to the body of the pump by the pin *m*. A short length of piping, *T*, carrying a pressure indicator, *U*, is connected to the body of the pump at *N*. At the extremity of the pipe a length of rubber tubing is connected up at *Q* and carried to the tire valve. To put the instrument into operation all that is necessary is to connect the tubing to the valve, lift out the floor boards and place the flywheel *R* on the flywheel of the engine. When the required pressure is shown on the indicator the operation is stopped, the wooden handle disconnected, and the pump stowed away in the tool box. All that is necessary to keep the pump in condition is to take down the piston from time to time and spread a little vaseline over the rings.

Although taking its power from the flywheel of the motor, the Vadam mechanical pump, another European production, is of quite a different order. As will be seen from the illustration reproduced from *The Car*, it is attached to the frame in such a way that the wheel of the pump is driven by friction from the engine flywheel. Attachment is merely a matter of bolting a bracket of 1 inch by 1-2 inch wrought iron to carry the inflator and above it the support for the adjusting screw, the leather faced wheel being brought into or out of engagement with the engine by means of a simple thumbscrew arrangement. The pump itself consists of eight cylinders containing four double pistons, which are situated round a center disk grooved to engage with a roller fitted to each set of pistons. The disk is directly driven on ball bearings by the driving wheel. With a sufficient length of piping, connection is made to any wheel.



"BOB" FITZSIMMONS AT THE WHEEL OF THE WINTON.

The celebrated ex-champion pugilist is a devoted admirer of the Winton "Sixteen-Six." Immediately back of Fitzsimmons is seated John S. Johnson, famous as a cyclist and skater, who is now connected with the Winton Branch at Pittsburgh. **A. J.**

THE AUTOMOBILE CALENDAR. AMERICAN.

Shows and Meetings.

- Dec. 14-21.....—St. Louis, Mo., Jai Alai Building, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association. D. M. Strauss, manager.
- Dec. 28-Jan. 4.....—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, manager.
- Jan. 14-18.....—Hartford, Conn., Foot Guard Hall, Hartford Automobile Dealers' Association.
- Feb. 1-8.....—Providence, State Armory, Automobile Show. Frank M. Prescott, manager.
- Feb. 10-15.....—Detroit, Light Guard Armory, Tri-State Automobile and Sporting Goods Association, Seventh Annual Show.
- Feb. 17-22.....—Cleveland, Central Armory, Annual Show, Cleveland Automobile Dealers' Association. George Collister, manager.
- Feb. 21-29.....—Newark, N. J., Orange A. C. Building, New Jersey Automobile Trade Association and New Jersey Automobile and Motor Club.
- Mar. 7-14.....—Boston, Mechanics' Building and Horticultural Hall, Boston Automobile Dealers' Association. Chester I. Campbell, manager, 5 Park Square.
- Mar. 9-14.....—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dal H. Lewis, manager.
- Mar. 21-28.....—Toronto, Canada, St. Lawrence Arena, Automobile Show. R. M. Jaffray, manager.
- Apr. 5-12.....—Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Motor Boat Shows.

- Jan. 1-8.....—Chicago, Coliseum, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 25-Feb. 1.....—Boston, Mechanics' Building, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Feb. 3-8.....—Buffalo, Convention Hall, First Annual Power Boat and Sportsman's Show, auspices of Buffalo Launch Club. Dal H. Lewis, manager.
- Feb. 20-Mar. 7.....—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsman's Show. J. H. Dressel, manager.

FOREIGN.

Shows.

- Dec. 5-22.....—Berlin, Germany, Automobile Show.
- Dec. 21-Jan. 2.....—Brussels, Show, Palace of the Cinquantenaire.
- Jan. 18-Feb. 2, '08.....—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.
- Mar. 21-28.....—London, Agricultural Hall, Cordingley's Show.
- May 6-20.....—Moscow, Russia, International Automobile Exposition, Automobile Club of Moscow.

Races, Hill-Climbs, Etc.

- April 1-13.....—Monaco Motor Boat Races and Motor Boat Exhibition, International Sporting Club of Monaco.
- April 25-May 25.....—Industrial Vehicle Competition, Automobile Club of France.
- May, 1908.....—Paris, Competition for Agricultural Automobiles, auspices of "L'Auto." (Exact date to be announced.)
- May 10.....—Sicily, Targa Florio, Automobile Club of Italy.
- June 1-18.....—Reliability Trials for Pleasure Cars, Automobile Club of Great Britain.
- June 9-17.....—Touring Competition for the Prince Henry of Prussia prize, Germany, Imperial Automobile Club of Germany.
- June 20-July 5.....—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
- July 13-17.....—Ostend, Belgium, International Race Week, Automobile Club of Ostend.
- July 20-30.....—Ardennes Circuit Races and Coupe de Liedederke, Automobile Club of Belgium.
- August, 1908.....—France, Coupe de la Presse, Automobile Club of France. (Exact date to be announced.)
- August 29-30.....—France, Mont Ventoux Hill Climb, Vauclussen Automobile Club.
- September 1-8.....—French Volturette Contest, L'Auto.
- September 27.....—France, Chateau-Thierry Hill Climb, L'Auto.

PRINCIPLES OF SPEED AND DISTANCE RECORDERS

By CHARLES B. HAYWARD.

If he were to give it a thought, the why and wherefore of the neat little instrument adorning the dashboard of his car that mutely indicates speed and mileage would considerably puzzle the average man to whom mechanics are a riddle. But he seldom lets it bother him—any more than does the train of action in his watch which transforms the pent-up energy of the main spring into the accurately measured beats of the second hand,

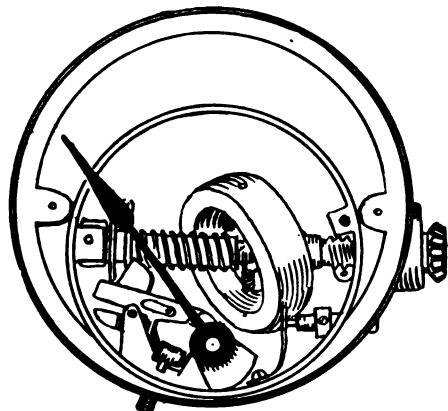


FIG. 1.—Internal view of the Jones Speedometer, showing the essentials of a typical centrifugal instrument.

and if interrogated on the point, doubtless his answer would consist of "Oh, something like the inside of a watch." So far as finish, delicacy of its component parts, accuracy in operation and a few kindred qualifications are concerned, a good speedometer may be correctly compared with a watch, but there the chief difference between the two is to be found in the fact that the watch is an entirely self-contained piece of mechanism, while all speed and distance recording instruments naturally require power from an external source for their operation, in view of the fact that they do not operate independently, but merely as a part of the vehicle to which they are attached. Familiarity with mechanical movements and principles makes it evident that such a device may be constructed with any one of several differing principles as its basis of action, but in the majority of instances that of the time-tried ball governor of the steam engine has been utilized as the groundwork, so to speak. In other words, centrifugal force. Just as the elevation of the two solid spheres of metal of the familiar two-ball governor is made to cut off the steam and reduce the speed of the engine when the latter exceeds a predetermined limit, so the tendency of any suspended weight

to fly away from its point of suspension, or attachment, when revolved at a high rate of speed, provides the actuating force which moves the pointer of a great many of the speedometers on the market to-day. Instead of taking the same form as that of the steam-engine governor, however, the chief moving part of the speed-indicating instrument is generally made annular in shape, taking the form of a wheel with a very heavy rim and but a single pair of spokes passing diagonally across its center and serving to pivot it on the shaft, which is directly

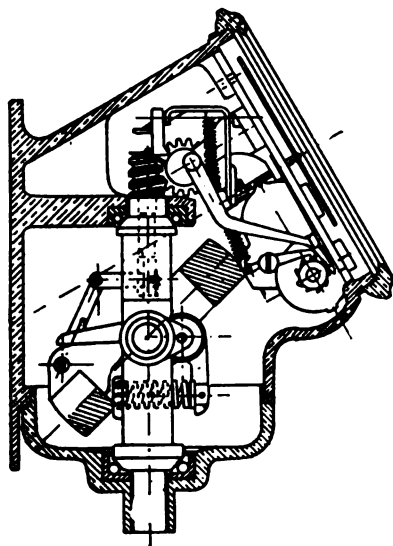


FIG. 2.—Cross sectional elevation of the Index Speed Indicator, illustrating the arrangement of a vertical centrifugal type.

driven from the forward wheel. As is the case with the watch, here the comparison between the governor and the speed indicator also comes to an end, because the conditions under which

the two devices are designed to operate are about as widely separated as the poles, and the chief difficulty in designing an instrument that would accurately record speed under the rough treatment inevitable when placed on such an unstable platform as the automobile was found in the shocks to which the latter is continually being subjected when run over rough roads at high speeds. To control the centrifugal force set up by the heavy annular weight when revolving at high speed, a stiff restraining spring is provided. Against this the weight must act before it can move the indicating pointer on the dial. As the speedometer is usually "geared up," that is, designed to run at a much higher rate of speed than the operating gears are attached, the instrument generally attains

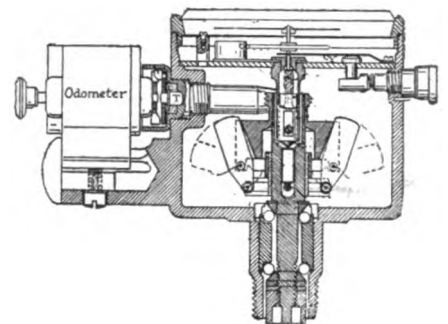


FIG. 3.—Part sectional view of the Loring Speed Gauge, which is of the vertical type, closely resembling a ball governor.

sufficient momentum in its heavy revolving member to accurately indicate speeds as low as five miles an hour, though, of course, it begins to act long before that figure is reached, and as the acceleration of a heavy, rapidly moving body is uniform, the movement of the hand is gradual and not jerky, as might at first appear to be a necessary sequence. To transmit the movement of the revolving member in one plane to that of the indicating hand, which lies in another, various forms of intermediaries are employed. These sometimes take the form of an arm moved by gearing, though this is one of the points in which some of the instruments of the centrifugal type are distinguished by their simplicity and others by their complication. It will be evident that inertia and momentum are two factors of great importance that the designer of the speedometer must figure with when calculating the size of the parts of the instrument, as the latter's components must be neither difficult to get under way nor hard to bring to a stop, once in movement. For this reason the parts are of a size and weight that make the comparison to the mechanism of a watch justifiable by the casual observer.

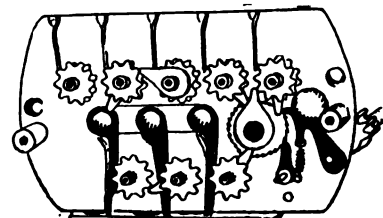


FIG. 4.—Details of the mileage-recording mechanism of the Jones Speedometer, having trip and season dials.

Credit must doubtless be given to the Jones Speedometer as the pioneer in its class, and as the principle upon which it operates is that of a number of other instruments since placed on the market, a detailed description of its working will apply, in large measure, to that of the others, barring a few details that will be noted later. It may most aptly be designed as a

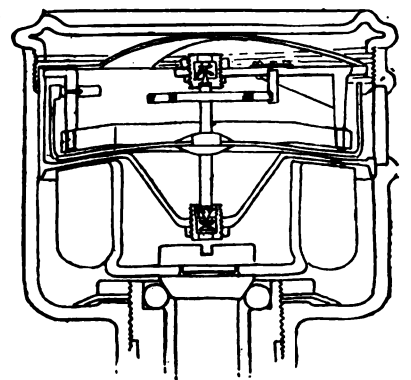


FIG. 5.—Interior of the Warner Auto-Meter revealed, showing the relative positions of the magnet and field ring.

horizontal centrifugal type, as the shaft and ring governor are placed in that manner, the drive being taken through the small bevel pinion seen at the right-hand side. The cut, Fig. 1, illustrates the heavy brass ring, which constitutes the chief factor in the operation of the instrument in the position it assumes when stopped, the hand being at zero. This ring swings freely on pivots mounted on the horizontal spindle driven by the bevel

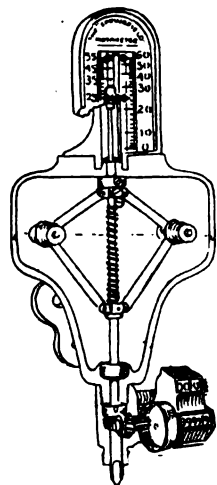


FIG. 6.—The Springfield Motormeter—a true ball governor.

gear, while connected to the ring by a light steel link is a sleeve, free to slide along the spindle. The left-hand end of this sleeve is flanged to form a collar, which is connected to the counterbalanced pointer through the levers shown, and which serves to transmit the movement of the ring at different speeds to the latter.

When revolving, the brass ring has a tendency to assume a position at right angles to the spindle, thus drawing the sleeve mentioned along the latter against the action of the controlling spring, so that the finger engaging with the collar on the left-hand end of the sleeve is carried with it. This part of the mechanism is not visible in Fig. 1, but it in turn engages the peculiar-shaped cam shown directly beneath the collar. The cam in question is pivoted on the sliding lever shown, and this in turn is attached at its right-hand end to a small crank on the indicating hand, the pointer spindle being controlled by a hair spring.

It will be evident from this that the faster the spindle turns, corresponding to an increased speed on the part of the car, the greater will be the tendency of the brass ring to take up a position at right angles to its shaft. But, bearing in mind the varying tension or compression of a spring with an increase in its load, the question will naturally arise, "How can the instrument be made accurate at all speeds over a range from a few miles an hour up to a mile a minute?" In the first place, the dial is calibrated according to the varying control of the spring at different speeds, the divisions accordingly not being uniform over the entire scale, and, secondly, an auxiliary spring is provided. This second spring is carried on the pivots of the ring, and comes into action when the ring assumes an intermediate position; it is not visible in the illustration.

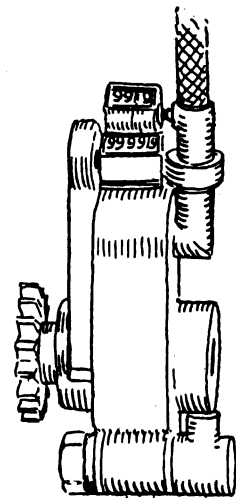


FIG. 7.—The Lipman combined Electric Generator and Odometer.

The mechanism of the mileage recorder of the Jones Speedometer is illustrated in Fig. 4. This device is driven from the main spindle carrying the brass ring by means of a short vertical shaft having gear-teeth cut on its lower end, and engaging with a worm at its upper. The upper end of this vertical shaft carries a pin, set eccentrically, which operates the counting mechanism through a pawl acting on a ratchet wheel. The latter carries a finger, which in the course of its rotation operates the upper train of five intermittent gears. These gears are accurately maintained in position by means of a spring fastened to the plate, the object of this spring being to throw the gears over the center quickly and index them uniformly, so that the figures indicating the mileage always stand centered in the dial openings. The lower train of intermittent gears is also actuated by the finger on the ratchet wheel, and carry the figure disks for the trip mileage. When it is desired to reset this part of the indicator at zero, pressing a small plunger shown protruding through the lower part of the case in Fig. 1, forces the pawl out of engagement, allowing this gear train to be acted upon by the spring, and turning each

figure disk until halted by the stop springs on the back of the device. The maximum speed-indicating device consists of a dummy hand and small pin which is engaged by the regular pointer and carries it along to the figure represented by the highest speed attained. As it is carried around the dial, the dummy hand winds up a small hair-spring, but this is prevented from returning the hand to zero when the pointer falls back, by means of a second spring. The latter may be released by pressing a button, and the hand then returns to zero.

The foregoing is descriptive of the manner in which both the speed and distance-recording apparatus of an instrument of the centrifugal type operates, but even though based on the same principle, other instruments vary considerably in the arrangement of their essentials. For instance, the Index Speed Indicator, shown in Fig. 2, is of the vertical centrifugal type in which the spindle is practically a continuation of the driving shaft, thus giving it the advantage of eliminating the bevel gear drive, in addition to simplifying the intermediate steps in the transmission of the movement of the ring governor to the indicating pointer. It will be seen that a system of articulated levers connects the ring governor to a second spindle in the same plane as the first but not revolving with it.

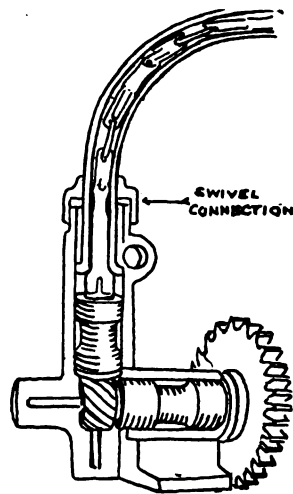


FIG. 8.—Details of the Warner drive connection.

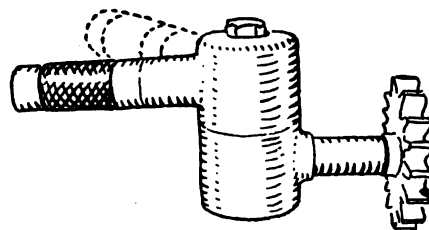


FIG. 9.—Swivelling drive connection of the Stewart instrument showing its range of movement.

At its upper end this second spindle, which runs on an independent ball bearing, carries a worm engaging with a small pinion at the right, to which is eccentrically attached the lever which serves to set the pointer in motion.

The Loring Speed Gauge, which is also of the vertical centrifugal type, represents a closer approach to the time-tried principle of the ball governor than any of those yet mentioned. Its vertical driving shaft enters the case direct without any intermediaries in the shape of bevel gears, and is supported on ball bearings. To this shaft is keyed a small balance wheel, having two weights pivoted at opposite points on its periphery. Under the action of centrifugal force the weights move outward and downward, raising a slotted sleeve by means of pins and rollers, this vertical motion again being transformed into a rotary one through several steps, terminating at a nut turning on a quick-pitch thread. This nut is prevented from rotating, and the indicating pointer is attached directly to the upper end of the threaded spindle which turns through it, thus making the only connection between the rotating shaft and the indicating part of the instrument, a hardened steel pin placed directly at the center of rotation, as will be seen by referring to the exterior view of the Loring shown in Fig. 10. It will also be noted that in this case the odometer is practically an independent instrument, being carried at the side.

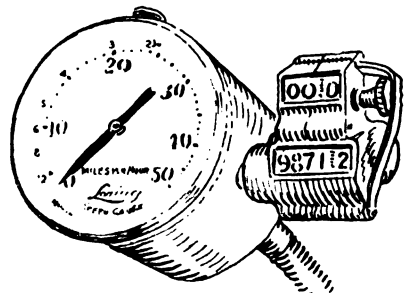


FIG. 10.—The Loring Speed Gauge as it appears on the dashboard of a car.

The Springfield motometer is another instrument of the vertical centrifugal type, but its construction is so simple as to scarcely call for any extended description of its working, the sectional drawing, shown in Fig. 6, illustrating it in its entirety. In fact, it is a ball governor, pure and simple, the spring-controlled weights shown operating a second spindle carrying the indicating hand, and which is free to move vertically. From this it will be apparent that the action of the governor is direct, there being no intermediaries in the shape of multiplying or reducing devices, which accounts for the distinctive type of dial employed. The odometer is a separate instrument and is driven from the main spindle of the instrument through worm gearing.

A centrifugal type of instrument that differs radically from those already described is the Veeder Tachodometer. In this simplicity has been carried to its extreme. The centrifugal force engendered in a liquid confined in a small vessel, when agitated by a rapidly revolving paddle, constitutes the principle of the Veeder and accounts for the fact that it has but one moving part. This consists of the driving shaft, to which is permanently attached a small paddle-wheel, revolving in a predetermined quantity of colored liquid which is forced upward through a glass tube from which the air has been exhausted. This tube is fastened to an accurately calibrated scale, the reading being similar to that of a thermometer—an instrument which the Veeder resembles at first glance. It has the advantage that all its operations are based on the natural laws of gravity and centrifugal force, and having but one moving part, it remains permanently accurate regardless of the length of its service.

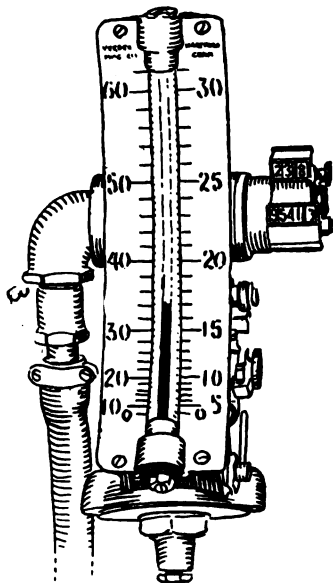


FIG. 11.—Thermometer-like appearance of the Veeder Tachodometer.

This suffices to sum up the various types of centrifugal instrument at present on the market, but does not comprise them all by any means. For instance, there are the Stewart and American instruments of the horizontal centrifugal type, both the product of one concern; the Hicks Speed Indicator, in which the intermediate mechanism between the ball governor and the hand has been simplified to an extent where it consists of but two springs; the Lea Speed Meter, which is of the vertical centrifugal

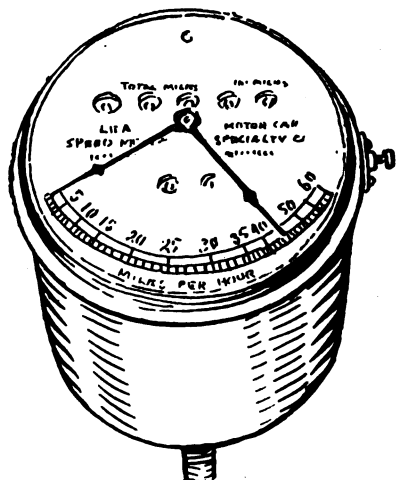


FIG. 12.—The Lea Speed Meter, showing record of maximum speed hand.

type and is extremely simple in its operation; the "Perfect" speed indicators, made by one of England's oldest watch-making firms, and the "Ever-Ready," also of the centrifugal type and which are made in quite a variety of styles. Being the product of a concern that has devoted its attention exclusively to the manufacture of chronometers and other instruments of precision for several generations past, it naturally follows that the "Perfect" instruments should be distinctive in design and construction. A series of controlling springs is employed, thus

making the instruments accurate at all speeds, a quality that is further contributed to by the fact that each dial is hand made to correspond to the instrument for which it is intended. The "Velocimeter" is another centrifugal instrument, which, as its name signifies, is intended only to indicate speed.

Electrical and Magnetic Instruments.

All of the instruments thus far considered are of purely mechanical types, and as such afforded great play for the ingenuity of the designer in making them simple or complicated, but it is only by substituting such forces as magnetism and electricity for mechanical operation that the extreme of simplicity is realized. The Warner Auto-Meter utilizes the magnetic principle, and the sectional view of its interior, shown in Fig. 5, illustrates the method of its working. The actuating force consists of a magnet which is shown attached directly to the ball-bearing driving shaft where it enters the case. Supported in sapphire pivot bearings just above the magnet is a field ring, and attached to the latter is the dial, which is of aluminum and annular in form. This field ring completes the magnetic circuit, and it will be apparent from the description thus far that there is no mechanical connection whatever between the driving shaft and

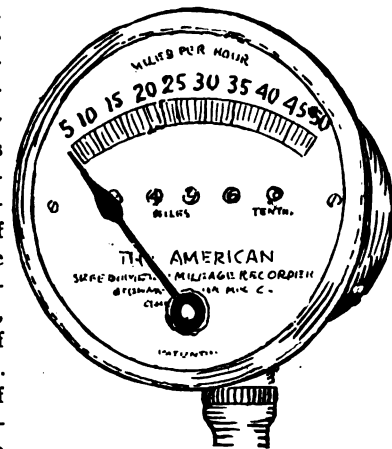


FIG. 13.—The American—a low-priced instrument made by the manufacturers of the Stewart.

the indicating dial, nor any delicate moving parts in constant service. The principle of the instrument is that of magnetic drag, the tendency of the magnet when revolving to pull the dial round with it in the same direction as it is rotating. This rotation of the dial is naturally proportionate to the speed of the magnet, but it is controlled by a hair-spring tending to return it to zero at all times. The strength of this spring increases directly in proportion to the angle of displacement caused by the turning of the dial, thus making it possible to mark the latter with uniform spaces for the various speeds. As the field ring and the dial are combined and the magnet acts directly upon the latter, there are but two parts to the instrument, barring the case, so that the great simplicity of the magnetic principle will be evident.

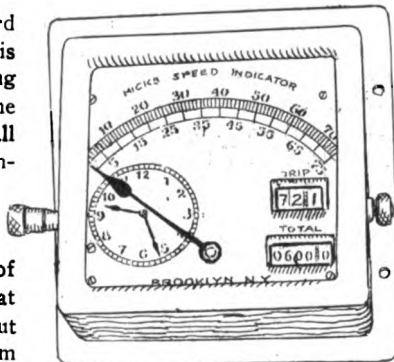


FIG. 14.—The Hicks self-contained speed indicator, mileage recorder and clock.

But the speed indicator reduced to its very lowest terms of simplicity is to be found in the Lipman electrical instrument. Scientific investigation extending over a long period of years has made possible the measurement of an electric current to a degree of accuracy unattainable in other fields, and this, in a word, represents the principle of the Lipman. It consists of a small generator driven directly from the front wheel

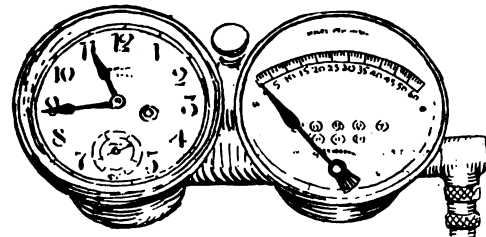


FIG. 15.—The Jones Speedometer and clock combination illuminated by a small electric light.

making the instruments accurate at all speeds, a quality that is further contributed to by the fact that each dial is hand made to correspond to the instrument for which it is intended. The "Velocimeter" is another centrifugal instrument, which, as its name signifies, is intended only to indicate speed.

of the car, and the indicating portion of the instrument, which is nothing more nor less than a millivoltmeter. The generator is of the simple, permanent field type, with a single horseshoe magnet and H armature, and is wound to generate a small current at a potential of one volt, when turning at a speed equivalent to 60 miles an hour on the part of the car. As the generator is of the induction type, employing no brushes or commutator, and the usual flexible shaft is replaced by a cable conveying the current to the indicator, it will be evident that the number of small parts liable to deflection has been reduced to its possible minimum in the Lipman. The driving shaft of the generator is of hardened steel, accurately ground, and runs on ball bearings, while the entire device is inclosed in a moisture and dust-proof case. As the voltage generated is always directly proportional to the speed and is sensitive to the slightest variations in the latter, the instrument can be made very accurate, the dial being calibrated to read in miles per hour, instead of fractions of a volt. The generator is directly attached to the steering knuckle of either of the front wheels and is combined with a season and trip odometer.

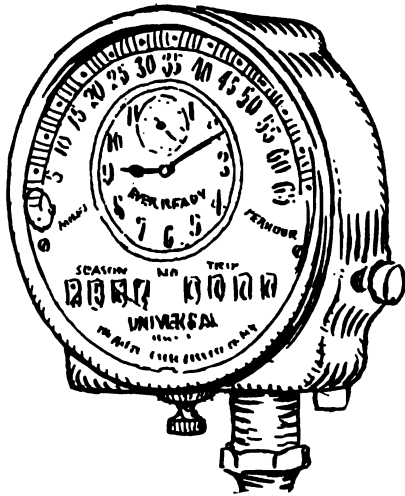


FIG. 16.—The Ever-Ready Universal, representing a very compact type of combined instrument.

indicating instrument is naturally an entirely negligible factor, that of maintaining the drive in efficient working condition has often proved to be quite the reverse, particularly in earlier days, when the condition of this essential as revealed by cars finishing endurance tests was often deplorable. With the exception of the Lipman electrical instrument, in which the generator alone is driven direct, the power to operate the device is conveyed from a gear fastened to the front wheel through a second and much smaller pinion and a flexible shaft, so that the governor ring, or ball governor, of the speed-indicator revolves several times as fast as the front wheel of the car. This, however, finds an exception in the case of the Perfect, which is friction-driven at a speed but twice that of the car wheel, thus distinguishing it from the majority of other centrifugal instruments in two important respects. Trouble was at first experienced with the flexible shaft coupling at the front wheel, taking the shape of numerous breakages, which have been overcome by a number of ingenious devices, two of which are shown by Figs. 8 and 9, the first being a feature of the Warner, and the second, part of the Stewart and American instruments.

Something About the Speedometer's Externals.

It has been facetiously remarked that the variety of speed and distance-indicating instruments on the American markets range in appearance "all the way from a steam gauge to a cash register," and when some of the types that have come and gone are recalled, the remark does not appear entirely unjustified. Simplicity and neatness of external appearance are, however, as great an asset, where such an instrument is concerned, as its accuracy and durability, and this will be borne out by casual observation of the dashboard of the average car and the instrument that adorns it. Within the past year or two, however, it is noticeable that instruments greatly exceeding in size and apparent complication those of former days, are becoming more prevalent. But this is for an entirely different reason. It has become common to combine several instruments in one, in keeping with the tendency to clear

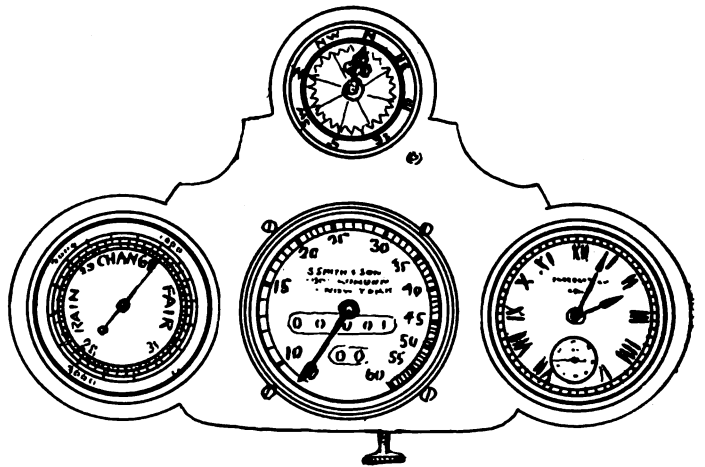


FIG. 17.—A most elaborate combination of Perfect speed and mileage recorder, clock, barometer and compass, all mounted on the same base.

the dash of the modern car of all superfluous attachments, so that now it is nothing unusual to find the timepiece and speedometer combined, as for example, in the Jones combination instrument shown in Fig. 15, and the trend in this direction has been carried to the extent illustrated by the Perfect speed indicator, clock, barometer and compass, and this does not represent the extreme attainable, as a signaling device might be added, even to this elaborate array. A combined clock, speed indicator and signaling device of the same make is illustrated in Fig. 18, which also serves to show the manner in which the readings may be duplicated by the use of a second instrument placed in view of the passengers, but driven from the same shaft. In addition to the types of speed and distance-recording instruments familiar to the autoist by their presence on the great majority of pleasure cars, there is another class which will shortly come into use in numbers, but which are, after all, designed more for use on the commercial vehicle than on the pleasure car, particularly as they are equally applicable to the horse-drawn or power-driven vehicle. One of the first of these to make its appearance was the Phelps Vehicle Recorder, which is being marketed by the same concern that handles the Lea Speed Meter. It differs radically from others in that the making of its record of stops, starts and elapsed time of stopping and running, night and day, requires no mechanical connection with any moving part of the vehicle itself. The record is made on sensitized paper disks.

In addition to the Phelps, there are two, or probably more, instruments which have been pretty thoroughly tried out in service and have proved satisfactory, but as yet have not been placed on the market. They are intended for pleasure as well as commercial use, and consist of a combined chronograph and speedometer. The chronograph record takes the form of a strip of paper, showing all stops, the distance covered, rate at which it was run, and other particulars which make it easy to keep a close check, either on a chauffeur or the driver of a vehicle.

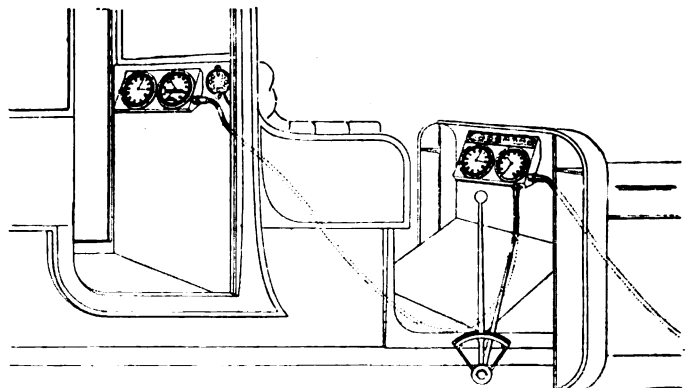


FIG. 18.—Perfect speed, distance and time recorder combined with signaling device, arranged to show in two places from the same drive.

LETTERS INTERESTING AND INSTRUCTIVE

RESTORING SCRATCHED CELLULOID FRONTS.

Editor THE AUTOMOBILE:

[1,017.]—Will you kindly republish the two articles printed a year or two ago, giving (1) the process for making clear again celluloid fronts which have become cloudy, and (2) the temperatures at which different strength solutions of calcium chloride freeze? If you do not care to republish, kindly advise me of the dates of these two articles.

Denver, Colo.

C. H. HOWE.

Editor THE AUTOMOBILE:

[1,018.]—Some time ago (about Spring, 1907), under the head of "Letters Interesting and Instructive," I noted an article entitled "How to Restore the Brilliancy of a Scratched Celluloid Window." Can you refer me to the number in which this article appeared?

Bridgeport, Conn.

A. A. LYMAN.

In answer to the foregoing inquiries we are reproducing herewith the answer of the correspondent who came to our aid in this matter. His instructions are as follows:

In a recent issue of "The Automobile," that of December 20, 1906, one of your readers asked, in question 508, what could be done to restore the surface and transparency of a celluloid window that had become scratched and dimmed by use. You admitted your inability to solve the problem, and said you would be pleased to have any reader help the inquirer out. I think I can do this. If a worn sheet of transparent celluloid is varnished on the worn side (on both sides if both sides are worn) with a very thin, even coat of any transparent varnish, it will recover practically its original condition and appearance. Probably the best varnish for the purpose is made by dissolving a quantity of transparent celluloid in acetone, making the solution exceedingly thin, and applying more than one coat if necessary.

HARRY CLINTON.

Asbury Park, N. J.

Regarding the subject of anti-freezing solutions, herewith are formulæ that will be found efficacious:

Calcium chloride—Ten per cent. Solution freezes at 15 above zero, Fahrenheit.

Calcium chloride—Fifteen per cent. Solution freezes at 5 above zero, Fahrenheit.

Calcium chloride—Twenty per cent. Solution freezes at zero, Fahrenheit.

Calcium chloride—Twenty-five per cent. Solution will not freeze at zero.

Wood alcohol—Ten per cent. Solution freezes at 15 above zero, Fahrenheit.

Wood alcohol—Fifteen per cent. Solution freezes at 5 above zero, Fahrenheit.

Wood alcohol—Twenty per cent. Solution freezes at 2 above zero, Fahrenheit.

Wood alcohol—Twenty-five per cent. Solution freezes at zero.

Glycerine—Ten per cent. Solution freezes at 20 above zero, Fahrenheit.

Glycerine—Fifteen per cent. Solution freezes at 15 above zero, Fahrenheit.

Glycerine—Twenty per cent. Solution freezes at 8 above zero, Fahrenheit.

Glycerine—Twenty-five per cent. Solution freezes at 5 above zero, Fahrenheit.

Wood alcohol and glycerine soften rubber connections after a time, but this would be a small matter.

DRIVING REGULATIONS IN NEW YORK CITY.

Editor THE AUTOMOBILE:

[1,019.]—Would you please send me circulars concerning rules of driving an automobile in New York City? If not able to furnish me with such, inform me where I can obtain them.

Cohoes, N. Y.

THOMAS ROULIER.

These rules are obtainable on application to the Police Department, City of New York, and will be forwarded gratis from the Central Office, 300 Mulberry street, New York.

POWER CONSUMED IN INITIAL CRANKING.

Editor THE AUTOMOBILE:

[1,020.]—I thank you very kindly for your reply to my recent question in regard to the amount of power required to produce a revolution of a gasoline engine. It was, no doubt, through my not having made myself clear that you misunderstood what I wanted.

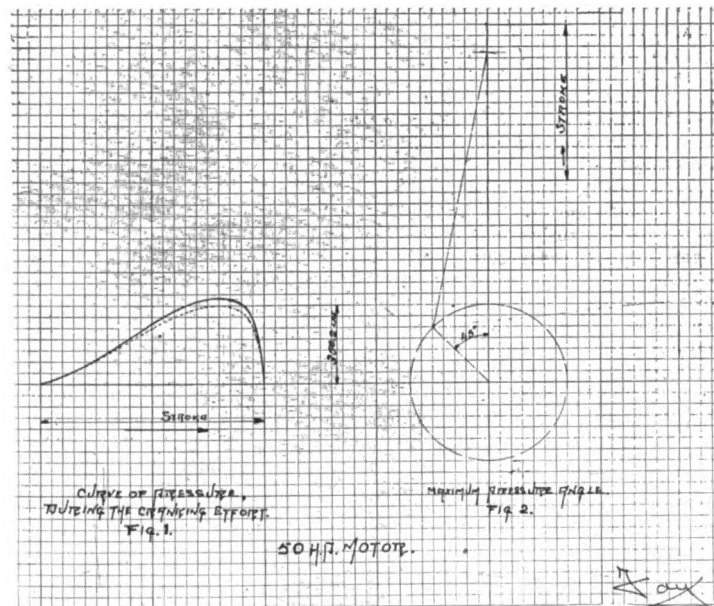
I wished to know the amount of power required to produce the initial revolution of a gasoline engine of 50 horsepower, with a compression of 70 pounds to the square inch, the majority of automobile engines not having over 50 horsepower, nor a compression higher than 60 or 70 pounds. You also gave the amount required at 1,000 r.p.m., whereas I desired this information for the initial revolution to start the engine.

I inclose envelope herewith for reply, also ten cents, for which please send me a copy of the October 31 issue, which I was unable to obtain, my dealer having sold out his supply.

H. C. ARNOLD.

South Framingham, Mass.

As it is customary to publish all letters of general interest in this department, the reply is given herewith instead of being forwarded by mail, the delay in answering being accounted for by the Chicago show intervening. It may be



FIGS. 1 and 2.—Illustrating the curve of pressure during the cranking stroke, and the maximum pressure angle with reference to the stroke.

well to point out that that question of the power of the motor is not involved, at least not directly, although it happens to be the case that the torque of a motor is very nearly the same as the initial pull in starting the motor. As your inquiry in its present form involves the mathematics of the subject, we think a curve illustrating it is of considerable interest, and herewith append an illustration of one that has been kindly prepared by Thomas J. Fay, who has also compiled the formula for calculating the pull. The curves, Figs. 1 and 2, were charted to show at what point in the revolution the maximum pull would come, beside indicating the characteristic of the pressure curve during the cranking revolution.

The cranking pull on a 9-inch crank, for a 50-horsepower motor of the usual automobile type, would be maximum as follows:

$$P = \text{Sin. } a \frac{C \times T}{L} \times \% C = 375.5 \text{ approximately for the}$$

motor in question. In this formula:

P = the pull in pounds at 9 inches radius.

a = the angle of the crank arm to the connecting rod.

C = cold compression in pounds per square inch.

%C = the percentage if the compression corresponding to the given angle of the connecting rod.

Naturally the length of the connecting rod will affect the result in some measure, in addition to which no calculation will give absolutely exact results.

INFORMATION ON CHANGE-SPEED GEARING?

Editor THE AUTOMOBILE:

[1,021.]—In a course on the subject of gas engines, each is required to write a paper on some subject pertaining to them. Mine chanced to be "Change of Speed Gearing." I find it difficult to get any information on that subject, and could you refer me to any articles in your paper or elsewhere on that subject? JAMES W. WAITE.
Golden, Colo.

Articles on this subject appeared in THE AUTOMOBILE in the following issues: July 12, July 19, July 26, August 2, 1906. It would be necessary to have reference to a file or bound volume of the paper to obtain these numbers and various other articles on the subject would be found by looking through it. A general article also appeared in the issues of May 9 and May 16, 1907, but as few of the back numbers of THE AUTOMOBILE are in print, doubtless you would find some such work as "Self-Propelled Vehicles," by Homans, much better suited to your purpose, the necessary information being concentrated in a few chapters, instead of being scattered through a number of papers.

CAN ANYONE HELP THIS INQUIRER?

Editor THE AUTOMOBILE:

[1,022.]—I have been told that J. C. Haschke, of Chicago, Ill., has a patent compound storage battery, and an official test was made on the 10th of April, 1907, and this touring car and battery was illustrated and described in all the scientific and automobile papers in the world. Have you described this car and battery in one or more of your magazines? If so, please give me the number and I will send money order covering the amount, as I am anxious to get all the reading matter that I can in regard to it.

Millis, Mass.

C. E. DANIELS.

We regret to be unable to help you out and must confess our ignorance of Mr. Haschke's battery. If any of our readers are better informed on the subject, or were present at the test in question, we shall be pleased to publish their communications or place them in direct touch with you.

WHY NOT THE 8-CYLINDER "V" TYPE MOTOR?

Editor THE AUTOMOBILE:

[1,023.]—While you are discussing four and six-cylinder motors, what is the reason that the eight-cylinder type has not been used? It could be built more compactly and with no more parts than a six, while its torque would be more even than either, inlet passages could be shorter, and other advantages are apparent. I think the Marmon is the only one built in this country, and they do not seem to be advertising it this year.
Cleveland, O. GEORGE S. CASE.

Probably the most practical reply to your question is to be found in the fact that there is a demand for the six-cylinder motor, but little or none for the eight-cylinder of the type you mention. It embodies all the advantages you set forth, but this does not make people who buy cars want it, and that is the only reason manufacturers are now building six-cylinder cars.

FROM GRAVITY TO PRESSURE FUEL FEED.

Editor THE AUTOMOBILE:

[1,024.]—I am up against a proposition I do not know how to handle. My gasoline tank is now above my carbureter, and I want to hang it below the frame. In doing this the bottom of the tank will be 18 inches below the float level in the carbureter. Now, how am I going to force the gasoline to the carbureter? Will check valve exhaust pressure work if I cut in between the motor and muffler? I have a Powell muffler, and will I get pressure enough to have a sure and dependable feed?
Grand Haven, Mich. CHARLES BOYDEN.

You can install either a pressure-feed system or a small pump. The former is most commonly used on cars having tanks below the carbureter level. The exhaust manifold is tapped, generally

just back of the motor, and a check valve inserted. As the pressure required seldom exceeds two pounds to the square inch, there is no difficulty in obtaining all that is needed in this manner.

WHY AN L. T. MAGNETO MUST BE TIMED.

Editor THE AUTOMOBILE:

[1,025.]—Will you kindly inform me if it is necessary to time a low-tension magneto in replacing it on a car in order to have it work properly? I have had the engine of my 15-20-horsepower Darraco taken down, and in doing so had the timing gears deranged. The man I employed to retime them claimed that the magneto had to be timed also, and proceeded to do it, but failed to make it work and claimed that the magneto was demagnetized. I cannot understand the failure, inasmuch that it had given me entire satisfaction up to the time of the engine being taken down. I have always been under the impression that a magneto supplied a continuous current and did not require to be timed.
New York City. VICTOR F. PELIN.

It is quite essential that the low-tension magneto should be timed with the engine in order to give satisfactory service. Your impression that such a generator supplies a continuous current is erroneous. A magneto, properly so-called, generates an alternating current which fluctuates from zero to its maximum, first in one direction and then in the other, this being known as its *cycle*. For incandescent lighting, an alternating current of 65 to 125 cycles per second is employed, the alternations thus being so rapid that the current is practically constant and no flickering is noticeable at the lamp. The winding of a magneto is, however, so simple that unless it be run at a very high rate of speed there is quite an appreciable interval between the recurrence of the cycles. Consequently a mechanical circuit-breaker actuated by the shaft of the magneto is employed. This maintains the armature short-circuited on itself, its opening being timed to coincide with the action of the make-and-break device in the cylinder, and also with the point of maximum value of the current curve, commonly called the peak. As the current curve, or wave, is of equal value at equal distances from the peak, this permits of advancing or retarding the time of ignition, though in practice there is found to be little need for this with low-tension ignition. In addition to synchronizing the action of the magneto with the running of the motor the use of a circuit-breaker, as described, also has another great advantage, in that the sudden opening of the armature circuit at the point of maximum current flow utilizes the self-induction of the winding to increase the value of the current, thus causing a much larger arc, or spark, at the point of rupture in the cylinder. The simple spark coil, with a single winding, is a familiar example of this action. If the magneto gear and the driving gear on your car, or whatever arrangement is employed, does not bear any distinguishing marks to facilitate timing the magneto, it may be done about as follows: Turn the motor over until the piston of the first cylinder is at the upper dead center, or what may be termed a medium-speed firing point. Remove the protecting plate from the armature of the magneto, unless its position can be determined otherwise, and turn the shaft by hand until the armature is in a position about 30 degrees from the horizontal; about one-fourth to one-third of the armature pole piece will then have emerged from the polar gap of the fields. As the point of maximum flux occurs when the armature is at approximately 45 degrees from the horizontal, this should provide ample latitude for advancing or retarding the spark. Mesh the driving gears in this position, marking them carefully for reference. Try starting the motor on the magneto and if the results be not as satisfactory as desired, changing the engagement of the gears one tooth forward or backward will frequently be found to make things right. The complaint that the magnets have weakened is an old standby of the repairman and should always be regarded suspiciously, unless the magneto has been permitted to stand with its armature withdrawn for some length of time. Such a charge can readily be refuted by turning the machine over by hand briskly and noting the spark.

EXTREMELY HAZY AS TO TWO-CYCLE MOTOR.

Editor THE AUTOMOBILE:

[1,026.]—Kindly answer these questions in the next issue.

1. Does a two-cycle engine travel twice as fast as a four-cycle, and if so, does it necessarily consume double the gasoline, batteries, etc., as a four-cycle one?
2. Will a two-cycle engine make 2,500 r.p.m., while a four-cycle but 500 r.p.m., and if so, does not this extra wear and tear offset the advantages of constant torque claimed for the two-cycle?
3. If the answer is yes to the second question, will not a two-cycle car travel twice as fast as a four-cycle?
4. Do you not think that the two-cycle superiority over the four-cycle type is only on paper?
5. Is not the Elmore the furthest advanced two-cycle car?
6. Is there any advantage in making six-cylinder, two-cycle cars over a four-cylinder one?
7. Can anything as to the balance of a motor be shown by the exhibition engines at the shows, which are run by electric motors?
8. Is not the Elmore the only two-cycle car licensed under the Selden patents?

FRIEND AND CRITIC.

1. No. A two-cycle engine cannot be made to run as fast under load as one of the four-cycle type, owing to the impossibility of getting a charge into the cylinder and out again at high speeds. This is one of the chief drawbacks of the two-cycle type.
2. The foregoing suffices to answer this question as well.
3. No. Two-cycle cars have never been noted for their unusually high speed.
4. Many of the claims of superiority made for the two-cycle motor are utterly unfounded, but they are not made by those who are aware of the relative merits of the two, and particularly not by makers of well-known two-cycle motors.
5. It is the only two-cycle car of its size that has been on the market for any length of time.
6. The gain would be merely theoretical and would doubtless be more than offset by the disadvantages of extra weight and mechanism.
7. No. The motor is only being run at a fraction of its normal speed under such conditions and is not under load.
8. Yes.

The nature of your queries shows such an utter lack of knowledge of the characteristics of either type of motor that it would be impossible for us to answer the first three without going to interminable lengths, and would advise you to read up on the subject in order to get a better understanding of it.

CONCERNING THE DESIGN OF A SPRING WHEEL.

Editor THE AUTOMOBILE:

[1,027.]—Kindly answer the following when convenient. In an autocar at rest (dead weight) and an autocar running at maximum speed, over the usual obstructions of country roads, what is the difference allowed by manufacturers for the extra pressure to be sustained by the wheels (the whole four wheels)? To illustrate, suppose a car to be 2,400 pounds in weight—we will not say anything about the extra weight of from one to five persons in this instance, but will consider that the 2,400 pounds at round figures covers everything. This will give each of the four wheels 600 pounds to carry or sustain when at rest—now what do you allow for the extra sudden weight that the four wheels in addition are called upon to sustain at the moment the reaction sets in, i.e., I mean when the full force of the weight falls upon the supporting wheels when running at the maximum rate of speed over obstructions such as offered by country roads? Would suspension or spring adjusted wheels rock, as I am working on, be required to be increased in strength to the extent of one-quarter, one-third, or one-half or more of the dead weight of said car, i.e., car weight (motor) 2,400 pounds; sustaining power of each resting wheel 600 pounds; sustaining power of each wheel in motion say to be one-half of the car's weight = 300 pounds per wheel = 900 pounds per wheel?

In conclusion, beg to say that I would be pleased to have you reply at an early date, if convenient, as I am about to place the order for my helical springs for the new wheels.

Easthampton, Mass.

CHARLES J. MALINGS.

A wheel that had no greater factor of safety than one which was merely designed to carry the weight of the car at rest, or 50 per cent. in excess, would be far from safe. In this, as in other forms of construction, the allowance generally made is several times that which calculations show the wheel will be called upon to stand in the course of ordinary service, and the

fact that the modern artillery wheel will frequently stand terrific shocks without damage, shows that its factor of safety is high. Just what the latter is, only the manufacturers of the wheels know, though there may be more or less data extant.

Lateral movement or side pressure, or, as you term it, "rocking," is one of the forces that nine spring wheel inventors out of ten totally overlook until they come to try out their devices. Such a wheel should have an even higher factor of safety than an artillery wheel, as it is not a solid construction, so that it should be capable of bearing several times the weight ordinarily imposed upon it, instead of 1-2 or 1-3 more, as you mention. A wheel capable of sustaining only 900 pounds, if placed on a 2,400-pound car and driven at speed, would provide a direct road to the hospital, if not something worse. As already mentioned, we are not aware of the percentage of the factor of safety of the ordinary artillery wheel, but would not be surprised to learn that one of these wheels could sustain 3,000 or 4,000 pounds without crushing, and probably more.

WHAT IS THE CAUSE OF THIS FORMATION?

Editor THE AUTOMOBILE:

[1,028.]—I desire to ask if you can give me any explanation of a condition which arose with my gasoline launch during the summer and which gave me a good deal of trouble.

I ran a 21-foot gasoline launch during the summer. This launch had a galvanized iron tank in the bow. My difficulty was that repeatedly the gasoline would not run out of the tank into the pipe leading from the tank to the engine. This I found to be occasioned by small flakes obstructing the outlet of the tank. These flakes were very thin, light yellow in color, varying in size from that of a pin head to that of a finger nail. They evidently formed in the tank, due to some peculiar action of the gasoline in the tank. These flakes would sink both in gasoline and in water, and seemed to re-form from time to time. When handled they would crumble into an almost impalpable powder. Have you had any similar experiences, and can you explain the formation of this material and how to obviate it?

Thanking you for your reply, either by letter or in "The Automobile," I am,
EDWARD G. TUTTLE, M.D.
New York City.

While we have never heard of a similar case, from your description of the flaky precipitate formed we should judge this to be the result of some chemical combination of the gasoline with the inside coating of the tank, unless the gasoline itself were of a very poor grade and would throw down such a precipitate, regardless of the nature of the container in which it was held. Galvanized iron tanks are seldom used on automobiles for holding gasoline, which probably accounts for the lack of similar cases. Doubtless the refiners could tell what the substance was and what is the cause of its formation. If any of our readers have ever had a similar experience we should be pleased to hear from them.

SOME QUERIES CONCERNING VARIOUS MATTERS.

Editor THE AUTOMOBILE:

[1,029.]—I have a few questions I would like to have you answer through "Letters Interesting and Instructive." (1) About what is the voltage of the spark as it takes place in the cylinder? (2) What should be the pressure of tires on a runabout? The tires are 28x3, the weight of the machine, 1,100. (3) Which is the cheapest in the end, and the most satisfactory, the magneto, dynamo, or batteries for ignition on a four-cycle, four-cylinder gasoline engine? (4) What should be put into a planetary transmission, oil, dope, or a mixture of oil and heavy grease. (5) I wish to put an oil tank with sight feed upon the dash and would like to know if it will drop by gravity into the crankcase, or will I have to have a pump to pump it in? The crankcase is enclosed and lubricated by the splash system.

LOWELL ELLIS.

Warren, Mass.

1. We believe it is estimated to be in excess of 100,000 volts, but to our knowledge no attempt has ever been made to accurately measure the voltage of secondary spark discharges. The potential required to bridge gaps of certain lengths in the air and in vacuo have been calculated, but the figures are not at hand.
2. Fifty pounds to the square inch.
3. We should say the magneto, but there is considerable op-

opportunity for a difference of opinion on the subject, as you may know.

4. Light machine oil, frequently renewed, will give the most satisfactory service. "Dope," or heavy oil and grease, will create too much friction between the pinions of a small planetary gear.

5. A gravity feed will work satisfactorily, but is not as reliable as a pressure or mechanical feed, in which the oil is forced through the tubes.

MR. RUSHMORE ON MR. LOUGHEED'S ARTICLE.

Editor THE AUTOMOBILE:

[1,030.]—The article on "Automobile Lamps and Their Lenses," by Victor Lougheed, in your December 12 issue, was read by us with a good deal of interest, and in the main is the clearest exposition of the optical principles of automobile lamps which we have seen in the trade publications. Two or three points, however, seem to require comment.

Mr. Lougheed seems to assume in preparing his diagrams that the intensity of the illumination is the same in all directions from an acetylene flame. In fact, this is far from being the case. Any luminous gas flame is more or less opaque to light rays passing through it, on account of the incandescent but solid particles of carbon which furnish the light. As the acetylene flame is particularly rich in these carbon particles, it is practically opaque, consequently the edges of the flame give an illumination substantially proportioned to their projected area, which, compared with the flat surface of the flame, is practically nothing. In other words, it is only the front and back of the flame that count, and the intermediate zone of the imaginary light sphere has little value. A short focus lens mirror, which catches nearly all of the rays from one surface of the flame, projects all the light that can in practice be utilized.

The opacity of the flame likewise defeats the theoretical argument in favor of the type of headlight which employs a parabolic reflector with bullseye lens in front of the flame and hemispherical cup behind the flame. As a matter of fact, even if the reflecting surfaces remained bright, which Mr. Lougheed very correctly points out is not the case, the flame would still stop the rear rays reflected back into it by the cup.

Finally, we will admit having some quarrel with Mr. Lougheed's use of the terms "project" and "efficiency." He shows in Fig. 6 the standard locomotive type of parabolic reflector, extending it, however, somewhat farther forward than is customary, and, after pointing out the deficiencies of any metal reflecting surface exposed to a flame, he states in the next breath that this reflector "projects" 88 per cent. of the light. As a matter of fact, it does nothing of the kind.

If the illumination were equal in all directions, it would intercept 88 per cent. of the rays; but it is one thing to intercept rays and quite another to project them. His use of the term "efficiency" is equally misleading. A steam boiler is rated at one horsepower for each 30 pounds of water evaporated per hour. If a certain boiler evaporated 3,000 pounds per hour and a 10-horsepower steam engine got away with all the steam the boiler could make, would Mr. Lougheed call the engine "efficient" simply because it took all of the steam? We hardly think so.

We ourselves used to make marine electric searchlights on the parabolic reflector-plus-lens-plus-hemispherical cup principle a good many years ago, before the lens mirror was heard of; and when we abandoned their manufacture, because shipmasters said, after a few weeks' service, they would not throw a beam the length of the ship, we were under the impression that they were not very "efficient," no matter how many rays of light were stopped by the reflectors.

Plainfield, N. J.

S. W. Rushmore.

WHY T. B. JEFFERY PROTESTED C. M. C. POINTS.

Editor THE AUTOMOBILE:

[1,031.]—In view of our having protested the decision of the technical committee making the awards in the recent 600-mile sealed bonnet reliability run of the Chicago Motor Club, we feel it only fair to state our reasons for such protest.

This run was undoubtedly the most severe official test of motor vehicles ever made, and, in the words of one of the judges, every effort was made to avoid perfect scores. In fact, these efforts were carried far beyond essential features, and though several cars made every control on time and finished in apparently perfect condition, with all seals intact, they were deprived of a final perfect score merely on account of inessentials or accessories.

In our own case the heaviest penalty, four points, was inflicted on account of a taillight, palpably broken by impact, and in all probability by another car while the contesting cars were being moved in or out of the official garage, as neither the observer nor the passenger in the rumble seat was aware of its being done, as

they undoubtedly would have been had the damage been done while the car was in service.

Under the circumstances, we felt it unfair to attach a stigma to our car on account of damage to an unimportant accessory from outside forces over which we had no control, and in which no weakness on the part of the car or accessory was even contributory.

We also protested the decision covering our primary or pedal brake.

In our judgment, based on several years' experience in automobile manufacture, it is inadvisable to so adjust this brake that by sudden or injudicious application the wheels may be locked and great and unnecessary damage be done the tires. This brake is, however, in its present condition and adjustment sufficiently effective to stop the car within fifty feet with the car traveling at twenty miles per hour, at the instant of application, as was proven by several tests on various pavements. In fact, the judges admitted that the question was merely one of adjustment, and based the penalty of two points on the fact that but one minute or less would be required to adjust the brake to meet the requirements.

Should instant stop be required in case of emergency, so great that effect on tires is of no consideration, a second brake is provided that will instantly lock the wheels at any reasonable speed. We felt that as no notice to the contrary had been given, the matter of brake adjustment was within our discretion and protested the penalty, but the referee held to the contrary and sustained the decision of the judges.

We deeply regret the conditions that impelled us to enter protest against the judgment of the committee, and offer this statement only in order to acquaint the public with our position.

THOMAS B. JEFFERY & COMPANY,

Kenosha, Wis.

Thos. B. Jeffery.

MORE OF THOSE ACETYLENE EXPLOSIONS.

Editor THE AUTOMOBILE:

[1,032.]—While looking through "Letters Interesting and Instructive," of the November 14 issue of your valuable journal, I saw some accounts of persons having had explosions take place while bending or handling tubing for generator use. Would say that I have had the same kind of explosions in two distinct cases, one of them taking place directly under a leaking gasoline cock where the piping happened to be at that moment. The lamps on this car had not been in use for some three days, when we received orders to place the generator on the opposite side of the car. While bending the piping for same, slowly, a terrific explosion took place, and a red and bluish flame issued from the end of the brass pipe, the heat generated being so intense that my hands were severely burned. While bending another pipe on same car the very same kind of a noise was heard, this time without the bluish flame. This was a new experience for me, and am glad to see it so ably explained.

Toronto, Ont.

HARRY W. SPENCER.

IN DEFENSE OF PAINTED AUTO HEADLIGHTS.

Editor THE AUTOMOBILE:

[1,033.]—I saw in "The Automobile" of October 17 a letter by William Gray, criticising people who do not use brass lamps. I think the painted brass and nickel lamps on a light painted car look best. I have had both. I find in my touring that not near as many horses are frightened at my car as it is now painted and has nickel lamps. I tour all over the country, and find it hard to get the brass cleaned, as it should be, by the men in the garages. It takes nearly an hour to clean the brass on a car as it should be done. I find now wherever I stop to stay over night the people come around my car and admire it very much, as it is odd. I think the time is not very far off when the brass will be removed by law, as the bright brass on an automobile coming suddenly on fine and high-spirited horses frightens them very much. This I am sure of, as I have tried both carefully. I am also a horseman.

Newburgh, N. Y.

E. D. W. ROSE.

STEARNS DID NOT HOLD RIVERSIDE RECORD.

Editor THE AUTOMOBILE:

[1,034.]—In your issue of December 12, page 877, under the heading "Riverside Annual Hill Climb a Success," I note in the first paragraph the statement: "The former record of 5:41 2-5, held by a six-cylinder Stearns, was lowered a fraction less than twenty seconds by a Stoddard-Dayton." This is a decided error, as none of our six-cylinder cars have ever been seen west of the Rocky Mountains to our positive knowledge; hence, it is impossible for any of our six-cylinder cars to have raced either at Riverside or anywhere else in California. Your Los Angeles correspondent was in error, and we trust that you will do us the justice of correcting this statement.

F. B. STEARNS COMPANY,

Henry H. Hower,

Assistant Advertising Manager.

Cleveland, Ohio.

"IT COSTS MORE TO PRODUCE A SIX THAN A FOUR"

By F. B. STEARNS.

SOME time ago, knowing that there was a great deal of interest among automobilists in general concerning the relative merits of four and six-cylinder cars, I expressed my opinions on this subject in a general way, giving the views of our company on this proposition as a whole. Inasmuch as we are manufacturers of both four and six-cylinder machines we have nothing to gain or lose by the final decision of the public. We feel, however, that we are in a position to take an unprejudiced view of the subject, something which no maker of either fours or sixes exclusively can hope to do.

I was very much surprised to note the interest taken in my remarks by the automobile public in general and was extremely interested in the views expressed by other manufacturers. I was particularly struck by the attitude taken by two of the latter, both of whom presented the other view of the subject. One of these, who is a maker of both four and six-cylinder cars and is the pioneer builder of sixes in this country, set forth in a very interesting manner the arguments in favor of the six-cylinder. His views on the subject as a whole are manifestly fair and unprejudiced, and on this account we are more gratified at the compliment which he chose to pay our own six-cylinder in his remarks.

We can hardly say as much of the other maker, who is obviously heart and soul in favor of the six-cylinder proposition. His position in this matter is unique, as we understand that he is now making six-cylinders exclusively, something which no other manufacturer in the world has cared to do.

His article in reply to my remarks assumed apparently a direct attack by me on his product, than which nothing was further from my thoughts. Instead of refuting our general arguments in favor of the four by like arguments in favor of the six, he chose to dissect every statement and twist my meaning to suit his own ends. For example, in my former remarks I made the statement that a six was more difficult to time and had 50 per cent. more ignition apparatus than a four. His reply was as follows: "Fifty per cent. more ignition apparatus might be taken to mean that if four cylinders require one magneto six would require one and a half magnetos, and we assure an innocent and unsuspecting public that this fear has no foundation in fact."

We doubt if even a suspecting public would have so construed our meaning! That the ignition mechanism on a six is more elaborate than on a four is self-evident. That an ignition system that "would do" on a four is entirely inadequate for a six is further evidenced by the high-tension magneto system, finally supplied by the above maker of sixes in addition to the battery and coils.

The additional fractional part of a magneto is not required on a six, as our six-cylinder "spokesman" rightly informs us—a whole and complete system is required, however. What percentage of an ignition system is represented by a magneto can best be determined by "unsuspecting" purchasers of former models of this maker, whose cars lacked this part of the system. However, the need of a magneto for the six is by no means an argument against the six, for a well-designed four-cylinder motor is not considered complete without magneto ignition, although the magneto itself is somewhat simpler.

That the correct timing of a six-cylinder motor is more difficult than on a four is beyond question. If not, why the inevitable question of the buyer—"How does she fire?" Why the resulting confusion of the salesman?

The replies made to my arguments by other makers confined themselves mostly to the standard argument for the six—namely, flexibility and power. Unquestionably, flexibility and power compatible with simplicity and reliability is the ultimate aim of every

automobile designer. Flexibility and power are admitted advantages of the six-cylinder motor, but why to these should be sacrificed simplicity and reliability? Undoubtedly there will be one, two, three, six, eight and even twelve-cylinder motors made for motor cars, all with various arguments in their favor, but the four is and always will be the standard of the world for sane touring car practice. If flexibility is of any advantage at all, it is at its best in town use and through heavy traffic. Why, then, are all the town cars and taximeter cabs four-cylinders? Isn't it probable that the majority of these cars have attained the required flexibility by other means than the addition of two more cylinders?

Everything else being equal, carburetion is the one thing in a motor car which makes flexibility possible, and which makes the motor run equally well at high and low speeds.

Without a change in adjustment on our carbureter we have obtained a variation in speed of from 150 to 2,000 revolutions per minute with a four-cylinder motor, and with two more cylinders we have not been able to obtain the 50 per cent. greater flexibility. In fact, the variation in speed of the two motors is practically the same, and the proportion of the amount of power developed at the lowest speeds is not noticeably different. This difference in the action of the engine rapidly disappears as the motor speeds up, and we believe that with the engine running as low as 250 revolutions no difference can be noticed by the ordinary observer. With the usual reduction in gearing in automobiles as low a speed of the engine as this is never required, and we fail to see how any difference in the handling of the car could be noticed.

We believe that for a six-cylinder motor to be better than a four for automobile purposes its advantages should be apparent to the driver of the car at any and all times and at any and all speeds. Admittedly the six as a motor has its advantages. It also has its disadvantages, and we believe that these are far more apparent to the owner. For instance, a six will start harder than a four because of the additional friction. If this is not the case, why has one maker of sixes equipped his car with a self-starting device, which in itself is a complicated piece of mechanism? But this is of minor importance. Much more than this will the owner notice the strain on his pocketbook rather than on his arm. This strain comes from an increased first cost and an increased cost of maintenance, which always accompanies additional complications in any kind of machinery.

Invariably the price of six-cylinder machines is much greater than that of fours of equal power. If it does not cost more to produce these six-cylinder cars, why the added cost to the purchaser? It does cost more to produce a six than a four. It costs more because there are more parts, and if there are more parts there is more complication, and if there is more complication there is more trouble, and if there is more trouble there are more repair bills. We note from extensive advertising that an exclusive six-cylinder maker is probably anticipating this trouble, as he is offering large rewards "in gold" for good chauffeurs—a plan which, he says, "will benefit the owner."

We do not advocate saving money in the first cost of a car; we do advocate paying for quality rather than quantity. We know it is possible to obtain in a four-cylinder by proper design and workmanship the flexibility and power of a good six-cylinder.

We advise paying for right design and expert workmanship in the first place, which in the end will be more than paid for by a greater reduced cost of upkeep. It is our belief that this point of view is the correct one for the intelligent purchaser of any motor car. The idea that a new model, and in some cases a new type should be produced yearly, is radically wrong.

A maker of sixes to-day formerly made one cylinder, then twos, then fours and now sixes. The excuse given at each step was that the two corrected the faults of the one, and that the four overcame the difficulties of the two, and now the six is the best ever and corrects all the faults of his four. Where is this going to stop? So on *ad infinitum*?

This line of argument is all wrong. The field for one and two-cylinder motors is in cars of small power, and there are many such successful machines in use to-day. The field for the six is in cars of extreme power, and there are some of these in successful operation. But the four-cylinder remains as the standard of the world for an ideal powered car and a still further refinement of this type of car is the ultimate aim. There will be one and two-cylinders made, and sixes and even eights, but there is and will be but one standard—the four.

Let me emphasize what I said in my previous remarks—that a good four-cylinder car is good enough for anyone, and that there is no need to desert the four for the six. With a high-

class four under the hood it is impossible to detect it from a six at anything above an abnormally low speed. And for this one small advantage the purchaser must pay a higher price, must care for 50 per cent. more cylinders, have 50 per cent. more reciprocating parts, 50 per cent. more valves to grind, 50 per cent. more cylinders to clean out, 50 per cent. more ignition troubles, and if his motor ever goes wrong he has repair bills amounting to 50 per cent. more than if he had a four.

In continuing to build both fours and sixes, we have followed the example of such concerns as the Panhard, Renault, Mercedes, C. G. V., Fiat and many others of note.

Despite all statements and arguments to the contrary, the four-cylinder is and always will be the standard of the world, a fact which no amount of talk can overcome, for the simple reason that it is a fact. This is far from being an individual opinion, or the opinion of any one company, but is held by all the leading designers of the world, notably those mentioned above, in addition to the cream of the American manufacturers.

“MAKER WHO HAS BUILT BOTH TYPES ABLE TO ARGUE”

By LOUIS GEYLER.

IN view of the fact that there are so many opinions on the subject of “fours” vs. “sixes,” it is very evident that those manufacturers who are building four-cylinder cars and have no sixes to sell talk very strongly in favor of the fours, because they have to sell them. And those who are building sixes are naturally talking the other way. It is simply a question of whom the shoe fits. They all agree on one point, however, and that is that the *six has more flexibility than the four*.

It certainly stands to reason that the manufacturer who has built both types of motors is better able to argue the point than one who is only making a four. Although the Stevens-Duryea people do not believe in a large four-cylinder car—that is, a four-cylinder of 40 horsepower or over—they have built a new four-cylinder with a 4 3-4 bore by 4 1-2 stroke, which, according to the A. L. A. M. rating, gives them the same horsepower as their light six—viz., 36 1-10. This gives them two cars of the same horsepower, but they do not for one minute consider that their new four will do the same work as their light six. They certainly are in better position than any other manufacturer in the country to judge of this matter, on account of having two cars of practically the same horsepower in fours and sixes, and are in position to state which one they consider the superior. They are very emphatic in their belief that the six-cylinder car represents the acme of motor car enjoyment, and any person paying more than \$2,750 for a car should get a six. In other words, the stand they take is that the four-cylinder car they are building is as large a four as anyone should buy, which they consider the limit of horsepower, size and speed that should be embodied in a four. They are building this car to supply

the demand for a four-cylinder of moderate size and power, the same as some manufacturers are building two-cylinder cars to supply the demand for machinery of that particular class.

As everybody knows, the majority of foreign manufacturers are building six-cylinder cars in connection with their fours, and in the last five years the number of makers putting out six-cylinder cars has increased from one or two to over seventy. And in the last four American shows (including licensed and unlicensed) the steady increase of sixes is shown by the following table:

	1905	1906	Dec. and Jan. 1906-7	Oct. and Nov. 1907
Six-cylinders	2	5	18	46
Four-cylinders	127	256	333	258

Showing 46 six-cylinder models built by 28 different American manufacturers to-day, this does not tend to prove, as some people seem to think, that the six is a passing craze.

Just one more point before closing, which I believe will show the tendency stronger than all the technical arguments that can be brought to bear on the subject. This is, the Stevens-Duryea Company have sold and delivered up to the present writing 730 six-cylinder cars, both light sixes and big sixes, and they are being used from Portland, Me., to Portland, Ore., and from Minneapolis, Minn., to Mexico City, Mex., and they are all giving satisfaction. So far as I have been able to ascertain there is not one single man driving a Stevens-Duryea six who would go back to a four, except in case he wants an extra car as a runabout. The Stevens-Duryea Company is the only American company that has this number of sixes in use.

PLEA FOR THE SIX-CYLINDER MOTOR ON “V” PRINCIPLE

Editor THE AUTOMOBILE:

There is nothing that is of more interest to the trade, and especially to the mechanical end of it, than the discussions of proper design that are now running in your columns. We all have at least one idea in common, that the future automobile must be reliable, powerful, and comfortable.

The chief discussion at present is concerning the power plant, and this is to be expected, for the fact that power plants differ more than any other detail signifies that the different builders are widely at variance as to what constitutes the best, from their point of view. One maker tells us that the “best” motor is the fastest one. The next one says his is better because more powerful; then comes the “smoothness” man, and the “durable,” etc., etc. But I believe the majority purchaser will seek for reliability first of all, and this usually means few parts, and those few properly designed and well made from the stock best fitted for the purpose, which is not always the most expensive stock, either.

After being convinced as to reliability, my customer usually calls for power. He well says that he wants to ride faster up hill than down, because in case of accident there is much less trouble in calling a halt, and, while he may not care to make fast time very often, yet there are times when it is of the utmost importance that he arrive promptly. The matter of comfort is usually lost sight of, or at least largely, most people believing that any good car, as at present turned out, is not very hard on the passenger, so I am placing the matter of comfort at the tail end of the list, the other elements of reliability and power being so much more important.

So far as reliability goes, we are agreed that any motor may be reliably made, within certain limits, said limits being measured by weight of material, its distribution, and its speed and strain under service conditions. This matter of weight and distribution of material leads us to the discussion of the number of cylinders, and that means as between the “4” and the “6,” for it is generally

conceded that while the single cylinder will do a certain amount of work well and will always be with us, and while the double opposed is extremely well adapted to many conditions and has an enormous future, yet the real, full-grown automobile will have either 4 or 6 cylinders, as more does not give proportionate advantage, and less does not give real results, either in power or use.

To my mind, the strong objection to the "6" as at present put on the market is its crank. No mechanic worthy of the name would think of transmitting power around so many corners as are found between the first cylinder and the transmission unless he was compelled to do so, and by this I mean that it is not good mechanics to do this, but it has to be done on the sixes as at present put out.

One of your able contributors, arguing against the six, said recently that he was unable to get 50 per cent. more power from six cylinders of the same size than he could get from the four, but I believe that if his test were made with the first four cylinders on a six-throw crank, he would find that he would not develop two-thirds as much power as with the full six, which is only another way of saying that, theoretically, the six will develop more power in proportion than the four, as the six certainly has 50 per cent. more displacement, and it certainly has not 50 per cent. more friction surfaces. So I believe the failure of the six to develop power in proportion is due more than any thing else to the utter impossibility of making a crankshaft that is stiff enough to carry the load developed in the front cylinders to the rear end, without large losses due to the bending and twisting strains on the shaft from one crank to the next, and so on to the rear end.

That a crank can be made that will do something in this place is indisputable, but that it can be made stiff enough to carry all the power of the front pistons is very doubtful, the peculiar shape of so long a crank tending to make it serve as a spring would if interposed between a hammer and nail. The further argument from the same source that a six calls for so long space that it

increases the wheelbase unduly, I do not agree with. No large car will give the best results under all conditions, either to its occupants or to itself, without a ten-foot wheelbase, and there is room enough here for the usual six, though it could be used for other purposes if not so occupied.

But the six is the smallest even number of cylinders that can be used in the 4-cycle plan, in which the impulses overlap, and hence it will surely run smoother, strain the transmission and tires less, and will always be in favor for these reasons. The "4" must always have two points in each revolution where nothing keeps it going but inertia, and then when the next power impulse arrives and takes hold suddenly, a strain is developed that tends to shorten the life of the material, and incidentally that of the occupants of the car. So that it seems to me that some form of the six is to be desired, if that form can be made more compact, and equally as efficient as the four is now made.

My suggestion in this connection is that we take a lesson from the very successful (if rather complicated) eights, that have shown more power for their weight than any thing else ever built, and set our six in two rows of three on a side, at 120 degrees, thus using a three-throw crank, dispensing with three bearings and their consequent friction, bringing the first three cylinders as near the work as the other three are, saving space, bringing our load lower and farther back if we wish to, and adding nothing at all in the way of complications, but rather decreasing them.

If this form is practical for an eight, it can certainly be adapted to the requirements of the six, and all users, as well as the makers, will be the gainers over any form now on the market. All the advantages of reliability possessed by the four should attend this design, and certainly in theory it should develop power in proportion to its displacement, while its easy qualities should be fully as good as the present six, if not better. I believe we shall hear more of this construction later.

W. L. ARCHER.

Rutland, Vt.

"ALL IMPORTANT RACING EVENTS WON BY FOUR-CYLINDERS"

By J. D. MAXWELL.

THE controversy now on between the manufacturers of four-cylinder and six-cylinder cars is not new, nor is it one in which the Maxwell-Briscoe Motor Company has not had its say. As a matter of fact, our own experiments along these lines have antedated those conducted by many other manufacturers, and we have even overstepped the limits which the manufacturers of six-cylinder cars seem to have set themselves, for we have built and have now running, experimentally, eight-cylinder cars, and even one of twelve cylinders.

If we have returned to the making of two and four-cylinder cars, you will agree there must be good reasons for such course. As an example, let us remember that all important racing events have been won by four-cylinder cars. In the last Grand Prix there were two eight-cylinder English cars, one six-cylinder car made in Italy, and an eight-cylinder French car, but none of them gained honors in this contest, which was won by a four-cylinder car. All this, while not disputing the value of the six-cylinder idea, surely is pretty strong testimony in favor of the

efficiency of the four-cylinder type of the motor-driven vehicle. One phase of the dispute which seems to have been overlooked so far is that the final word will not be spoken by the automobile designer, but by the motorist, who, from all evidence, does not consider the six-cylinder car as past all experimentation. Both the four-cylinder and the six-cylinder have their relative advantages. It must be borne in mind that the automobile buyer of to-day is a rather remarkably well informed chap, who knows a good deal about motor cars, although he may never have owned one himself. The new type of purchaser, who only a few years ago was satisfied if his motor would take him over the roads in fairly good fashion, has become more fastidious—he knows what he wants and insists upon getting it. Nor can there be any question that he should get it, for it is he who pays the freight. And if you ask me why the 1908 Maxwell line includes no six-cylinder model, let me show you our orders for two and four-cylinder Maxwells and you have the answer.

HOW TO ADVANCE THE SIX-CYLINDER INTERESTS

By CHARLES B. SHANKS.

THERE are two ways of advancing six-cylinder interest. One is a straightforward presentation of six-cylinder advantages by catalog, in the newspapers, and by salesmen. The second and the less expensive way is that of foolish opposition. Indeed we have found that the very absurdities urged against six-cylinders by advocates of the four have been extremely effective in convincing intelligent motorists that the six, lacking real, tangible defects for its opponents to pounce upon (as illustrated by their use of obviously illogical points), must be

a car well worth investigating. We hope our loving friends in the four camp will keep up their good work. They are doing quite as much to create a "six" stampede as are the "six" makers themselves.

A four-cylinder enthusiast says that six-cylinders are unnecessary. "Hark back to nature," he says, "and observe that the horse who has only four legs combines great speed and strength." On that basis the two-cylinder is still better, particularly for speed—did you ever see an ostrich run? What!

Next year's Tourist Trophy race on the Isle of Man will be run under four-cylinder, four-inch bore rules instead of the time-honored fuel limit regulations.

According to official statistics there were 1,672 cars registered in France in 1899. In 1903 the number had reached 12,984, and last year's registrations were 35,923.



ALL-WINTER UTILITY OF THE AUTOMOBILE AS EXEMPLIFIED ON NORTHERN NEW JERSEY'S WINTER HIGHWAYS

SOME AUTOMOBILE OBSERVATIONS THAT MAY BE OF HELP

By A. D. HARD, M.D., MARSHALL, MINN.

Bolts and nuts, screws and pins,
Buy an auto and trouble begins.

WHEN the automobile fails to do its duty, the expert looks and thinks; the novice gets out all the wrenches and goes to work in an energetic manner.

Some operators use the throttle to control speed, and some use spark changer. The wise one uses both, with judgment.

A good anti-freeze solution for use in your acetylene generator in winter consists of one and one-half pounds of calcium chloride in one quart of soft water.

Too many monkey-wrench mechanics are serving as trained nurses in automobile hospitals.

If you can set your starting crank so that the first explosion will take place while you are pulling upward, there will be no serious results, even if there is a back-kick.

Equal parts of denatured alcohol and soft water make the very best anti-freeze mixture to use in a radiator. It will also answer to generate acetylene gas in your generator, however.

A small semicircular copper cup holding about one ounce, communicating with the inlet pipe about two inches from the cylinder by means of the 1-8-inch copper tubing used for gas lamps, makes the best priming arrangement for winter.

If you can put a 4-inch tire on a 3 1-2-inch rim you will save about 50 per cent. of your tire troubles.

CLUBS OUTLINING NEXT SEASON'S WORK

A. C. OF CINCINNATI GOOD ROADS CAMPAIGN.

CINCINNATI, Dec. 16.—The annual banquet of the Automobile Club of Cincinnati was held December 10 at the Business Men's Club, with State Highway Commissioner Sam Houston as the guest of honor. In his after-dinner talk Mr. Houston gave the members a history of road building in Chicago and made a stirring appeal for support in his efforts to get legislation by which the State will help build good public highways by paying one-half the expense thereof. He told of the status of the movements in other States, particularly commenting on the fact that Pennsylvania had appropriated a fund of \$4,000,000 to build State roadways.

Commissioner Houston said that in the past the principal opposition in the legislature to State aid in highway construction had come from two sources. First from members from the larger cities, who could not see why their constituents should bear the expense of road construction in the poorer counties of the State. The other source of opposition came from the members from the rural districts, who he said opposed the measure because they said that if they build good roads the city people would come out into the country with their automobiles and scare their horses off the road. At present Mr. Houston said the legislators from the city and those from the rural districts were beginning to realize more and more the advantage to both from good highways, and the prospects are beginning to be very bright that the two elements will give their united support to the movement. The appeal of Commissioner Houston for support brought the members of the club to their feet in a unanimous pledge to aid him in every way they can and on a larger basis than has ever before been attempted.

PROGRESS OF THE ALBANY (N. Y.) AUTO CLUB.

ALBANY, N. Y., Dec. 16.—The membership of the Albany Automobile Club has increased during the past year from 70 to 168, and the officers intend to secure every automobile owner within a radius of twenty-five miles of Albany on its roll. During the past year the active work of the club has included attention to the various speed traps outside the city limits, many members and visitors having been saved from falling into the clutches of grafting constables.

Through the efforts of the counsel of the club, a precedent has been established by the courts that the maximum fine which can be imposed for a violation of the speed laws is \$50, and in case of arrest, if cash bail is given and a trial is desired, the amount of such bail cannot exceed the amount of the maximum fine, viz., \$50.

The club has on hand signboards to cover the route from Rensselaer to Pittsfield (a few of which have been erected), but, owing to proposed changes in the State road now in course of construction over a large part of this route, it has been deemed advisable by the committee having this in charge to wait until the routes are definitely determined before erecting the balance.

NORTH JERSEY CLUB AFTER BAD CROSSINGS.

PATERSON, N. J., Dec. 16.—The North Jersey Automobile Club is making considerable progress in its efforts to have abolished or properly protected the dangerous railroad crossings in the vicinity of this city, as well as in other parts of the State when learned of by members of the club. A report will be filed shortly with the chairman of the New Jersey Railroad Commissioners and results are expected in the near future. There are some especially dangerous crossings near Paterson, and the club is using its greatest strength to have them abolished.

LONG ISLANDERS READY FOR 1908 SEASON.

BROOKLYN, N. Y., Dec. 18.—With the election of officers on December 4, and the annual dinner two evenings later, the Long Island Automobile Club is now fairly well started on the season of 1908, which promises in every way to be a memorable one in the history of the organization. Charles Jerome Edwards, president; Dr. C. B. Parker, vice-president; Russell A. Field, secretary, and Louis T. Weiss, treasurer, bring to their new positions great hopes and enthusiasm for the future, and all possess the hearty endorsement and support of those who have figured in the early and later successes of the club. Activity and a business-like administration will be the watchwords.

No definite announcement of the plans for the ensuing year has as yet been made. It is certain, however, that there will be no let-up in the fight for better road conditions and rational legislation. The bill for the extension of Eastern Parkway through Cypress Hills Cemetery to Forest Park, which would provide some means of decent communication between Brooklyn and other parts of Long Island, will be pushed as never before. This most important measure all but passed both branches of the State legislature this year.



C. J. EDWARDS, President. DR. C. B. PARKER, Vice-President. LOUIS T. WEISS, Treasurer. R. A. FIELD, Secretary.

One of the features of the annual dinner was the presentation of the trophies offered for competition in various events this year. A brief summary of these trophies follows:

Trophy offered by James Edward Bristol for the member making the greatest mileage during the regular touring season: Won by Charles Jerome Edwards. Distance 10,202 miles. Cadillac car.

Trophy offered by Willard P. Reid for the member touring in the greatest number of States: Won by Samuel H. Burns. Seventeen States and the Dominion of Canada. Packard car.

Trophy offered by Wm. Payson Richardson for the L. I. A. C. man recruiting the greatest number of new members for the year: Won by Louis T. Weiss. Thirteen members.

Trophy offered by Wm. Payson Richardson for member attending the greatest number of regularly organized club runs: Won by Leffert Lefferts.

Despite repeated efforts, the contest committee found it impossible to decide the ties resulting from the endurance run held over Long Island roads, and the trophies thus offered will remain in the custody of the club after the names of the cars in the ties are engraved upon them.

SPRING ENDURANCE RUNS OF PENNSY CLUBS.

YORK, PA., Dec. 16.—Spurred on by the success of other endurance runs held recently in the Keystone State, local autoists are planning for a two-day run next spring, which will take in Lancaster, Philadelphia, Reading and Harrisburg. A southern route was suggested, but the trip through the State seems the

most popular one. According to the plans, the first day's run will take in Wrightsville, Columbia, Lancaster, Coatesville and Philadelphia. The night control will be at the Quaker City, thus making the mileage about 100 miles. Two routes have been suggested for the second or final day's run, but the one most generally spoken of takes in Reading, Harrisburg, Middletown and Columbia. It has also been suggested that the second day's run be via Reading and Lancaster to this city. Between 125 and 150 miles will be covered the second day. No date has been set, but the run will probably be held the latter part of May. This will enable the York autoists to participate in the annual run of the Motor Club of Harrisburg, which is to be held earlier in the spring.

BALTIMORE'S CLUB TO TRY SPEEDY MEMBER.

BALTIMORE, MD., Dec. 16.—The board of governors of the Automobile Club of Maryland will sit as a court of investigation when one of the members, Frank Brown, Jr., son of ex-Governor Frank Brown, of Maryland, and the present Democratic leader of Baltimore city, will be tried on charges of reckless speeding of his automobile, which resulted in the death of a pedestrian on one of the principal streets of the city, Thanksgiving morning. Brown has already been fined \$25 and costs by a police magistrate on the charge of exceeding the speed limit and was censured by the grand jury, which, in a special report, condemned Brown's action as brutal and cowardly, but claimed that no presentment could be found against him on the evidence produced, which was insufficient to hold him on.

Since last March the club has been committed to a policy of co-operation with the authorities in the punishment of violators of the speed ordinance. If Brown is found guilty of recklessness he will be liable to a suspension of not less than thirty days or for such longer term as the board in its discretion shall determine, according to the nature of the evidence.

Other matters under consideration by the club are the prevention of "joy" riding by chauffeurs, securing a new country and city home, and efforts, in co-operation with the American Automobile Association, to secure a Federal system of registration and identification. The club has received numerous complaints of the loose methods of garages in allowing chauffeurs to take out and return cars any time of the day or night without making note of the same, as well as inadequate provision for verifying the amounts of gasoline used each month. The Philadelphia method of keeping a record of the departure and return of machines, whether taken out by the owner or chauffeur, and the forwarding of memos of the supply of gasoline to owners daily are favored and will likely be adopted.

BAY STATERS HAVE ANNUAL BANQUET.

BOSTON, Dec. 16.—About one hundred members of the Bay State Automobile Association attended the annual banquet of the organization, held Tuesday evening of last week at the Hotel Somerset. President L. R. Speare was unable to be present, and in his place J. C. Kerrison, of the board of directors, presided. The speechmaking was informal, among those called upon being James T. Sullivan, of Boston; George W. McNear, of the Bay State house committee; President John P. Coughlin, of the Worcester Automobile Club; ex-President S. L. Haynes, and Harry Fisk, of the Automobile Club of Springfield; William Noon, and others. The Bay State association is in excellent condition and is preparing for an active season during 1908. The association will look carefully after the interests of autoists at the State House this winter and next spring will enter into outdoor sports with its usual enthusiasm.

WASHINGTON CLUB'S CONTEST HELPED SALES.

WASHINGTON, D. C., Dec. 16.—The spacious clubhouse of the Automobile Club of Washington was thronged with automobilists on the evening of December 10, the occasion being a smoker

given in honor of the drivers and observers in the sealed bonnet contest held that day. President Caverly and the house committee arranged a very attractive program, and in addition all the drivers who finished with clean scores were called upon to say something about their experiences on the 118-mile journey over Maryland roads. The contest served a very good purpose in awakening renewed interest in automobiles and members of the trade are making sales every day as a direct result of it.

AUTOMOBILE CLUB OF AMERICA LADIES' DAY.

NEW YORK, Dec. 17.—At the A. C. A. clubhouse, on West Fifty-fourth street, this afternoon was designated as "Ladies' Day," the fair sex having the privileges of the clubhouse and being served with light refreshments. A substantial attendance was the result.

In the evening the entertainment committee provided an illustrated lecture by O. P. Austin, Chief of the Bureau of Statistics, Department of Commerce and Labor, the subject, "Curious Transportation Methods in Queer Corners of the Earth," being most interestingly presented by the speaker.

The usual dinner for members preceded the lecture. Orrel A. Parker, chairman of the entertainment committee, is receiving much commendation for his energetic efforts.

AUTO CLUB OF KANSAS CITY PROSPEROUS.

KANSAS CITY, MO., Dec. 14.—The Automobile Club of Kansas City now has a membership of 174 and a balance in its treasury of \$1,980.53. During the past year it has conducted many successful events, including a race meet, an orphans' day, as well as giving pleasure rides to the inmates of other charitable institutions, and various club runs. The annual banquet of the club in January will be a good roads affair, and President William H. Hotchkiss, of the American Automobile Association, is being prevailed upon to be one of the principal speakers. The club is a member of the Missouri State body of the A. A. A.

A TEXAS AUTO CLUB WHICH IS DOING THINGS.

DALLAS, TEX., Dec. 14.—The Dallas Automobile Club, at its recent meeting, elected thirteen new members, giving it a total of 77 out of 150 registered owners in the city. The meeting decided to bring influence to bear upon the congressmen of the district in favor of the federal registration law being put forward by the Legislative Board of the American Automobile Association. The club will appoint members to look after the streets and roads of the city, and efforts will also be made to assist the local officials in enforcing the same use of automobiles in Dallas.

JERSEY'S BIG CLUB TO DISCUSS PRESENT LAW.

NEWARK, N. J., Dec. 16.—There will be a special meeting of the New Jersey Automobile and Motor Club on Thursday evening for the purpose of discussing such amendments to the present automobile law as may be deemed necessary. The legislative committee of the club has been looking into the matter very carefully and is only waiting the sanction of the members to endeavor to complete its work. The club, being a member of the Associated Automobile Clubs of New Jersey, will endeavor to secure the co-operation of the State body, the officers of which have not been particularly energetic of late.

PHOENIX, ARIZ., FORMING AUTOMOBILE CLUB.

PHOENIX, ARIZ., Dec. 12.—The automobile owners of Phoenix, Ariz., are going to have a club. At the recent meeting, Thomas Armstrong, Jr., was selected as temporary chairman and Arthur Ainsworth as secretary, and G. P. Bullard, R. B. Burmister, and Judge Ainsworth as a committee to draft a constitution and by-laws. All automobile owners in Phoenix will be invited to be present at the next session.



EARLY WINTER AUTOMOBILING HAS A CHARM THAT IS EQUALED BY NO OTHER OPEN AIR PASTIME.

TO TEST DOUBLE REGISTRATION IN INDIANA.

INDIANAPOLIS, IND., Dec. 16.—Through the efforts of automobile dealers, manufacturers, and concerns employing automobiles in their business, a test case has finally been started to determine the validity of the city automobile license ordinance. At a meeting held at the garage of the Fisher Automobile Co., practically every automobile concern in the city, as well as a number of owners, were represented. It was decided to take the suggestion of city officials and test the ordinance. When a number of cases were called in police court that of Charles T. Austin was selected as the one upon which to base the test. He was fined \$1 and costs, and bond was immediately given for an appeal to the circuit court. If Austin is held guilty by the Circuit Court, the case will be carried to the Indiana Supreme or Appellate Court. A sufficient sum of money has been pledged to bear all costs.

The city license ordinance was in effect several years before the State automobile law, which requires \$1 registration fee and expressly prohibits any municipality for exercising any ordinance conflicting with the law. The city license fee is \$3 yearly, and not more than one-half of the owners in the city have paid it this year.

NON-RESIDENTS HAVE TEN DAYS IN DELAWARE.

WILMINGTON, DEL., Dec. 16.—The new automobile law, which goes into effect in Delaware, January 1, is the same as the existing law, except that it allows non-residents the privilege of being in the State for ten days without taking out a license; terminates all licenses on December 31 of each year; places the

age limit for chauffeurs at 16 years; places dealers and manufacturers in a special class, making one license good for several cars; prohibits loaning, licensing, or using unregistered cars, and provides a fine up to \$100 or imprisonment up to 30 days upon an intoxicated person operating a car.

AUTOWAY FROM LAKEWOOD TO QUAKERTOWN.

ASBURY PARK, N. J., Dec. 16.—Good news for automobilists is contained in the announcement that in Lakewood a movement is on foot to build a road from Lakewood which will connect that New Jersey winter resort directly with Philadelphia. The project bids fair to go through, and when it does autoists will have one of the finest and straightest speedways in this part of the country. Philadelphians will find it as easy to run up to Lakewood as to go to Atlantic City. It will also make another route for New York automobilists in their runs to the Quaker City. It is given out that George Gould, John Hays Hammond, and William Hamilton are the backers of the project at the Lakewood end, while the Philadelphia contingent is also representative. Work has begun on the Lakewood end. It will be a turnpike wide enough for three cars to run abreast, and all such arrangements as drainage, culverts, and fences will be carefully worked out. A sufficient number of toll-keepers will be installed and paid by the autoists to keep the road in good condition. The highway will run from Lakewood through Lakehurst, New Egypt, and so on direct across New Jersey, to the Camden ferries. If the work is pushed as fast as is now planned, the road will be ready early next year.

CONCERNING THE OVERHEATING OF AUTO ENGINES

By H. H. FRANKLIN.

MANY people have entirely wrong ideas on the subject of overheating an automobile engine. As everybody knows, power is obtained in a gasoline motor by turning the gasoline into heat. Hence the motor which utilizes the largest percentage of the heat in the gasoline is the most economical.

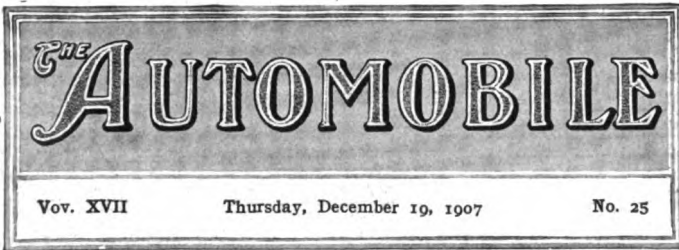
Lubrication determines the degree of heat at which a motor can be safely run. The hotter you can run your engine, and still lubricate, the greater efficiency you can get out of your gasoline. Cylinder oil "flashes" or burns at about 450 degrees. So long as the inside of the cylinder is kept below that temperature the pistons can be properly lubricated.

In a water-cooled motor the working temperature is determined by the steaming point of water. Water boils at 212 degrees; it steams freely at 200 degrees. Hence a water-cooled motor cannot run above 200 degrees, because at that point the water evaporates

so rapidly that it is soon lost. As soon as the water is gone the empty water-jackets hold the heat, instead of allowing it to radiate. Then the temperature quickly runs above the burning point of oil and the pistons stick.

The Franklin air-cooled motor works with the outside of the cylinder walls at a temperature of about 350 degrees. This means that the inside is hot enough to get good efficiency out of the gasoline, and it is still far enough below the "flashing" point of oil to give a big margin of safety.

The water-cooled motor running at about 200 degrees obtains less power from the gasoline consumed than an air-cooled motor, like the Franklin, running at 350 degrees. The hotter the motor, the greater its efficiency. On the other hand, the water-cooled motor goes out of business at about 30 degrees, because then the water freezes and something bursts.



THE CLASS JOURNAL COMPANY

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT

A. G. BATCHELDER, Managing Editor

R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor

W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager

LOUIS R. SMITH FRANK B. BARNETT

W. I. RALPH, 1035 Old South Building, Boston, Mass.

C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES:

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00

To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Hilffe & Sons, Limited, 20 Tudor Street, London, E. C.

FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.

GERMANY:—A. Seydel Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor
Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903,
and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905	- - - - -	730,000
“ “ in 1906	- - - - -	791,000
“ “ this issue	- - - - -	18,000
“ “ since January 1	- - - - -	852,900

Influence of the Parts Maker on Auto Design. Though the subject is dwelt upon from time to time in the automobile press, the importance of the rôle carried out by the manufacturer of parts seldom seems to be appreciated at anything like its real value. It may be for the reason that the majority of automobile builders do not like to admit that Doe's gearboxes and Roe's steering gears enter into the make-up of their productions, not to mention rear axles of another make, and frames, brakes, or any one of a half dozen other components that might be cited. Such an admission might be considered as a tacit avowal of the fact that the maker in question was really nothing more or less than an assembler, instead of a builder of automobiles—and all wish to have the latter reputation.

However, it is practically an impossibility to draw a definite line of demarcation where assembling ends and building begins. It is generally admitted that the use of a stock motor marks the assembler, but after passing that point there are innumerable parts of the car which are purchased from special makers by even the largest builders. Nothing short of a catalogue would suffice to include a complete list of such parts, and credit for the great improvement in their design and construction during the past few years is certainly due, in the great majority of instances, to the parts maker. Two years ago, when the flanged mud-guard first made its appearance, the observer was considerably struck by the unanimity with which leading makers had adopted it—overnight, as it were. That such a number of widely separated makers had conceived and carried out an idea of this

kind simultaneously seemed more than a coincidence and investigation proved this supposition to be unfounded. Here, as on many other parts of the car, particularly such as the gearbox and steering gear, it was merely an illustration of the influence of the parts maker on the design of a large number of makes.



Development of Speed and Distance-Recorders. Among the many things that the automobile has brought in its train few have been carried to such a state of development in the same length of time as is the case with what has come to be familiarly known as the "speedometer," through the fact that this was the trade name given his product by a pioneer maker of these instruments. Distance covered appeared to be the only information desired by the cyclist regarding his travels, so that similar attachments designed for the two-wheeler never got beyond that stage, and it remained for the automobile to be responsible for the production of this entirely new type of instrument. Numerous makers have entered the field, and a correspondingly diverse number of instruments has been the result, but with few exceptions all seem to have carried their special systems to a high standard of efficiency and accuracy.

In the course of a few years these instruments have become so universally introduced as now to form an almost indispensable part of the car. The exhilaration of speed is made doubly alluring by definite knowledge of the rate attained, and this indisputable evidence forms the foundation of endless tales of drives at a high pace. With such inducements as this, coupled with season and trip mileage figures, on one hand, and the stern necessity of keeping within the absolute letter of the law in so many places, on the other, it is not strange that the demand for speed and distance indicators has grown to such amazing proportions during the few years that they have been on the market. At first their use was confined to a very large extent to the high-powered cars, on which even the cost of the highest-priced instruments formed but a negligible fraction of the cost of the car itself, and it was an early fad to have the dash ornamented with as much as could possibly be put on it. For that matter, the question of price has served to restrict the use of the speedometer, more or less, to cars selling above a certain price-limit, but within the past two years more extended experience in the manufacture of these instruments, as well as greatly improved facilities for turning them out, have served to bring them within the reach of even the small car owner, so that there is very little doubt that within comparatively few years their use will be universal.



Extreme Case of Obeying the Law to the Letter. Nothing is better calculated to bring about reform in traffic speed regulations than a rigorous application of existing laws. A New Jersey automobilist who, like many others, had chafed under the speed restraining regulations of more or less authoritative bodies, relates how he was brought to see the error of his ways and penitently resolved at all times and under all circumstances to maintain the exact legal rate of speed. At the same time there was born within him a love for driving on the street car tracks. When half a dozen trolley car drivers found they had to follow in a ten-mile-an-hour procession because of an automobile on the tracks, aid was demanded of the police, only to find that there was no law compelling other users of the roads to keep off the tracks, and that to ask the automobilist to go faster for the convenience of the trolley cars was more than could be expected of a policeman. Further, on looking up the matter, it was discovered that the franchise of the street railroad company limited the trolley cars to a lower rate of speed than that accorded later to automobiles. As to the wisdom of the policy of the New Jersey driver even automobilists are likely to be divided; its legality, however, is beyond question. As an object lesson it is effective—too effective probably, for it visits the iniquities of the guilty upon good and bad alike.

WHAT IS BEING DONE ON THE LONG ISLAND MOTOR PARKWAY

A LARGELY attended meeting of the board of directors of the Long Island Motor Parkway, Inc., was held in the general offices of the company, 527 Fifth avenue, New York, at 11 o'clock Thursday, December 12, with W. K. Vanderbilt, Jr., presiding.

The president reported at length regarding the activities of the various committees, the chief engineer, the general manager, and the treasurer, and submitted reports and blueprints indicating that thirty-four miles of right of way between the Jericho Turnpike, at Mineola; Fulton street, in Hempstead Village, and Garden City on the west and Lake Ronkonkoma on the east, had been secured, that detailed surveys had been completed, applications made to the various boards of supervisors, highway commissioners, etc., for their consent to cross the various high-

ways between these points, either above or below grade, and that the engineering department was now preparing detailed tracings for these various crossings, including the three crossings of the Long Island Railroad at Mineola, Central Park, and in Hempstead.

The chief engineer reported on various types of road construction which he was investigating, and on which tests were now being made. The chief engineer and the general manager further reported that the right of way between Riverhead town and Riverhead village had been surveyed in full, and that the Riverhead Board of Trade had worked most enthusiastically in furtherance of the project. Reports were made showing that the rights of way between Lake Ronkonkoma and Riverhead town were being secured.

LOOKS LIKE A STOCK CHASSIS RACE AT SAVANNAH IN MARCH

SAVANNAH, GA., Dec. 16.—The Savannah *News* in a lengthy article printed yesterday tells of the visit of representatives of the American Automobile Association who came to Savannah at the invitation of the Savannah Automobile Club and the civic and trade bodies of the city, the trip here being for the purpose of investigating the claims of Savannah as the place for holding one or more long-distance road races. Frank G. Webb, vice-chairman of the A. A. A. Racing Board, who served as the designated substitute of Chairman Jefferson de Mont Thompson; N. H. Van Sicklen, chairman of the Technical Board, and Frederick H. Elliott, secretary of the national organization, composed the visiting trio.

Mayor Tiedeman, County Commissioners Albert Wyly and A. B. Moore; President Williamson, of the Chamber of Commerce; President Wright Hunter, of the Cotton Exchange; President

W. B. Stillwell, of the Board of Trade; President F. C. Battey, of the Savannah Automobile Club; Chairman R. J. Davant, of the City Council, and Harvey Granger and J. J. Rauers, prominent members of the Automobile Club, escorted the visitors.

The *News* story contains the following: "The three men were sent to Savannah by President Hotchkiss of the A. A. A. to look over the course and see what the prospects were for the holding of the national stock car meet on the local course in March.

"As has been held all along by the men handling the local end, the course appears to be the best of its kind on this side of the Atlantic and it is for that reason that the A. A. A. have sent its most representative members to personally investigate. They are more than pleased."

A final conference was held to-day and this afternoon the visitors left for the North.

HOW THE FAMOUS AIRSHIP "PATRIE" WAS LOST TO FRANCE

PARIS, Dec. 10.—The primary cause of the loss of the French military airship *Patrie* was the breakdown of the ignition system through the mechanic's jacket catching in the distribution gears. The airship was over Toul, and but two miles of accomplishing its journey of 150 miles from Paris to Verdun, when the mechanic allowed his loose jacket to engage in the gears. The Panhard engine was fitted with double ignition, but as distribution was from the same shaft, the accident put both out of business. It would have been easy to descend and drag the ship to its shed, but in the spirit of *amour propre* the pilot decided to repair the damage and enter under his own power. All night the airship was held by 800 troopers, and next morning moved to a more sheltered position, secured by anchors and held by soldiers. There appears to have been negligence in not

attaching the valve cord to a bag of ballast, for on the second squall, when the airship was torn away from the troops, it was impossible to find it among the mass of cordage. Thus the *Patrie* rose into the air with its envelope fully inflated and no means of the gas being liberated automatically.

Henry Deutsch de la Meurthe's *Ville de Paris*, offered by its owner to the war authorities, has been accepted by General Picquart and will enter into service immediately. The *Lebaudy*, practically a sister ship of the *Patrie*, has been ordered to be put into commission also. Four other ships of the *Patrie* type are also projected, one of them, the *Republique*, being ready for delivery in March, and the *Democratie*, *Justice* and *Vérité* to be started as soon as funds are devoted by Parliament. The value of the lost *Patrie* is declared to be \$60,000.

NEW YORK AUTO TRADE MAY HAVE SPRING OUTDOOR SHOW

IN order to present something in the way of an exhibition at a time when automobile buying is at its height, the dealers of New York City, as represented by the New York Automobile Trade Association, will probably hold a show when the spring season opens. In accordance with a suggestion made at the last meeting of the association, at its headquarters in the Motor Mart, Sixty-second street and Broadway, last week, this

is to take the form of an open-air affair combined with a race meet, having for its venue the old Morris Park race track. As the betting ring under the huge grand stand is capable of accommodating as many cars as Madison Square Garden, this location is considerably favored, and Secretary Stratton, of the association, has been instructed to ascertain the feeling of the trade in the matter and see what arrangements could be made.

WORCESTER CLUB HAS MANY EX-MAYORS.

WORCESTER, MASS., Dec. 16.—The Worcester Automobile Club had the second smoker of its season Tuesday night, when Alfred Thomas, of the board of governors, told the members of his experience in England and the Continent last summer in his Pierce Great Arrow touring car. He told of motoring conditions in England, France, Belgium and elsewhere, and besides giving general conditions told of personal experiences. He covered 3,500 miles abroad.

Election returns were likewise given at the smoker, for it was city election day. James Logan was elected Mayor, but the leading feature of the election was the majority of 962 for no license. Worcester will, after May 1, 1908, when the licenses now in existence will expire, be the largest "dry" town in the country. This will effect the Worcester Automobile Club in common with all other clubs in the city, and the board of governors will soon meet to decide on the policy which will be followed in the café department, owing to the changed conditions after May 1.

Mayor John T. Duggan, ex-officio an honorary member of the club, whose term of office will expire January 6, has announced his intention to become an active member. In this he follows the example of his predecessors, ex-Mayors Edward F. Fletcher and Walter H. Blodgett.

MORE CLUBS FOR MICHIGAN STATE BODY.

GRAND RAPIDS, MICH., Dec. 16.—J. R. Jackson, chairman of the membership committee of the Michigan State Automobile Association, has just formed a club in Hart consisting of 25 charter members, which, of course, becomes a member of the State body. The officers are: President, Dr. L. P. Mulder; vice-president, J. D. S. Hansen; secretary, J. D. McClellan; treasurer, Carl F. Flood. Besides the officers, the board of governors will consist of J. W. Nicholson, John S. Fisher and Rupert Steele.

Mr. Jackson is working with the Muskegon autoists and expects soon to have an association formed in that city, which has a rapidly growing colony of automobile owners.

CANADIANS AND "CHAUFFEUR'S RAKE-OFF."

TORONTO, ONT., Dec. 16.—The nuisance known as the "chauffeur's rake-off" has become so pronounced in Canada of late that the Ontario Motor League has taken steps to prevent it, by organizing a chauffeurs' bureau in connection with the League. The purpose of the bureau is to protect owners of cars who employ chauffeurs from unscrupulous practices on the part of their drivers. Numerous complaints have been made that chauffeurs exact, or try to exact, a commission from dealers on supplies purchased from them for their employers. Cases have been known where this having been refused, the chauffeur has induced his employer to take his car to another garage.

The chauffeurs' bureau will undertake to investigate, on request of members of the Ontario Motor League, the record and character of any chauffeur who may apply for employment. It will also keep a register of competent and reliable chauffeurs who are looking for employment, and place them in touch with owners needing drivers. Details of the organization are being worked out at the secretary's office in Toronto.

PHILADELPHIANS TO HAVE NOTABLE BANQUET.

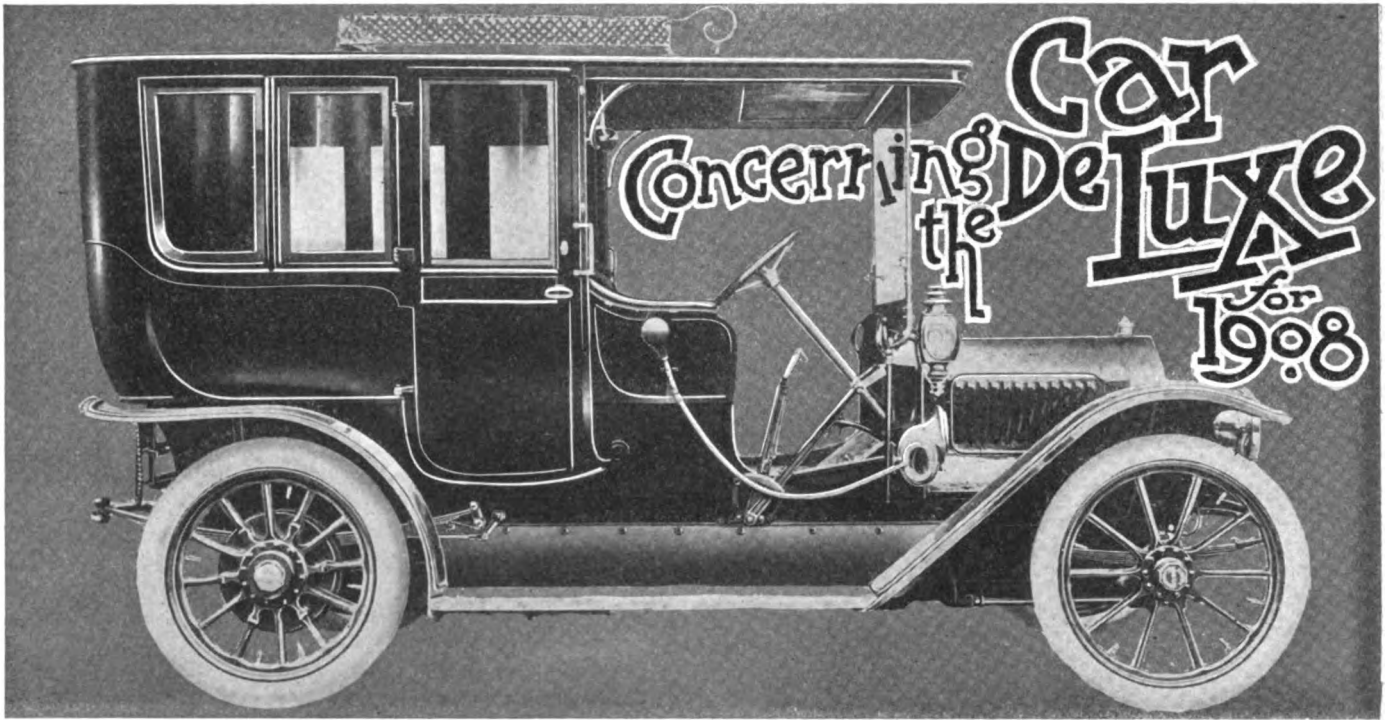
PHILADELPHIA, Dec. 16.—At the last meeting of the Automobile Club of Philadelphia, the good work being done by the Automobile Club of Delaware County was recognized by an appropriation of \$100 to assist the hard-working suburbanites in their good roads campaign. Twice that amount was placed at the disposal of the sign committee, which is engaged in marking all the principal routes leading into this city.

The preliminaries for the annual banquet of the Philadelphians were planned at the meeting, and efforts will be made to secure the presence of Governor Stuart, Highway Commissioner Hunter, and many national and local automobile celebrities. The banquet is one of great importance socially, and is always noted for its well-known guests of honor.

Last Saturday's blizzard put an effectual quietus on the club's second "legal speed limit run," scheduled for that day, and it was indefinitely postponed.

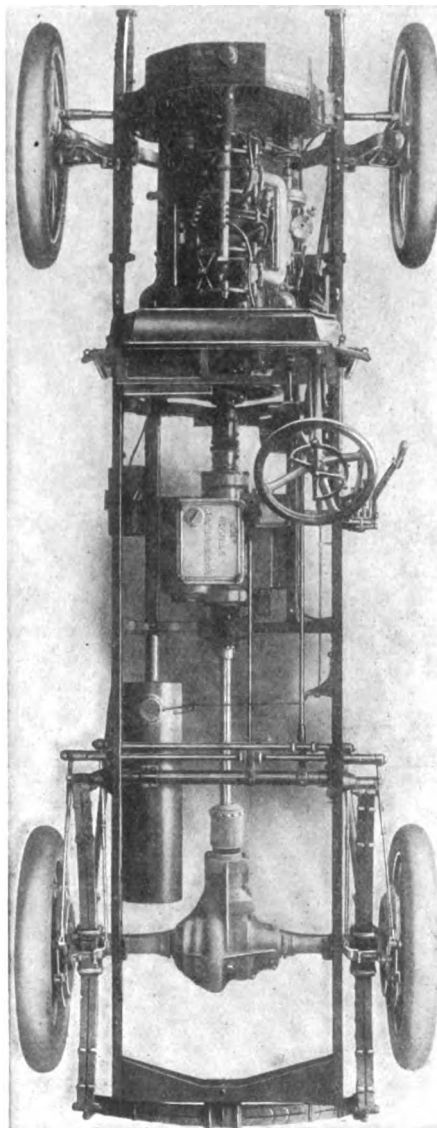


CONTESTANTS IN THE RECENT SEALED BONNET CONTEST OF THE AUTOMOBILE CLUB OF WASHINGTON HALTING EN ROUTE.



CONSISTENT adherence to a well-outlined plan of chassis has marked the De Luxe car, built by the De Luxe Motor Car Company, Detroit, Mich., ever since it has been on the market, and in presenting its model for 1908, the company calls attention to a number of small changes which may be most aptly classified under the category represented by the now time-honored term "detailed refinements," as none of them is a departure from previous standards in any sense of the word. Chief among these changes has been the adoption of internal expanding and external contracting metal to metal brakes, of the shoe type, centered on the driving wheels, in place of the brakes formerly located on either side of the transmission. A dual system of ignition has replaced the battery and coil outfit of last year, the Eisemann high-tension magneto having been adopted for the working side of the system, while the standard, four-unit coil type, with low-tension timer is relied upon for emergency purposes. Tire sizes have also been increased, 4 and 5-inch front and rear sizes replacing the 3 1-2 front and 4 1-2-inch rear used last year, while riding has been made still easier by the use of Lemoine three-point suspension rear springs, instead of the individual semi-elliptic springs formerly a feature. The clutch has likewise been improved by the abandonment of the plain leather-faced type, in favor of a metal to metal cone provided with cork inserts, which makes disengaging much easier, beside extending the efficient life of this essential of the car considerably.

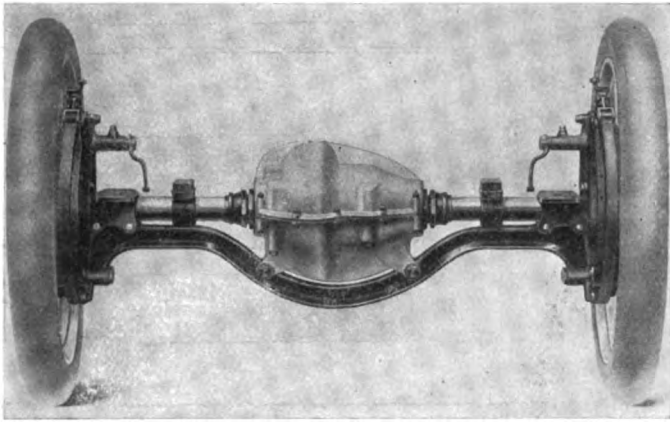
With the exception of the improved oiling system, this suffices to sum up the



PLAN VIEW OF CHASSIS, 1908 CAR DE LUXE.

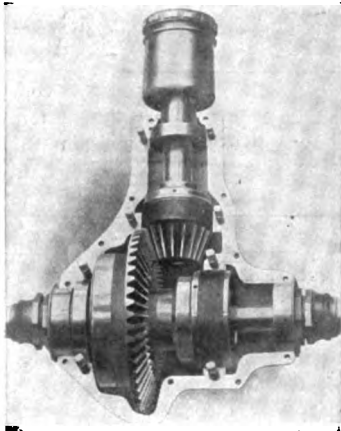
changes made. Where the latter is concerned, a continuous circulating system has been introduced to maintain the crankcase supply of oil at a constant level at all times. This consists of an auxiliary oil tank, placed directly beneath the crankcase proper, and from which a pump, operated by the camshaft, serves to raise the oil to the crankcase. The oil-pan of the latter is provided with overflow stand pipes, the outlets of which are placed at exactly the level desired to be maintained, so that all excess oil finds its way back to the tank by gravity, and is again pumped up, or circulated. In addition to this provision, a six-tube, mechanical force-feed oiler having sight-feeds on the dash, is provided. Four of the feed tubes are taken to the cylinders, one to the pump bearing and one to the timing gears, from which it will be evident that two independent systems of lubrication are, in reality, employed, and the first is one that is greatly appreciated by the average driver as it entirely eliminates any question of the height of the oil in the crankcase, whether the car has been driven 100 or 1,000 miles. The only attention required by such a system is a periodical flushing out and replenishment of the oil supply, as the latter loses its lubricating properties after long service.

So far as the remainder of the motor is concerned, it is distinguished by all those features of design and construction that have been identified with the De Luxe car in former models. The cylinder dimensions are 5-inch bore by 5 1-4-inch stroke, while the horsepower rating is 50. Both the inlet and exhaust valves are located in the cylinder-



THE DOUBLE REAR AXLE DRIVING AND SUPPORTING MEMBERS.

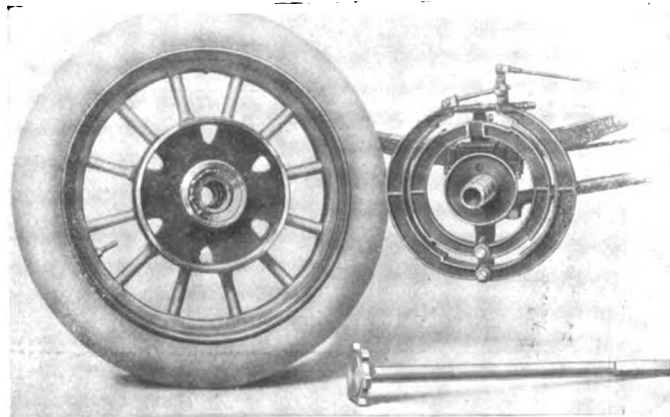
heads, and are inclined at an angle of 20 degrees to the vertical, which makes it possible to give both of them a diameter equivalent to half that of the cylinder itself. They are operated by double-contact rocker arms, one push rod and rocker arm serving to operate each pair of valves, so that the engine is particularly simple in this respect. These rocker arms are chrome



SHOWING BEVEL GEAR DRIVE.

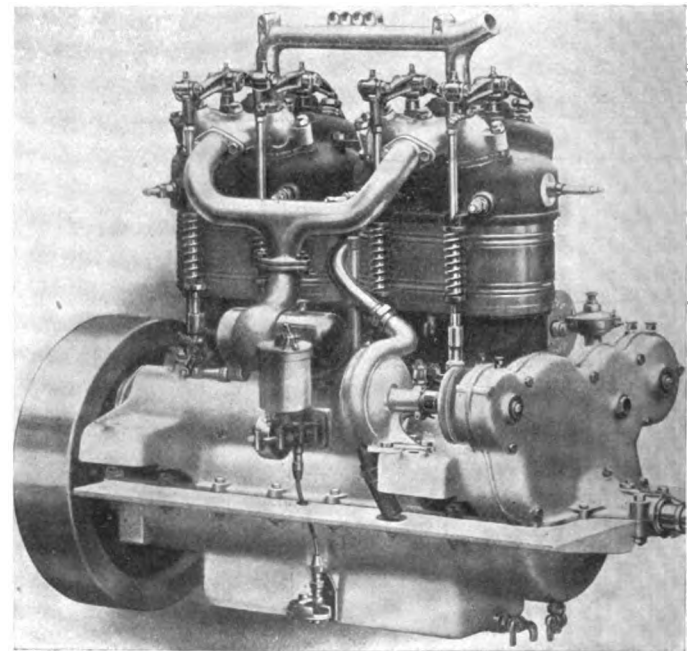
nickel-steel forgings and are supported on yoke-topped, adjustable pillars, one end of the arm resting on the top of the exhaust valve stem, while part of the other end acts as the contact for the intake valve end and the second part is hooked to the push rod. This, accordingly, necessitates the use of but four push rods and four cams. In addition to the adjustable supporting pillar, further provision is made for timing the valves by giving the push rods adjustable connections at their upper ends. Another advantage of this construction is that any of the valves may be removed without disturbing their timing adjustments. Instead of relying entirely upon the ground fit employed on the intake-valve cages last year, this has been supplemented by a sleeve nut which holds the intake valve cage to its seat in the cylinder head, making an absolutely tight joint.

The crankshaft is a one-piece, chrome nickel-steel forging of high tensile strength, supported on three unusually liberal-sized D. W. F. ball bearings. It is customary with the makers of the latter bearings only to guarantee them when they are



TYPE OF BRAKES, DRIVE SHAFT AND BALL-BEARING OF WHEEL.

of the size required and have been installed in accordance with the recommendations of their own engineers, but in the De Luxe the designers have specified a size larger than those called for by the bearing makers. As is the case with the motor, practically every essential of the car has been designed exclusively for it. This will be particularly evident in the case of the rear axle, which is of a double type, upon which patents have been granted. As will be seen from the accompanying illustration of it, the entire weight is carried on the solid, one-piece, chrome nickel-steel axle of I-beam type, very much resembling a typical forward axle with its downward sweep, which is to allow for the differential and drive housing, as well as to permit of accurate alignment of the driving shafts. The second half of the axle is really not an axle at all, but is simply the driving mechanism, which has no part whatever in carrying the weight of the vehicle. The driving shafts have squared ends fitting the differential pinions, and extending through the outboard tubular ends of the I-beam supporting axle, where they engage the hubs of the driving wheels by means of a special clutch device of substantial size which is forged integral with the shaft. The details of the



MOTOR DE LUXE FROM THE CARBURETER AND VALVE SIDE.

bevel gear drive are also shown in one of the accompanying illustrations, and this essential, like practically every part of the car, is supported throughout on ball bearings. Six of the D. W. F. imported annular type are used here alone, while five are employed in the gear-set, four in the steering-gear construction, six in the driving axles, one in the clutch and eight on the wheels, making a total of 33, counting those on the crankshaft. As already mentioned, the brakes are now centered on the driving wheels, where they are located in large steel drums. They are of the internal expanding and external contracting type, and both are equally effective in either direction, the former constituting the running brake and being operated by pedal, while the latter is the emergency and is controlled by the hand lever. A very simple equalizing device insures an evenly distributed contact on each of the brake drums. Both brakes are lined with special friction surfaces consisting of a special composition of bronze, which are adapted to be easily replaced at a nominal expense, when worn.

One standard type of chassis will be built, but several models are listed, including a roadster, which sells at the same price as the touring car, \$5,000, a limousine and landaulet being listed at \$6,250. respectively.

NEXT THE IMPORTERS AT MADISON SQUARE GARDEN

WHEN cackling hens, cooing pigeons and quacking ducks have been noisily turned out of Madison Square Garden next Saturday night, a new staff will rush in to fit the building for the Importers' Automobile Salon, a goodly share of which is now being brought from Europe on various liners. On Saturday, December 28, America will be given her first look at the products of French, German, Italian, English and Belgian factories for the 1908 season, and allowed to gaze until 11 o'clock on the following Saturday night.

A complete transformation of the Garden is promised for what the promoters have entitled the "Paris Salon Transplanted," the decorative scheme to be unique, artistic and altogether *chic*. The interval of six days between the departure of the roosters and the arrival of the Europeans would not be sufficient to install the decorative work had not all the preliminaries been pushed ahead for the past two or three weeks at the decorators' own shops. Thus everything is expected to be in readiness for the opening hour.

A full list of the exhibitors, together with the cars that will be shown on the main floor of the Garden, is as follows:

Auto Import Co. (Rochet-Schnelder); Archer & Co. (Hotchkiss); Brewster & Co. (Imported cars); S. B. Bowman Auto Co. (Clement-

Bayard); C. G. V. Import Co. (C. G. V.); Darracq Motor Car Co. (Darracq); Delahaye & Pilain Import Co. (Pilain-Delahaye); De Dietrich Import Co. (De Dietrich); Fiat Automobile Co. (Fiat); Itala Import Co. (Itala); Isotta Import Co. (Isotta-Fraschini); Martini Import Co. (Martini); L. P. MacNamara (Renault); Maja Co., Ltd., Am. Br. (Maja); Percy Owen (Blanchi); Panhard & Levassor (Panhard); Palais de l'Automobile (Delaunay-Belleville); J. M. Quinby & Co. (Imported cars); Rothschild & Co. (Imported cars); Rolls-Royce Import Co. (Rolls-Royce); Renault Frères Selling Branch (Renault).

A list of the tire, accessory and publishing concerns which will occupy the elevated platform and mezzanine floor, subject to a few possible changes at a later date, is as follows:

H. T. Alexander Co.; American Chauffeur; Acetyvone Co.; Automobile Topics; Auto Supply Co.; Robert Bosch; S. F. Bowser & Co.; Continental Caoutchouc Co.; Class Journal Co.; Central Automobile Top Co.; Cole & Woop; Comptoir d'Innovations Pour Autos; Dow Tire Co.; Diamond Rubber Co.; Fisk Rubber Co.; B. F. Goodrich Co.; Glaenger & Co.; Healey Leather Tire Co.; Hartford Suspension Co.; Hartford Rubber Works Co.; Isaac G. Johnson & Co.; Leon Mann Co.; Lavalette & Co.; Motor; Charles E. Miller; Michelin Tire Co.; National Sales Corporation; N. Y. & N. J. Lubricant Co.; Pneu l'Electric Co.; Pennsylvania Rubber Co.; Leon Rubay; Spare Motor Wheel Co.; S. Smith & Son; Samson Leather Tire Co.; C. E. Spltdorf; Victor Shock Absorber Co.; Warner Instrument Co.; Wood Mfg. Co.

DETROIT WOULD HAVE CONTINUED EXCEPT FOR ST. LOUIS

DETROIT, MICH., Dec. 14.—Unqualified success crowned the first annual show of the Detroit Automobile Dealers' Association, which closed to-night at Riverview Park. In point of attendance all expectations were exceeded, while a careful canvass of those exhibiting brings forth the statement that the aggregate amount of business done was better than at any previous show held in Detroit. Not all this was real money. Many sales were made outright, and others booked. But possibly the most encouraging feature was the number of inquiries and the interest shown by live "prospects."

Several dealers went into the show with fear and trembling, feeling that with the financial flurry still fresh in mind and the holiday season at hand there was little to hope for. That they

were disappointed—and agreeably, too—in the outcome is a matter of record.

So enthusiastic were the dealers and so marked the interest of the public that the question of continuing the show for another week was freely discussed. Had it not been for the fact that a number of the exhibits were going to St. Louis, the show would have been continued. As it is, with this season's success in mind there is every probability of next year's show lasting a fortnight.

To the efforts of Chairman Alex. I. McLeod and Manager E. LeRoy Pelletier can be attributed much of the success achieved, although they were backed up by the Detroit Automobile Dealers' Association at every turn.

ST. LOUIS SHOW OPENS WITH MOST OF AMERICA'S FINEST

ST. LOUIS, Dec. 16.—Again are the sleek show beauties—shining representatives of the leading American makers—on exhibition, this time on the banks of the Mississippi. Rushed to Detroit from Chicago, they have made another quick jump here, and a small army of attendants were set to work transferring the contents of the special train to the exhibition spaces in the big Jai Alai building on Friday, where a second division undertook the renovation of the toilets of the many much-exhibited cars, which had lost more or less of their pristine brightness during the many miles of railroad travel they have had since the beginning of the show season. The show is the second annual event held under the auspices of the St. Louis Automobile Deal-

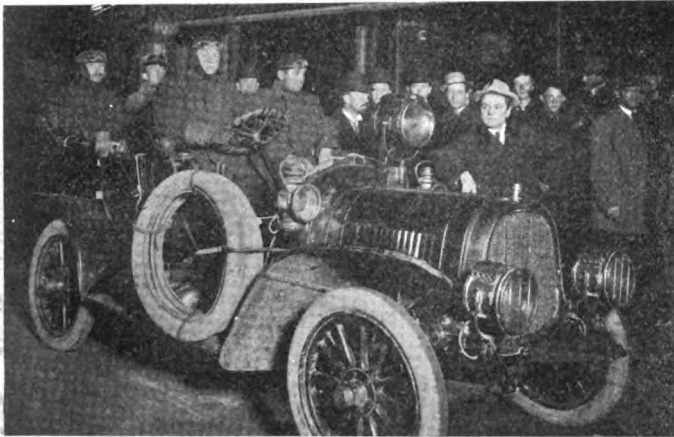
ers' Association, and is being well managed by D. M. Strauss. What with the large number of complete exhibits brought on from the national show and the unusually good showing made by the local dealers, this year's affair far eclipses its predecessor, and this is also true where the decorations are concerned, the management having spared no pains to make these in keeping with the importance of the occasion. The show opened Saturday night and the attendance was excellent. St. Louis forms an exception to the general run of automobile show cities and keeps open house for the public on Sundays, which is really one of the big days here. Another one this year will be "society night," which will be Tuesday, when the admission will be raised to one dollar.

PENNSYLVANIA 1908 LICENSE TAGS ARE OUT.

PHILADELPHIA, Dec. 16.—The first of the 1908 Pennsylvania license tags was issued from the offices of the State Highway Department at Harrisburg last Thursday. They have a yellow ground with black lettering. Over two thousand applications have already been filed for them.

RACING DRIVER TO HANDLE WAR AUTO.

PARIS, Dec. 11.—A Panhard automobile fitted with a Hotchkiss quick-firing gun has been sent to Oran to be used against the rebellious tribesmen. Captain Genty, head of the army automobile corps at Vincennes, will be in charge; the captain has competed in a number of races under the name of De la Touloubre.



HOBENICHT IN HIS POPE-HARTFORD THAT TRIED FOR RECORD.

LOST RECORD IN SIGHT OF GOAL.

SAN FRANCISCO, Dec. 10.—Another attempt was made recently to lower the record made by Fernando Nelson, in his 40-horse-power Columbia, between San Francisco and Los Angeles. The start was made December 3 at 10:30 P.M. by Rudolph Hobenicht, in his Pope-Hartford touring car. Hobenicht had with him Jack Fleming, who has made quite a reputation as a driver. As the record was made with four passengers aboard, Hobenicht had to carry two others, who were James Fleming and Ernest Alford. At the appointed time R. R. l'Hommedieu gave the word and the car shot down Guirero street and out the Mission road to the country. It was a wild ride all night at every point. Hobenicht was ahead of Nelson's record. Everything went along smoothly until after Santa Maria had been passed and the car was nearing Los Olivos, while Hobenicht was at the wheel. Suddenly the forward left wheel dropped into a rut and away went the spring. There was no chance to make repairs until Santa Barbara was reached. They shouted to a party in one of the towns through which they were passing to 'phone to Santa Barbara and tell those there of their trouble. A short time after the engine practically stopped from overheating. An examination was made and it was found that the petcock on the radiator had unscrewed, an accident heretofore unknown. They had to wait until the engine cooled before they could proceed, which cost them over an hour. Where the stop was there was not a tree or shrub in sight from which could be cut a plug to stop up the radiator. Fleming stuffed it up with his handkerchief, which was only a makeshift affair and leaked so badly that they had to stop time and again to take water. Finally Santa Barbara was reached. There they met "Bill" Reuss, of Los Angeles, who took the wheel.

Then began one of the wildest rides in the history of the game on the coast. Reuss opened up the car to the limit and just let her go. Through two of the hardest mountain passes the car flew at a frightful pace. It was just after getting through the first pass that in making a sharp turn the tires on the front wheels were torn off and the temporary repairs to the broken spring lost. The tires were put on, and the wild ride resumed with the car resting on the front axle. There was never a let-up on the pace, and the car was brought into Los Angeles ahead of time. It was just after getting within the city limits that the car had to cross a railroad track. The pace was too fast and the front wheels turned at right angles to the car and the next second it was hopelessly ditched. The car went over with a crash and the four fell clear of the machine and luckily escaped without the slightest injury. At the time of the accident it was only five blocks from the finishing line with eighteen minutes to the good. The fact that the record was practically broken has caused Homer Boushey, the head of the house which handles the Pope cars in San Francisco, to decide to make the attempt again.

THE OPTIMISM OF THE SALES MANAGERS.

F. C. Gilbert, Sales Manager for Pope-Toledo: "It is wonderful what can be accomplished by thought rightly directed. The great success of the Chicago Automobile Show was a grand demonstration of 'thought-power.' The managers of the show were determined to have everyone come in the right-thought attitude, to boost, and the result was splendid. Everybody I met was happy. I have long been a student of 'thought rightly directed' as a great factor in a sales campaign. When the power of thought is understood and properly used we will reach the zenith in commercialism; no panics, no great failures; all will be harmony. Each man will get his share of success, because when we become sufficiently enlightened to live by and work by 'thought-power,' our present jealousies and strifes will become as nothingness. The tendency of the times is toward the development of this heretofore latent force. The outlook is very good."

R. M. Owen, General Sales Agent for Reo and Premier: "It was very gratifying to me to learn of the hopeful attitude which our dealers exhibited at the Chicago Show. This was notably true of our agents in the West and South. That this optimism on the part of our agents is genuine is shown in the fact that our November and December deliveries have been much larger than in any previous year. This is probably due somewhat to the earlier shows. Be that as it may, it is nevertheless true that conservative business and professional men throughout the country have not in the least abated their interest in the economy, efficiency, convenience, and many other advantages afforded by the high grade, moderate-priced, simple, reliable and durable power-driven vehicle. The 1908 outlook is very encouraging with us."

E. C. Corder, Studebaker Branch, New York City: "While we have had a steady demand for enclosed cars, and have made a number of sales, we had not anticipated much retail demand for touring cars at this season of the year, and have been most agreeably surprised at the interest taken in this type of car and the number of sales made. In spite of the alleged stringency in the money market, the outlook, as far as we are concerned, is certainly most pleasing."

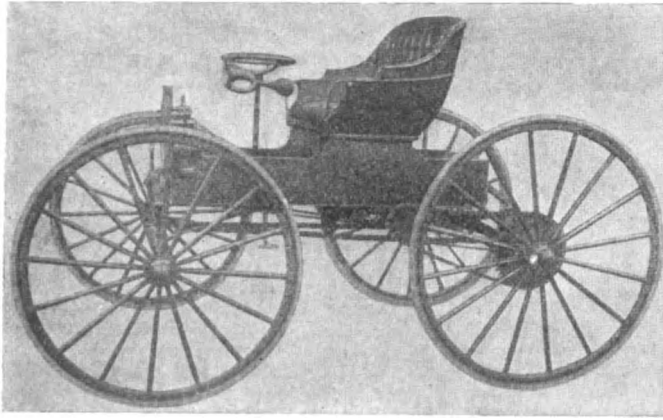
FRANKLIN MOTOR COMPLETES ITS TEST.

CHICAGO, Dec. 16.—On the closing day of the show here there was brought to a successful termination the strenuous test of a Franklin air-cooled motor that had been undertaken by the local branch to demonstrate its cooling powers under adverse conditions.

During its continuous, seven-day run the motor made a non-stop record of 168 hours, its performance being the equivalent of a distance of 3,500 miles. The gasoline consumption was 40 miles to the gallon, and the lubricating oil but one gallon for each 300 miles. At 12:30 P.M. on the last day the motor was stopped long enough to replace the muffler, and was then immediately restarted and the car taken out on the street, where it was driven about steadily until 10:30 that evening.

CLAIMS FINEST GARAGE IN COUNTRY.

PHILADELPHIA, Dec. 16.—To-morrow there will be opened by the Keystone Motor Car Company its new concrete garage and salesrooms at 216-220 North Broad street, said to be the finest building of its kind in this country. Fifty-three feet wide by 200 feet in depth and four stories high, it is fitted up with every possible convenience, not alone for the comfort of its patrons, but for the quick transaction of the company's business. The salesroom, which extends across the entire Broad street front, is two stories in height, the handsomely ornamented ceiling being studded with numberless electric lights, while the tessellated floor is strewn with handsome rugs. The Keystone concern handles the Packard and Buick.



SUCCESS AUTO BUGGY FOR 1908—FOUR HORSEPOWER.

PIONEER AUTO-BUGGY CONSTRUCTORS.

Though he has been building automobiles ever since 1896, when by dint of a great deal of labor and much perseverance he succeeded in installing as light a stationary engine as was procurable, beneath an express wagon, and made it run, John C. Higdon, of St. Louis, who is the president of the Success Auto Buggy Manufacturing Company of that city, has always been a firm believer in the future of the buggyabout type and has never devoted his attention to any other form of construction. Quite in contrast with the ton or more of engine which he was compelled to utilize on his first car, is the neat little engine which characterizes the 4-horsepower Success Auto-Buggy of 1908. It is of the single-cylinder, inclosed flywheel type and is attached to one end of a special angle-iron frame extending clear across the body. The motor drives to a countershaft carrying a planetary change-speed gear through a chain and sprockets, and from this another chain drive is taken to a second countershaft, forward of the first. This second countershaft extends outboard on the left-hand side and its alignment with the rear axle is maintained by a distance rod, the final drive being by a third chain and only the wheel on that side of the vehicle being driven, thus dispensing with a differential. This machine sells for \$250, and not a few of them are in use in the West.

The company also lists a much more ambitious model for 1908, in the shape of the 10-horsepower Success Auto-Buggy, which is fitted with a double-opposed, four-cycle, air-cooled motor, the builders also giving the option of a 12-horsepower water-cooled motor of the same type at a slight extra charge. Both cars have the regular buggy running gear and body, with wheel steer, and with the exception of the power plant and double-chain drive of the latter the specifications are practically the same. The 10-horsepower model lists at \$400.

TITUS MAKES 24-HOUR TEST ON THOMAS CAR.

NEWARK, N. J., Dec. 16.—Five hundred and twelve miles through snow, rain and slush, have been covered by Fred Titus and John Prowett with a Thomas touring car, in their self-imposed twenty-four hour touring test. The two men and their car from Buffalo made a double run round a circuit comprising Princeton, Trenton, Camden, Atlantic City, Toms River, Lakewood, Freehold and New Jersey, the roads being a fair sample of the good and the bad of the State. In the cars with them were George Walters, official observer, and E. E. Pearce, his assistant. During the run the engine was not stopped and no adjustments were made other than the replacing of two punctured tires. With the exception of the last breakfast, all meals were taken while the car was running, the exception being enforced owing to the exhaustion of the provisions on board. Tests were made by the occupants of the car of various kinds of clothing, but neither leather, rubber, furs, nor felt were able to keep out the cold and the wet.

THAT STARTLING NEW YORK TO I

Seven cars are declared by *Le Matin* to be... 'round-the-world tour which it is organizing in conjunction with the *New York Times*. How the run will be made, what route will be chosen, and what the details of the contest will be neither journal is yet able to announce definitely. The *Matin* declares emphatically that towards the end of February the competitors will leave Paris, travel to Calais, cross the English Channel, run up to Liverpool, then embark for New York, where the difficult part of the trip will commence. Four routes are projected for crossing the United States, but the organizers stop when the region of the Bering straits is reached and has not much advice to offer on the best way of getting across Asia.

Marquis de Dion, who had two cars in the Pekin-Paris event, has written to the *Matin* very wisely asking that more time should be granted manufacturers to prepare for the long and dangerous journey. Two months in which to make arrangements for the supply of stores and fuel along the route and for the construction of special cars is manifestly not sufficient. Speaking on the type of car he would use in the tour, the head of the De Dion Bouton firm declares that he will employ a 30-40-horsepower engine capable of driving the car at a speed of thirty miles an hour, but geared to run as low as three miles an hour where necessary. Road wheels will be of sufficient size to give ample clearance in any kind of country and will be equipped with pneumatic tires capable of being dismounted and replaced by wooden rims in the Arctic regions. Four spare air-cooled cylinders will be carried along on each car to replace the water-cooled ones when the coldest regions are reached. A heating apparatus will be fitted to warm up the engine sufficiently to start. At the forward end of the car will be mounted a windlass operated by the motor, by means of which the most difficult portions of the road can be negotiated. Provision for the driver will be secured by means of a leather tent over the body, so arranged as to make the car habitable when it is necessary to camp out.

Two American firms—Hol-Tan and Franklin—which have promised to take part in the run to Paris have not yet announced any detailed plan of action, and, so far as can be learned, have taken no steps for the construction or fitting out of their cars. If the start really is to take place from Times Square, New York City, in March, there is no room for delay. The wiser plan would appear to be to wait until such arrangements can be made to assure the success of the daring enterprise. As the Bering straits can only be crossed in winter, delay beyond March would mean a postponement until the following year.

NATIONAL DEALERS' ASSOCIATION ORGANIZED.

CHICAGO, Dec. 16.—As the result of several meetings held during the course of the show here the organization of an association to promote the interests of those connected with the automobile and supply business was effected. It is known as the National Retail Dealers' Automobile Association, and was launched with a charter membership of thirty, with good prospects of doubling this number within the next few months, as the annual dues are but \$2. The officers are: President, C. F. Jensen, of the Steinhart-Jensen Automobile Company, Joliet, Ill.; vice-president, R. Hokanson, Hokanson Auto Company, Madison, Wis.; secretary, J. A. Crum, Krueger Auto Company, Oshkosh, Wis.; treasurer, L. Ohnhaus, Ohnhaus Auto Company, Fort Wayne, Ind. The officers were made members of the board of directors ex-officio, which is comprised of the following three members in addition: Mr. Tanberg, Tanberg Auto Company, La Crosse, Wis.; Mr. Sutter, Sutter & Gamble, Burlington, Ia.; and Don P. McClure, Oskaloosa, Ia. The president appointed a committee of two, consisting of L. Ohnhaus, Fort Wayne, Ind., and N. A. Carlsen, Butte, Mont., to act in conjunction with him in the drafting of by-laws for the association. The next annual meeting is to take place in connection with the 1908 Chicago show.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

A 1908 Franklin touring car of 16 horsepower gave an interesting hill-climbing demonstration at Wilmington, Del., a few days ago, ascending Third street hill, about a 45 per cent. grade, covered with rough cobblestones.

Mrs. Myra E. Roach, of Milwaukee, Wis., claims the distinction of being the only lady driver in the United States to have driven a two-cylinder car over 20,000 miles in three consecutive seasons. Mrs. Roach, who employs a Rambler, drove 8,000 miles the first season, 6,000 the second year, and the same distance in 1907.

The Philadelphia Ford Motor Club recently held the first of a series of winter social gatherings, when two-score members with their wives, husbands, brothers, and sisters, journeyed to Woodbury, N. J., to the home of one of the members. The Fordites of Philadelphia are growing, and at the present rate should reach the century mark before another year rolls round.

The Fort Pitt Motor Mfg. Co., New Kensington, Pa., makers of the Pittsburgh "Six," expects to have its first car ready within the next two weeks. Two models will be manufactured, one a six-cylinder runabout with disappearing seat, selling at \$1,850, and the other a six-cylinder touring car, selling at \$2,250. George Von Rottweiler, general manager of the company, has just completed a trip to the eastern cities in the interests of the new car.

Announcement has been made from the plant of the York Motor Car Company, York, Pa., that a new runabout product, to be known as the 4-40 runabout, or gentlemen's roadster, will be put on the market about the first of the new year. Plans of the new car were submitted to the western agents at the recent Chicago show and many orders taken. Sales Manager H. R. Averill put in a busy week at the Chicago show and established a number of new western agencies. During the past few weeks three carloads of Pullman touring cars were shipped to San Francisco.

An incident depicting the cheerful kindness that has been born of the successful opposition of the automobile to the horse-drawn vehicle was witnessed during the recent days of slippery streets in New York. At the direction of the officers, the street in front of the Rainier Company's place, on Broadway at Fiftieth street, was kept strewn with ashes for the benefit of the suffering horses. The Rainier cars and others running past were having no trouble, and in a business way there was "nothing in it" for this concern to help along the horse, so it was a piece of magnanimity very becoming to a company of such substantial standing.

A recent story in a newspaper of Bangkok, Siam, goes to prove that "nature faking" is not an exclusive American institution. The story in question relates how an attack was made on an automobile by one of two white elephants which were being driven to the river for their morning bath. This elephant is credited with seeing in the automobile, which was a Rambler car owned and driven by C. G. Edwards, of Bangkok, a strong competitor in the transportation business, and to have been imbued with the idea of accom-

plishing its destruction before it could breed any more of its kind in the land of Siam. Mr. Edwards' car came through the encounter with only a lamp and mud-guard broken.

In the \$5,000 advertising contest, conducted by Arbuckle Bros., the coffee importers of New York, the first prize of \$2,000 was won by Charles W. Mears, of the Winton Motor Carriage Company's advertising department. There were 18 prizes and hundreds of contestants. The purpose of the contest was to secure new ideas for the advertising and sale of Ariosa coffee, and the Winton man put the best suggestions over the plate. He advised against freak schemes, and strongly advocated the persistent use of daily papers. Mr. Mears has been associated with the Winton company for four years as assistant to Charles B. Shanks, the general sales manager, and one of the cleverest men in the automobile industry.

R. W. Daniels and a party of friends in a 40-horsepower Studebaker last week made a test trip from New York City to Boston and return. In talking over the journey, Mr. Daniels said: "Everything went along in apple-pie order. We had a most satisfactory trip, the motor working like a charm, and we had no trouble the entire distance. Some rain storms crossed our path at the start, thus making the roads very slippery and muddy. In one place we were all but hub deep in the mud. Despite this, however, we managed to complete the journey in nine hours, and were congratulated upon our fine showing when we arrived in Boston. The return trip was made in perfect weather, and was much enjoyed by the party."

Two rules which should always be kept in mind by automobilists desirous of reducing their tire expenses to a minimum are, says the Michelin Tire Company, to keep the car fitted with tires large enough to carry the load easily and to always keep them well inflated. Michelin tires, when new, will stand a test of over 300 pounds to the inch. If not sufficiently inflated there will be excessive friction between the plies of fabric and rubber, resulting in the wrecking of the tire prematurely. If the tire is well inflated there is reduced deformation under load; reduced deforming means reduced action between the plies, less friction, less heat, and longer life. There is very little danger of getting tires inflated too tightly. A 3-inch Michelin, when new, will stand a strain of not less than 800 pounds to the square inch; 4 1-2-inch tires will stand 50 per cent. more. It is difficult with any means at the disposal of the automobilist, to inflate tires to more than 100 pounds to the square inch. Drop the pressure to 40, 30, or 20 pounds and more tires will be used up in a 50-mile run than would be consumed in 500 miles under proper conditions.

Not being satisfied that the two weeks' test carried out during the course of the New York shows conclusively proved how long the Atwater-Kent Spark Generator would run on a single set of dry cells, the makers, the Atwater-Kent Manufacturing Company, Philadelphia, Pa., transferred the entire outfit, consisting of the set of cells, the spark generator, Jones' speedometer, electric

motor and the glass case containing them to the Chicago show. As the result of its two weeks' running the odometer showed a record of 4,249.6 miles, while the batteries, which had showed an average of 6 amperes at the conclusion of the first part of the test, had deteriorated to the extent of showing but 4 1-2 at Chicago. The outfit was officially restarted, exactly where it had left off, barring the loss in the cells, and when it had run 5,328.6 miles the plugs began to miss for the first time. On publicly breaking the seals and testing the battery, the cells were found to show an average of 3 amperes, thus losing but 1 1-2 amperes in a 1,000-mile run, a fact which strikingly indicates the extremely small current consumption of the spark generator. The latter was found to be in perfect condition at the end of its long run and all the plugs sparked regularly when fresh cells were inserted. The contact adjustment was not changed throughout the test.

NEW AGENCIES ESTABLISHED.

Edwin Kilburn, of Spring Valley, Minn., has closed a contract to handle the Ford line of automobiles in his district next season.

From January 1 the present agency in Chicago for the Thomas-Detroit will be changed. It is intended either to place a direct agency or open a branch. Coey & Company will continue to handle the Thomas Flyer.

Twenty-eight new agencies in thirteen States have been placed by the Forest City Motor Car Company, of Massillon, O., makers of the Jewel automobile. In addition three agencies have been concluded for abroad, in London, England, Cuba, and Porto Rico.

PERSONAL TRADE MENTION.

W. N. Norton, the newly-appointed superintendent of the Autocar Company, has been officially installed in his new position at the factory in Ardmore, Pa.

C. S. Ransom, for the past two years general manager of the Albany Garage Company, Albany, N. Y., has severed his connection with that company and taken up the agency for the Stevens-Duryea car at 5 Tweddle Building, Albany.

THE WORK OF THE COURTS.

A judgment for \$19,195 has been entered by default against the Christie Direct Action Motor Car Company, formerly of 519 East Eighteenth street, New York City, in favor of William Gould Brokaw for the amount now due on a demand note of the company dated April 13, 1907, payable to the Christie Iron Works, which indorsed the note and delivered it to Mr. Brokaw. When the note was made Walter Christie was president of the company and Harry H. Tredwell treasurer. The company was incorporated with a capital stock of \$300,000.

Judge Wheeler, of the Superior Court, has granted permission to the receivers of the Pope Manufacturing Company, Hartford, Conn., to continue manufacturing four months from December 28.

E. R. THOMAS DETROIT CO.
RECEIVED
DEC 29 1907
ANSWERED

THE AUTOMOBILE

WEEKLY

NEW YORK—THURSDAY, DECEMBER 26, 1907—CHICAGO

10 CEN



No. 835



No. 837

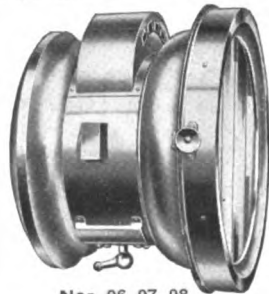


No. 36

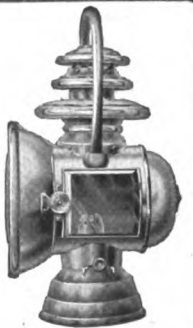
GRAY & DAVIS



No. 21



Nos. 96, 97, 98



No. 29

AUTO 1908 LAMPS

SEND FOR COMPLETE CATALOG



No. 817



"G" Generator

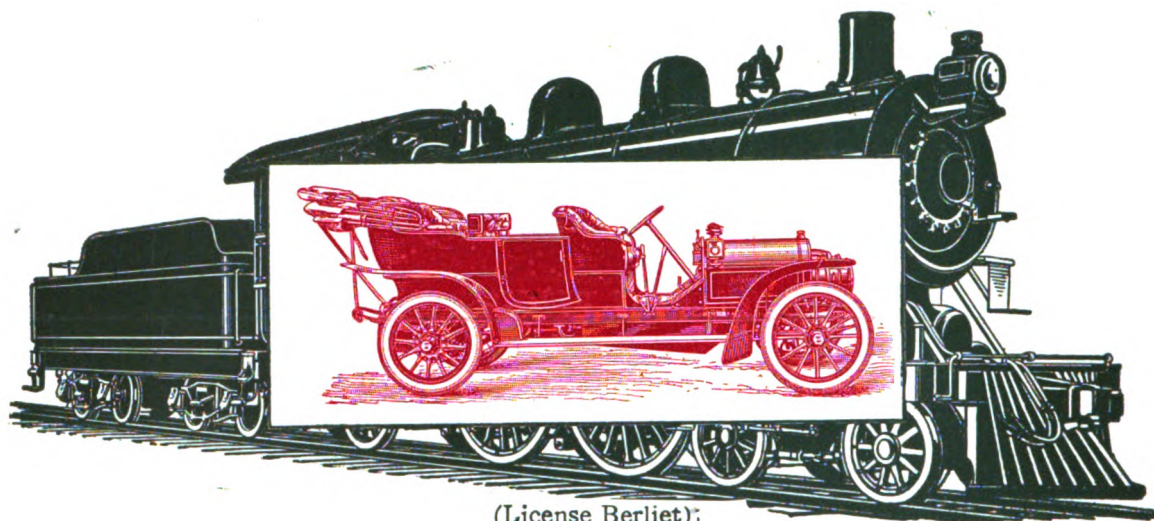


No. 23

GRAY & DAVIS

AMESBURY, MASS.

American Locomotive Motor Car



(License Berliet);

Imported Materials. American Workmanship.
An ideal worked out to practicality and success.
A composite of superiorities. Users say: "It Stays New"

AMERICAN LOCOMOTIVE AUTOMOBILE COMPANY
FACTORY, PROVIDENCE, R. I. 1886 BROADWAY, NEW YORK CITY

Imported Chassis

(ANY MAKE OF FOREIGN CAR)

Promptly fitted with open or closed type

ALUMINUM BODY

Material and Workmanship the Best.

Taximeter Cabs

built in *quantity*.

Get our
estimates
for '08.

ALUMINUM BODIES

We
operate one
of the largest
plants for building

BODIES

in America, fully equipped with
special machinery, insuring accurate
and uniform work. We are absolutely
right on Aluminum Bodies, both in design
and finish. Are you interested?

The Biddle & Smart Co.,
AMESBURY, MASS.

THE AUTOMOBILE

VOL. XVII

NEW YORK—THURSDAY, DECEMBER 26, 1907—CHICAGO

No. 26

Auto Law in Paris



FRANCE in general, and Paris in particular, may properly enough be considered the stream and fountain-head of the life of the automobile world of to-day, and for this reason it will be interesting to know what one may not do, and what are some of the restrictions which bear most heavily upon the automobilist, be he a Frenchman or a mere tourist. It's quite a novel point of view at any rate.

THE OCTROI.—There are those folk in the United States that curse the tariff tax, but surely no such onerous tax is levied upon the comings and goings of a free people as that of the Octroi at Paris, which takes account of the gasoline and oil in the tanks of your automobile as you pass the fortifications, and makes you pay accordingly.

At each of the fifteen or more *grandes portes* leading through the Paris ramparts, whether one arrives by the Côte de Suresnes and the Porte Maillot, or Meaux and the Porte de Vincennes, an octroi official, clad in the dingy uniform of French officialdom, steps out from his hut and demands that you declare the amount of *essence à pétrole* and *huile* in your reservoirs. Of course you don't know exactly, having been touring outside of Paris for days and weeks and filling up as occasion required, and you say so frankly. You might have said ten, fifteen, or forty liters, as many frequent comers and goers do, and take the chances, and if you said it convincingly the statement would be accepted; otherwise, as in the present case, you would tumble your cushions and all your paraphernalia about while the hard-worked (*sic*) official takes the exterior measurements of your tanks and prods a dirty stick down the bung-hole and marks the remaining depth of gasoline thereon—literally a measurement by rule of thumb. Outrageous, isn't it? So think the Parisians themselves. *Quel faire?* One must live ("*il faut manger,*" the Frenchman always replies to any animadversions cast upon officialdom), and if all the octroi officials in France were suddenly bereft of their jobs by the abolishment of octroi dues they would fill the almshouses, or else would have to emigrate, as have the Basques and the Alsacians. Bureaucracy is a good thing in overcrowded Old World countries; it takes care of a lot of the drifting population who would otherwise compete with others of more brain power, but a bureaucracy that clogs the wheels of progress is a doubtful blessing.

Gasoline sells for a very high price within the gates of Paris, and you may not bring a supply with you for your own personal needs of the next fifteen minutes, in order to arrive *chez vous* without paying your little contribution to the city. Obviously, you don't buy essence (gasoline) in town either, at least not more

than you can help, enough to take you through the gates and allow you to draw up outside before a dealer's, where they sell you the same article at 35, 36, 37, or 38 sous the liter instead of 50 or 55 inside the walls. This is

a tax which works out at from 40 to 60 per cent., and for one who goes in and out of the city much it mounts up alarmingly.

The revenue of the city of Paris from this one source alone must be enormous, and it is a growing one day by day. In the last three years the automobiles passing through the Porte de Chatillon alone have increased from six thousand per year to ten thousand, and these numbers are probably exceeded by those of the Porte Maillot, and perhaps others of the encircling group. And all to accomplish what? The collection of a revenue: yes, by the driving outside the walls a trading in gasoline and oil (and uncounted volumes of attendant and necessary small purchases which must run yearly into millions of francs). *Tant pis pour Paris alors!*

The crime is a grave one if you attempt to sneak by the octroi barrier, or make a misstatement—and expensive. It is less expensive if you have unwittingly run by the half-hidden shack the octroi authorities all over France designate as a *bureau*, and have been called back and made to show your *papiers*. You can make excuses till the cows come home, or the carbide in your lamps runs out, and you may state as emphatically as possible to the *gendarme* who now enters the *mêlée*, and all the rest of loitering officialdom, that you didn't know, that you are an *étranger* anyway, and don't live in Paris nor in effete old Europe at all, but it will make no difference. Everybody is formal, polite and good-natured, and you can but feel that they believe all you say, and that they don't call you down because they hate you but because they have the authority. They are not vindictive or *méchants*, these representatives of the law in France, but the *procès-verbal* will cost you something just the same—and the object is only to prove that yours was not a wilful case of disobedience, but only a case of ignorance of the law, for which you pay in France as elsewhere, though perhaps not for the same reasons. The bill of costs will be something like the following: Amende, fos. 10; Assignation, 10; Frais de Justice, 11.50; Frais d'Extraits, 1.25; Timbre, .25—total, francs 33. (Always a *timbre*; you can't even file a protest with the Préfect without addressing him on stamped paper.) Thus one sees the procedure is not cheap, and you ultimately have to pay that tax on your essence as well, so that it does not pay to run by.

The *procès-verbal* of the octroi or a *contravention à vol* are accidents of the road which one must be prepared to meet with



in France, unless they happen to be forewarned and forearmed. The *contravention à vol* is most difficult to protect yourself against. It is sudden, subtle, and usually premeditated. It depends upon the humor of the *gendarme*, or the agent, who hauls you up, as to whether he has had a good dinner, or a bad one as like as not. It is as much this as a desire on his part to make you respect foolish laws which are nothing to him personally, but which give him endless opportunities.

One word of advice: if a *procès* is instituted against you accept with as good a grace as possible, for the *gendarme* of France is but human. If you exasperate him—and the chances are that you will if you don't hold yourself in—he will push you to the last limit, and instead of a modest fine to be paid over the counter of the nearest *gendarmerie*—a ready-money, quick transaction—or a dismissal of the entire charge by the brigadier in charge (he perhaps having dined well) you will probably be held up three or five days in a dull little country town eating your head off in a country inn and playing *piquet*, *boston* or *dame*—perhaps with the brigadier himself. It's nothing much of a horrible fate, but it is not for a moment to be compared with the joys of the road.

Agitation is ever rife in France as to the suppression and modification of the octroi on the food for automobiles. One proposition was actually put forward recently to suppress the tax on essence and put a *taxe de séjour* on automobiles of one franc per day for all the time they remained within the fortifications of Paris. Thus did the *ville lumière* seek to equilibrate its budget. Surely the cure were worse than the complaint, from the automobilist's point of view. A million and a half francs was to be raised in this way, and with less labor involved in collecting it. But what about that army of octroi employees who would be left without occupations?

The actual sum totals received from travelers entering the gates of Paris, by road, railway, and tram, rise to an incomprehensible figure. Nearly six hundred million came to town by rail alone last year, and each and every one was liable for a tax on a bottle of wine which he might be bringing to a sick friend, a fowl, or a rabbit, or a half a dozen "new-laid," which the Frenchman calls *a la coque*.

Paris, the most brilliant and glorious of the world's capitals, with its million and a half of industrious and prosperous souls, has to eke out its revenues by taking the essence of the automobilist who already is a larger spender of money than any other class who enters the iron grilles of the great gates. Yes, Paris collects of the automobilist down to the last centime, though she does it by rule of thumb, the last fifty centimes of tax not leaving enough essence free to allow you to reach your wife's dressmaker's or the chic restaurant where you proposed giving a golden banquet

to some visiting compatriot, and thus keep money in circulation. Really it is a *peu banal*; there is no question about that, and it only proves that Paris, with all its splendor and attractions, is full of contradictions—it welcomes you with one hand and waves you away with the other.

Anyway, save the gates of the Bois and some of the minor exits and entrances, the octroi gates of Paris are open to pass the belated traveler throughout the night, and are not closed tight like the *grilles de la morte* of Versailles and Macon. Look out for these if you are passing that way and are out late at night.

There are some localities in France which have so modified their octroi regulations that they hang more heavily on automobiles than they do on hippomobiles. The automobile pays a very heavy tax to begin with, whilst the horse pays merely a nominal one, and their food of gasoline and oil pays the octroi, where horse-fodder comes in free. Here's the case at Lyons: An automobile of 20-horsepower (which the French call *chevaux-vapeur*) which already pays a state tax based on the number of inhabitants in the commune in which it is registered, also pays a *taxe indirecte*, the *impôt* on essence. From this, one figures that the flesh and bone horse does not pay more than 10 per cent. of the tax for his right to live and work that does his descendant in bronze and steel.

For actual collar-work the *cheval à quatre pattes* develops (in starting) a force, perhaps, equal to twelve mechanical horsepower, and it is for this reason that the three-horse Parisian omnibus of the Nineteenth Century is being replaced by the Twentieth Century autobus of from 25 to 40 horsepower, to do the same work. The *cheval à quatre pattes* pays a yearly tax of 5 francs 60 centimes, and the autobus in Paris pays 90 francs and 5 francs a horsepower for its forty mechanical horses—in all 290 francs, and some odd francs besides, and always that tax on gasoline and oil, and that's no small thing, as has been shown.

One-third of the population of France lives beyond the pale of the octroi. By means of this tax is raised the enormous sum of considerably over three hundred million francs. How much of this is actually paid by the automobilist is not shown in the returns, but the proposition must be figured large, as large as that paid by any one other single class. The octroi tax in France, with very little modification, is a legacy handed down from the Romans when they were running things up and down the breadth of Gaul. They knew not automobiles and they knew not automobilists, but before the present generation of tax gatherers have entirely died off the automobilist will probably be heard from—in this respect as he has been with regard to good roads. Not that he has been entirely supine in the matter up to the present moment, but action has not yet assumed definite form.

IN THE BOIS.—Maximum speed allowed: twelve kilometers an hour.

On *routes non carrossable*, bridle and cycle-paths automobiles may not enter. Automobiles are absolutely prohibited in the Pré Catalan—the nurse-maids' and children's playground, and the Allée des Acacias—that *cadre d'elegance*—between noon and 7 P.M. This is because the *grande monde*, or enough of it possessed of influence, object to the odor of petrol as being an exotic perfume to which their sense of smell, used only to those odors of the stable and the garbage-heap, are not yet accustomed. Whyever do people object to the unburned fumes of petrol; it's a good clean smell, a purifier probably, and perhaps healthful. With burning, dripping oil the case is different, but none of the present-day automobile breed offend in this manner. If one drives an electric in the Bois, the Allée des Acacias is open to him. So much for an inducement for the modern manufacturer to make a silent petrol motor—if he can do it without throttling all its force, which is doubtful. What about the steam car!

The gates of the Bois are closed at midnight, but the Administrateur des Services d'Architecture et des Promenades et Plantations, to give him his full title, which doubtless he would want one to do, will give you a Carte de Circulation, valuable for a year (at a cost of thirty francs) before which the minions who guard the gates in the small hours of the night will bow respectfully—and still more respectfully for passing of a fifty centime *pourboire*. The only possible reason for one's wanting to enter the Bois after the gates are closed at midnight is to get a smooth, clear road in and out of town, crossing the river at Suresnes.

Here's another thing to look out for:

Article 8 of the law of locomotion now in vigor in Paris, though it was promulgated in Revolutionary times and bears the date of 2 Brumaire de l'An IX., prescribes that no voiture, whether propelled by a horse or other means of locomotion (was this prophecy?) shall cut through a funeral cortège, a file of soldiery, or a party of young misses going home from school. The boarding school *queue* was, apparently even then an institution that was duly respected and officially protected.

NUMBER PLATES IN FRANCE.—Every automobile circulating on the roads of France must be passed, as to its proper mechanical construction, by an inspector of the Département des Mines, by personal inspection by an employee thereof, or by having the *passavant descriptif* supplied by the manufacturer endorsed. This *passavant descriptif* is simply a categorical description of the marque and model and its constructive details given by the manufacturer, and corresponding in every particular with another of the type previously passed upon by the government inspector as being a fit and proper and well-behaved automobile. It is from the lack of the *passavant* that all foreign automobiles are obliged to pass before the critical, inquisitive eye of a rubicund little Frenchman, usually fat and round and with a red ribbon in his button hole. It is he, too, who puts you through your paces as to your ability to start and steer the thing as well, which, fortunately, for many, is the Alpha and Omega of the automobile curriculum as

it is known to the representatives of officialdom in France. Automobiles in France capable of running at a speed greater than thirty kilometers an hour must bear a number-plate—white letters and figures on a black ground—with the dimensions of those at the rear 25 per cent. greater than those at the front; this on the supposition that the eagle eye of a gendarme may thus more quickly not the number of a flying auto and make literally a *contravention à vol*, which is nothing more nor less than springing an accusation upon you, not at the time the offense was committed, but at some future time when it little suits you, and perhaps prevents you from stating your case at all.

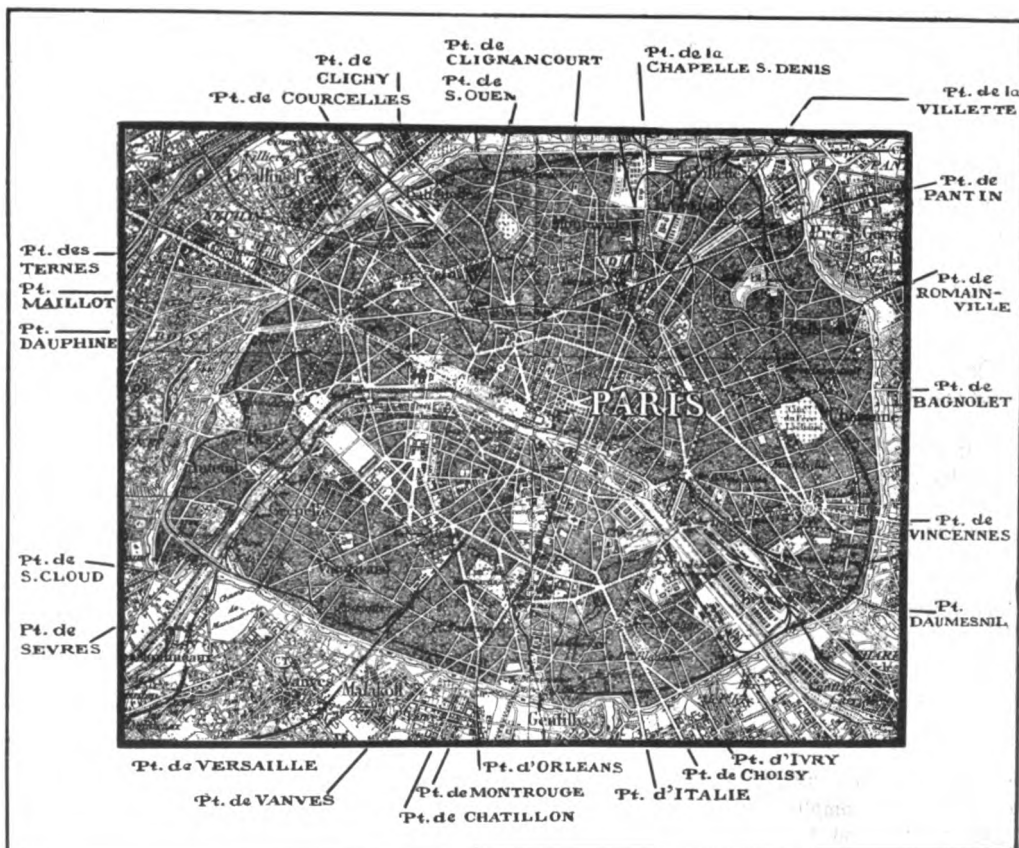
Automobile number-plates in France bear the letters of the Arrondissements Mineralogiques under which they have been issued. A number-plate issued by one arrondissement is good throughout France, and also in Algeria and Corsica, without any other formalities.

The largest number of automobiles are, as might be supposed, registered as from Paris—Seine—4,627, and the fewest from the Département of Lot—32, Haute Savoie—31, Hautes-Alpes—20, Basses-Pyrénées—13, Lozere—9, and Ariège—21.

THE AUTO TAX IN FRANCE.—According to the "Loi du 10 Juillet, 1900," *voitures automobiles* are taxed in France according to the following table.

You pay less for a low-powered car than you do for a high-powered one, and you pay less for a two-seated car than for a four-seated one, and again you pay less all around if you live in a small town instead of a big city. Take it all in all, it seems a fair way of taxing automobiles, and the best proof of this is that the automobilist is not kicking on the imposition of the mere tax on the machine, be it great or small. Taxes are spent, or supposed to be spent, for the benefit of the tax-payer—what is not absorbed by officialdom—and so long as the tax on automobiles is not outrageous, and so long as the automobilist gets good roads for his money, the tax is quite worth the paying without grumbling.

This was the old turnpike idea—and it was not such a bad idea either; now let some benefactor, or mere speculator if you like, build exclusive automobile roads and charge for running over





THE GASOLINE DEALERS OUTSIDE THE GATES OF PARIS.

them and watch him get business and perhaps become wealthy. The following is the scale on which you pay your automobile tax in France:

Cities or Communes	One or two seats	Two or more seats	For each H.P.
Paris	50 fr.	90 fr.	5 fr.
Communes of more than 40,000 habitants	40 fr.	75 fr.	5 fr.
20,001 à 40,000 habitants.....	30 fr.	60 fr.	5 fr.
10,001 à 20,000 habitants.....	25 fr.	50 fr.	5 fr.
10,000 hab. or less.....	20 fr.	40 fr.	5 fr.
Motorcycles with one seat (including tricycles).....			12 fr.
Motorcycles with two seats (including quadricycles and tri-cars)			24 fr.

If you don't pay your tax on demand, after having first declared your automobile at the *mairie*, the tax is doubled. Result: quick returns for the tax collector.

WHEN IS A CARRIAGE NOT A CARRIAGE?— Madame X—, who lives in one of those typical and splendid Paris apartments with a courtyard, in the Etoile quarter, has recently sued the owners of the building for not allowing her to drive her last new delight in the automobile line inside the hallowed portals. Previously she had maneuvered, or her smuggy-puggy coachman had for her, her pair of dock-tailed equines attached to her coupé, landau or brougham. The beasts stamped and neighed and committed other indecencies to which no one objected, but her last new joy, a *dernière modèle* of an automobile, was an outrageous and unholy thing, even though it really made no disturbance. The neighbors complained; they didn't possess an automobile themselves, it may be supposed. Anyway, the automobile of Madame X— had to stand in the gutter by the curb, and that good lady, instead of being able to step from her carriage into her house under cover had to make her dusty or muddy way across twenty feet of pavement.

This was because the *concierge* was deaf to the call of "*cordon s'il vous plaît*" whenever Madame came and went. He was an autocrat first, like all Paris *concierges*, and an autophobe after. "*Ces sales choses là*" should not come within the frontiers of the little land over which he ruled as dictator.

Madame X— promptly took the case to the courts; she paid 16,000 francs a year *loyer* and she didn't see why her automobile should not be treated with the same consideration as the horses of her neighbors. It was house-broke.

The procès dragged as law cases will, and meantime Madame's automobile was allowed to get no nearer her door than the curb. It seemed likely that aeroplanes would come into common use before the status of Madame's automobile was legally decided, and then a claim would have to be put forward demanding that the latch string of the skylight should be let out all night. This would be a new complication to set the judiciary all agog. The Paris bench and bar had never had such a case before

and so they debated with all that explicitness of which the French language is capable, and the parties to the action, one and all, got more and more indignant.

Finally, *Voilà!*—the owner could do as he liked about compelling his *concierge* to open the great door promptly at any hour of the day or night to Madame's automobile, but each time the lady was kept waiting fifty francs would be knocked off of her rent. At this rate, if the thing happened only once a day, Madame might have her apartment rent free, and accordingly she was content, for she had a "three, six or nine" years' lease, and she had hitherto paid her rent promptly. Another automobile victory, and they are still coming down the line.

AU PAS.—Once and again, even in enlightened France, one sees in some broad city thoroughfare, in Paris even, a staring blue and white warning with the words "*AU PAS*" boldly lettered thereon. True, there are many official admonitions which are worthy and ought to be respected, but to increase and multiply them needlessly is to admit that the automobile is a wild, uncontrollable thing as compared with the two-wheeled butcher's, baker's and grocer's cart, usually driven by a lad of sixteen, at a speed around corners of anything he likes, dangerous to himself and all the world.

Automobiles, supposedly rushing at a death-dealing pace, have before now been measured and timed in London and Paris with astonishing results in their favor. Their speed has usually worked out at something like twelve or fourteen miles an hour, the cabby and his charge at eighteen, and the butcher's boy at twenty or more. Which is the more dangerous? Which is the more radically controlled—the horse with a pair of leather thongs and a bit in his mouth for a brake, or a modern automobile which can pull itself up when going at forty miles an hour in a quarter as many feet?

"*Au Pas*" was probably meant for someone besides the automobilist originally, but the municipal guardians of that vague entity known as the public who are usually against everybody, say: "*Vous avez marcher contrairement aux reglements*"—at a greater speed than is allowed.

Au Pas! What is "*au pas*"? The speed at which a veteran of the Crimea ambles along as he takes his walks abroad, that of a postman, the average mortal, say three or three and a half miles an hour, that of a horse, a child, or what? It is the habitual rate of progression at which an able-bodied man walks, so say the courts, though evidence has been forthcoming to prove that the sign was originally put up to bring the horse trot, canter or gallop down to a walk.

"*Au Pas*" then; the walk of a man, but, as the French automobilist cries out, "*Quel homme!*" A young man, an old man, a sandwich-man, or a *chasseur à pied*? There's a difference.

In all probability these signs are soon to be buried, along with that other curse of the French automobilist, the Louis Quatorze *pavé* which, in the gallant days of old, was so generously besprinkled all over France, and which still remains in detached strips here and there as effectual a means of bringing one's speed down to "*au pas*" as any other extant.





Next the Garden Innings of the Importers

A GROUP of eighteen firms as representative of the European automobile industry cannot be taken numerically as an indication of the size of the movement on the other side of the Atlantic. Yet the cars to be shown to the American public when the doors at Madison Square Garden are flung open next Saturday night will not fail to be interesting from the fact that they are, on the principle of the survival of the fittest, the best that the Old World can produce in the shape of an auto. Competition with vigorous America has not been run on the lines of sentimentality, but of mechanical superiority and business acuteness. The eighteen, therefore, that have survived the industrial struggle are worthy of close attention if for no other reason than that they make a bold stand for popularity in face of international competition.

With such firms as Renault, Delaunay-Belleville, and Panhard-Levassor representing France; Maja for Germany; Fiat for Italy; Martini for Switzerland, and Rolls-Royce for Great Britain—to mention only a few—the lover of imported cars will have enough to interest him, and the student of automobiles will find in the best of four countries plenty of material for observation and comparison. It is declared that in every case 1908 models will be on view, and there is no reason why they should not be, for there has been a sufficient interval between the closing of the grandiose Paris display and the opening of the more modest event in Madison Square to admit of their transportation. No one with any conception of the scale on which European shows are held will expect to see the press agent's story of a Paris Salon Transplanted carried out to the letter, and consequently will not be disappointed. But so much has been said on the

artistic dress of a hall which is not the best in the world for decorative effect that the promoters will have to accomplish much to eclipse the best efforts of American promoters.

In the accessories section natives and foreigners are about equally divided. A few of those holding stands on the mezzanine floor put forth their products for the first time this season, but the majority have already exhibited at one or both of the exhibits in this city. Consequently, except for those who really mean business, there will be less of interest here than on the main floor, where cars are exhibited.

Coming at a festive season of the year, it is appropriate that a tone of seasonable gaiety should be rung into the big hall. This is promised in the form of an artistic setting with plenty of room for the lounge, where the *flanerie* of the grand boulevards will be encouraged and even made delightful. Chief among the social functions is a banquet on New Year's eve which will gather in the *élite* of the importers' world and not turn away those interested in their products. The following is a complete list of the cars and firms represented:

RENAULT—Renault Freres Selling Branch.
RENAULT—L. P. MacNamara.
DELAUNAY-BELLEVILLE—Palais de l'Automobile.
MAJA—Maja Company, Limited.
PANHARD-LEVASSOR—Panhard & Levassor American Branch.
BAYARD CLEMENT—S. B. Bowman Auto Company.
BIANCHI—Percy Owen.
C. G. V.—C. G. V. Import Company.
DARRACQ—Darracq Motor Car Company.
DELAHAYE and PILAIN—Delahaye-Pilain Import Company.
DIETRICH—Dietrich Import Company.
FIAT—Fiat Automobile Company.
HOTCHKISS—Archer & Company.
ITALA—Itala Import Company.
ISOTTA-FRASCHINI—Isotta Import Company.
MARTINI—Martini Import Company.
ROCHET-SCHNEIDER—Auto Import Company.
ROLLS-ROYCE—Rolls-Royce Import Company.

Renault.—Prominent among the cars shown by the Renault Frères will be the new six-cylinder chassis with cylinders of 4.7 by 5.5 bore and stroke cast in pairs, given a catalogue rating of 50 horsepower. This model, as well as the larger four-cylinder cars, will be fitted with an automatic self-starter, designed by Louis Renault and exhibited for the first time in America. A small, air-cooled pump on the forward end of the chassis and driven off the camshaft compresses air into a tank attached within the frame. Communication is made from the compressed air tank to an operating lever on the dashboard, and from here to the cylinders by suitable piping. By pulling down the lever air is admitted from the tank to a distributing valve above the cylinders, through which it is carried into the cylinders in correct sequence at what would ordinarily be the firing point.

No radical changes have been made in 1908 Renault models, but a great deal of attention has been given to the refining of details and to rendering still more accessible a car which has always been admitted to be one of the most conspicuous in this respect. There is further a uniformity of design in all models from the smallest two-cylinder to the largest six-cylinder car, which of itself is proof that Renault has long passed the experimental stage. Among the refinements are some changes on the car to facilitate the dismantling of the radiator. There being no pump and no fan, except in the flywheel, the cooling system is

a model of simplicity. To dismantle the radiator on the new cars all that is necessary is to disconnect the inlet and outlet piping and withdraw a bolt on each side of the frame, when the radiator can be lifted out of the channel in which it rests against the dashboard, the operation requiring but a few minutes.

Five models of four-cylinder cars are built, varying in size from a 35-45-horsepower touring car or limousine to a 10-14-horsepower town vehicle. At the end of the list is a two-cylinder, 8-horsepower car used very extensively in various European capitals as a taxicab. Instead of the compressed air self-starter, the smaller models can be fitted with an entirely mechanical contrivance for starting the engine from the driver's seat merely by pressing down a foot pedal.

Delaunay - Belleville. — The old-established firm of boiler makers, established at Saint-Denis for over one hundred



years, has paid special attention in its automobile factory to the production of six-cylinder cars. There are two distinct models of sixes, one rated at 40 horsepower and having its cylinders cast separately, the other having its six cylinders cast in two groups of three and catalogued at 15 horsepower. There are four other models, each with four cylinders, rated at 15, 20, 28 and 40 horsepower. The three smaller models have shaft drive; the three powerful cars are fitted with final drive by side chains.

Certainly the most interesting vehicle in the series is the new 15-horsepower six-cylinder chassis town vehicle, for which service it has been specially designed and which may be classed as one of the finest products of France.

The six-cylinders are 3.3 by 4.7 bore and stroke, forming two groups of three each, with valves all on one side, giving a compact, clean-cut and fully accessible motor.

Maja.—The one name at the Importers' Salon which will be strange to the ears of Americans is curiously enough connected with the oldest and best known house in the automobile world. Maja is the younger sister of Mercedes, produced at the Austrian factory of the Daimler Motoren Gesellschaft. Two models are promised for the American show, one being rated at 28-35 horsepower, the other at 35-40 horsepower. In general features the Maja is a reproduction of the Mercedes, but unlike her better known relative can be obtained with either shaft or chain drive.

Among the more important features in which the Maja differs from the other automobiles of the premier German factory may be mentioned the method of operating the ignitors of the low-tension magneto ignition. Instead of being placed on the side of the combustion chamber and being operated by vertical tappet rods, they are now contained within a specially formed inlet cover. They are connected by horizontal tapped rods, all commanded by a double cam which is carried to the top of a vertical shaft situated between the two pairs of cylinders. This shaft is driven by worm gearing off the inlet valve camshaft and its position can be varied sufficiently by a sliding rotary movement to advance or retard the point of ignition to the usual requirements. In order that the firing of each cylinder may be verified without opening the bonnet, as is usually necessary, there are four plugs placed outside the dashboard in such a position that the driver can immediately and separately test each cylinder with the minimum of trouble.

Panhard-Levassor.—A four-cylinder 15-horsepower live axle Panhard chassis will form the center of attraction at the stand of this leading French firm. It is the first time in the history of the house that a touring car with other than chain drive has borne the name of Panhard, though shaft-driven racers were built a few years ago. Instead of the armored wood frame which has always been associated with Panhard, it is now of the ordinary pressed steel type, channel section. On the 15-horsepower model it is not narrowed in front, this, according to the makers, being a source of weakness, but the rear ends are set upward. Suspension is by semi-elliptic springs in front and three-quarter elliptics in the rear, these latter being attached to brackets bolted to the frame. The four vertical cylinders of the engine are cast separately, with valves on opposite sides, bore and stroke of the cylinders being 3.5 by 5.1 inches. One of the most interesting features of the new Panhard models is the sliding camshaft actuated by a pedal, and operating the exhaust valves, by means of which the engine can be used as a powerful brake with no extra weight to the car and the addition of very little in the way of mechanical extras. Both camshafts are enclosed in the upper portion of the crankcase and can be withdrawn from the rear end by removing a detachable disk. Each valve tappet guide is formed with its flange so that it is a comparatively easy matter to dismount any of them.

Clement-Bayard, or Bayard as it is called in the land of its origin, to distinguish it from a rival firm with the same name, will be represented mostly by cars of high power, though the Levallois factory is this year producing a large series of models from the small taxicab to the most powerful touring car.

Bianchi.—Some of the finest of Italy's high-grade cars will be exhibited on the Bianchi stand backed by Percy Owen, Incorporated. The firm, although only starting in the automobile business towards the end of 1905, has now three factories, one at Brescia and two at Milan, where, in addition to pleasure cars, a good deal of attention is now being paid to commercial vehicles. The Milan factory, equipped with \$400,000 worth of American machine tools, is considered one of the finest in Italy.

C. G. V.—A handsome town chassis with shaft drive and steering wheel on the left instead of the right-hand side will form the principal attraction from the Charron factory for 1908. This is in reality the continuance of a model placed on the market a year ago with considerable success. It has shaft drive and an interesting type of rear suspension by C springs.

Darracq.—Although all previous models from the Suresnes factory, from single to six-cylinder cars, will be continued, the outstanding feature for 1908 will be the four-cylinder car, designed first for taxicab work and now used for touring and similar general service. These have already been introduced to New Yorkers by their service as taxicabs, but no opportunity has been given heretofore to examine them in detail.

Delahaye and Pilain.—The one from Paris, the other from Lyons, both these French makes have a good reputation in their own country. The Delahaye is produced in a number of sizes from small two-cylinder taxicabs to powerful six-cylinder cars, while Pilain is almost entirely confined to cars of moderate horsepower, though sufficiently powerful for touring.

Dietrich.—Because it is the latest arrival to the Dietrich family, the shaft-driven car of this firm will be examined with more interest than the better known chain-drive cars from Lunenburg. The new model has a special double drop frame, designed to give a very low side entrance.

Fiat.—Seven distinct models will be produced from the Fiat factories during the next season, the series comprising three shaft-driven cars and four with chain drive, among the latter being two six-cylinder models.

Hotchkiss.—A handy four-cylinder town vehicle, and a powerful six-cylinder model will vie with one another for first attentions at the stand of the French gunmakers. In the town car the four cylinders have been cast in one block, ignition is by high-tension Eisemann magneto, and, naturally, final drive is by means of propeller shaft.

Itala.—Though not entirely a newcomer to the automobile world, Itala was only brought prominently before the world a couple of years ago by a series of successes in international speed contests in Italy and France. The models are based largely on the Mercedes type and have a reputation in Europe for correct design and excellent workmanship.

Isotta-Fraschini.—Another Italian firm which has sprung up since 1905 and already earned a reputation in the construction of the automobile de luxe. Recently the firm has passed under the control of Dietrich, but the models shown for 1908 are all the work of Italian engineers.

Martini.—Switzerland's rifle firm is also one of the pioneers in the automobile industry, having a history which dates back more than eleven years. Being built in a land of mountains, the product of the firm has always been noted for its hill-climbing powers, some of the Martini's greatest honors being won in open competition in the mountains.

Rochet-Schneider.—Another foreigner created in a land of mountains and bearing all the characteristics of a machine built where impossible grades are the commonalties of life. The Rochet-Schneider car was first put on the market in 1900; in 1904 the concern was made an English limited liability company, and its head offices removed to London.

Rolls-Royce.—Six-cylinder automobiles are devoting the entire attention of the only British firm holding space at the Importers' Salon. Rolls-Royce has won some fame in America by capturing a special gold medal for a 12-mile race at Ormond against an American car.

of
date
could

PARIS, Dec. 14. —
for the French
night of July on a course
numbers 1, 2 and 3 are from the
sur-Sambre, and will be driven by Degrais, Perpere and
Brault, who handled the three Germain stripped touring cars in
last year's Grand Prix.

Two days ago the Sporting Commission of the Automobile Club of France met in full force and gave official confirmation of its adoption of the international racing rule adopted at Ostend by every recognized automobile club except America, under which bore for four-cylinder engines must not exceed 155 millimeters (6.102 inches) and weight must not be less than 2,425 pounds, empty. Next morning Secretary Sautin received a check for \$2,400 and the official engagement of the three Germain. It had been decided at the meeting to reduce the entry fee in every case where more than a single car was engaged. One thousand dollars is the fee which must be paid to put one car in the race, but for teams of two the fee is \$1,800 and for full teams of three \$2,400. As single entries are rare, the reduction is a clear saving for automobile constructors.

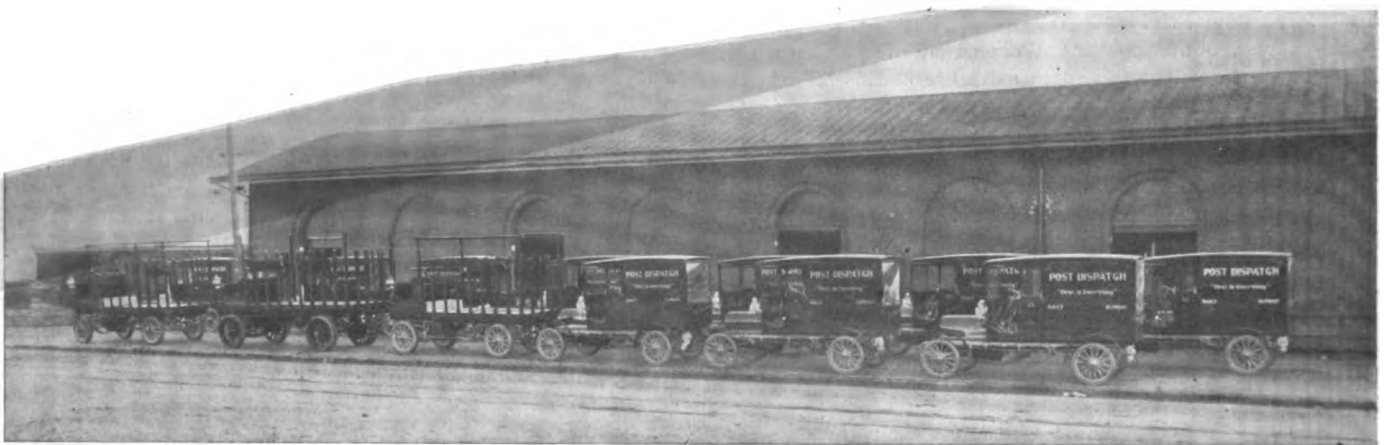
This is the first occasion on which less than \$1,000 per car has been fixed as entrance fee for an international automobile race, and has been made possible by the more economical administration of Victor Breyer, manager of last year's event on the Dieppe circuit. Under the same excellent administration a substantial credit balance is certain next year, for the race will be

of the change
intending to take part
months before the test, well advanced
a few cases, indeed, where racers are already
certain that the winner will not be found in the
leaves the factory.

Last year's circuit near Dieppe is still favorite for the race, but will be close pressed by half a dozen others. At a recent meeting between the Dieppe authorities and the club it was officially announced that the township would guarantee to raise a subsidy of \$10,000 and might even double this if necessary to induce the club to hold the race in its district. There is an opinion among certain members of the Racing Board that some other district should be chosen this year, in order to develop automobile enthusiasm in different parts of France, more especially as there is a strong league at work against automobilism.

Six other circuits have been selected for consideration, comprising the districts of Morvan, Loiret, Cher, Marne, Rhone and Bretagne. All can offer an excellent course of 40 to 60 miles in length, in every way suitable for a 500-mile contest, but the selection will depend on local support and it is in this feature that Dieppe is particularly strong.

...es he
...nce has
... make his
Autocar, and
...a.
...about in a Holsman
...s his trust in a Haynes.
... M.D.'s hereabouts.



AN EPOCH IN THE AUTO TRUCK BUSINESS—FOURTEEN CARS TO ONE CUSTOMER BY THE LOGAN CONSTRUCTION COMPANY.

This shipment was made Thursday, December 12, by the Logan Construction Company, from its factory at Chillicothe, O., to the St. Louis *Post-Dispatch*, and is claimed to be the largest shipment ever made to a single customer for this type of car. The cars will be required to make four trips daily delivering newspapers, the trips varying in length from four to fifteen miles. They will replace three times their number of horse-drawn vehicles.

THE FUEL SYSTEM OF AUTOMOBILES

By THOS. J. FAY, E.E.

A COMBINATION of hydro-carbon vapor and atmospheric air serves as the fuel in automobile motors at the present time, and it is probable this fuel will continue to be the main stay, for some years, at any rate. In view of this fact, it seems as if the several questions of its production and use should be well understood, not only by the makers of automobiles, but by the users of them as well. Whilst it is true that much has been said about this fuel, and many autoists are well informed, even so, it will stand some further discussion, it is believed. Beside the hydro-carbon products, as gasoline, there are other sources of supply, amongst which alcoholic vapor with atmospheric air and synthetic mixtures, having for their base alcohol on the one hand, and gasoline in some cases.

The fuel question from the autoist's point of view involves more than the mere matter of the genera of the fuel, and it will be a step in the right direction to discuss the details interesting to the user. There are few who do not know how illuminating gas is produced, and of those who understand its production very well indeed, many would be surprised were they told that "a little gas plant" exists on every automobile. True, the gas is used as produced, and the familiar "gas holder" is missing. It would be quite possible to take the automobile gas plant, quite as it is, and adapt it to the purpose of providing illumination in the home. It would not be cheap gas to use for such purposes, but that is not important, since the cheaper gas is to be had on every hand. Equally true, illuminating gas, as used for lighting, works perfectly well in motors, and would do for automobile work. It would even serve better, and it would be cheaper to use; but a gas holder (gasometer) on an automobile would weigh over much, and the space it would take might ill be afforded. At all events, in the automobile, the gas plant is very simple, and it might even be called primitive.

There are advocates of the plan involving the use of stored gas for automobile work, and it cannot be safely claimed that the scheme is without its due measure of merit. On the other hand, liquid fuel is in a more condensed form, and is in a more stable state of equilibrium; hence liquid fuel is very convenient, although a still further state of condensation would be by way of "solid" fuel, with a melting point below the temperatures, normal to the surrounding. This question is not unheard of, since alcohol will lend itself to the purpose, but the time is not ripe to thrust the solid fuel problem to the fore.

Concerning the Fuel Tank.

The liquid fuel holder for gasoline may be a tank of copper, capable of holding gasoline under a pressure of about two pounds per square inch; the capacity of the tank to be about twenty times the piston displacement of the sum of the cylinders. This is to say, a four-cylinder motor with cylinders, 4 inches bore and 4 inches stroke, would have a total displacement of 201 cubic inches and 20 times this would be about 4,020 cubic inches of the fuel tank. In other words, or approximately, 17 gallons. In this way it is possible to decide upon the approximate desirable capacity of the fuel tank for any sized motor. Steel tanks are not so good for the purpose, since water is likely to settle in the bottom of the tanks and the rusting process that is likely to follow will, in time at any rate, become a great source of annoyance. Cornice copper serves very well the purpose, and the ease with which it fashions into shape is one of its strong points. It is not unusual to use 16-ounce copper for the girth, and 20-ounce copper for the heads, measuring in ounces per square foot. If the tanks are to be large and long, they require to be partitioned off to prevent the liquid from piling up when the car negotiates curves at a considerable speed. The partitions should be perforated to enable the fuel

to reach its level quickly, and the same partitions are of further value, as they serve to strengthen the tanks considerably.

There is one other point about the capacity of tanks, to mention which will be in order. The amount of gasoline required for the various motors depends upon the number of cylinders, rather than upon the total piston displacement. The difference may be approximated about as follows:

- (a) Single-cylinder motors, allow 26 miles to the gallon.
- (b) Double-cylinder motors, allow 19 miles to the gallon.
- (c) Quadruple-cylinder motors, allow 13 miles to the gallon.
- (d) Sextuple-cylinder motors, allow 10 miles to the gallon.
- (e) Octuple-cylinder motors, allow 7 miles to the gallon.

These allowances must be but rough approximations, because there are a variety of considerations beside the question of the

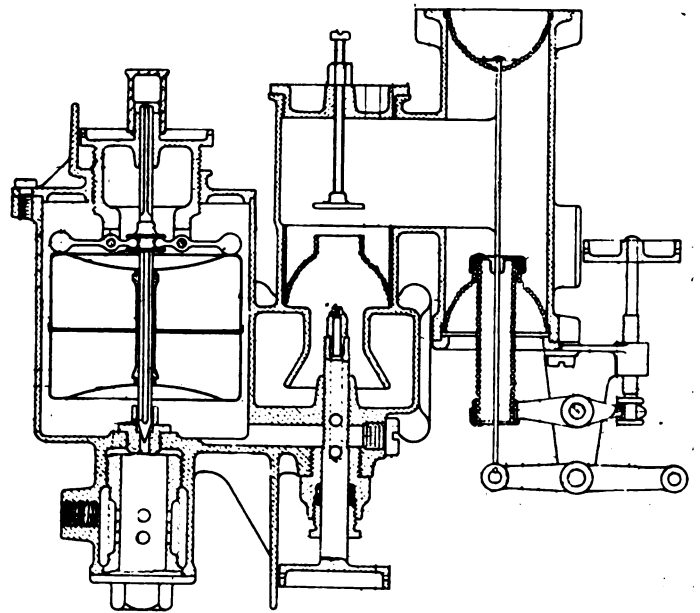


FIG. 1.—Sectional view of standardized carbureter referred to in the accompanying article.

number of the cylinders. Some motors will perform in a superior way, and thereby serve as exceptions to the approximations; and again, the weight and design of the car in each case will introduce a variable. The matter of the six-cylinder motor, now so much in vogue, and the expediency of the use of so many cylinders, becomes a much mooted question, from the point of view of the fuel, and the values above set down are bound to cause some uneasiness on the part of the builders of such motors. It is not the intention here to go into this matter any more than to point out the fuel requirement, but to leave this part of the subject without giving at least one reason why the fuel requirement increases with the number of cylinders would be unwise.

In a motor of eight cylinders there are eight times as many piston rings as those of a single-cylinder motor, and, if each ring dissipates in heat, as a result of friction, say, 0.25 horsepower, then it is plain to be seen that 103,800 B. T. U. of heat are lost in the process as against 12,725 B. T. U. of heat in the single-cylinder motor. This is on the assumption that some 12,725 B. T. U. of heat must be supplied in the fuel for each one mechanical horsepower developed. Of course there are good reasons for using multiple-cylinder motors, but economy of fuel is not on the list. It follows, then, that the size of the fuel tank must be influenced by the number of cylin-

ders in the makeup of the motor in any given case; moreover, high speed has its "windage" to be taken into account. The fuel tank should also allow for the nature of the roads over which a car must be driven, since the fuel requirement will be a variable, depending upon the nature of the roads.

Nor does it follow that the most fuel will be used on the very inferior road, since a car at a high rate of speed might burn up more gasoline on a good road than would be used by a car at a low rate of speed on a road not so good. Indeed, the whole matter is one hedged in by the several conditions, and it is only possible to fix the results if the conditions are also definitely established. It was said, one horsepower represents, in round numbers, some 12,725 B. T. U. of heat. Certainly, this amount of heat has a mechanical equivalent, greater than one horsepower, but the thermal efficiency of the best of the internal combustion motors is far from 100 per cent.

In the English system of notation, it will be remembered, heat is measured in such terms as to render one British Thermal Unit (B. T. U.) as equal to 778 foot pounds, according to Prof. Rowland, although the original "Joules" equivalent was set down as 772 foot pounds. At all events, the B. T. U. is more definitely described as: *That quantity of heat which will raise the temperature of one pound of pure water 1° F., considering the point of maximum density of water, which is said to be 39.1° F., nearly.* In this, we have a means of making comparisons, and with this means it is possible to set down the data at hand and approximate some conclusions. In the first instance, the thermal efficiency of a good gasoline motor may be so high as 20 per cent., hence it is plain that the value of the gasoline in thermal units must be at least five times more than the mechanical power.

One horsepower hour represents 2,545 B. T. U. per hour, and $2,545 \times 5 = 12,725$ B. T. U. required in the fuel per horsepower, mechanically developed. Plainly, then, increasing the mechanical requirement in any way increases the fuel requirement some five times the mechanical increase. Moreover, this is a low value to be realized, under the best conditions only; provided the motor is allowed to operate at the most efficient point on its characteristic curve. These matters are, on occasions, befogged, because in the scramble for other advantages the absolute facts are disregarded. True, little attention is paid to the question of thermal efficiency, and the amount of gasoline required is left to be settled for by the owner of the car. This in itself is not a matter over which to lament, since it is the purchasers of cars that must decide if they want high thermal efficiency or high speed.

Some Details of the Gas Plant.

The liquid fuel reaches the carbureter through copper piping, impelled by either pressure on the fuel tank, or if the tank is elevated, through force of gravity. It is not uncommon to find the piping a little too small in diameter, too flimsy to possess the requisite endurance, and most likely to become obstructed by jelly formations, or from other causes. Most of us know that the building laws require a 4-inch pipe as a minimum size for sewer connections, not because a smaller pipe would be too small to conduct away the sewage, but for the reason that the 4-inch size will not dam up of its own volition. The same holds for gasoline pipes, in the same way, but, fortunately, a 4-inch pipe is not necessary to prevent the dam. A 3-8-inch pipe serves very well indeed, and it is also mechanically strong enough to possess the requisite endurance. This piping will be a little heavy, to be sure; but it would be better to use less castings elsewhere and have the gasoline piping in more stable shape.

Piping is sometimes so installed as not to be accessible; this is really much to be avoided, since it is just such installations that are likely to give trouble, as piping so placed will have a hole chafed in it, and in cramped quarters no one can be sure the piping does not rub against edges of laterals, of the chassis

frame, or some other abrading surface. There should be no joints in the piping between the tank connection and the carbureter connection, primarily because such joints serve no useful purpose, and again, they are not necessary. The best of joints are more or less prone to give trouble, and as they are oftentimes made they are sure to go wrong.

The carbureter may be one of several types, structurally, but in principle, the differences are not so great as one might suppose, judging from looks alone. At all events, the carbureter is but a miniature gas plant, the function of which is to impregnate atmospheric air with liquid (gasoline) in the right proportions, and in such finely divided form as to render the mixture highly inflammable. The explosive feature may be best understood if it is merely considered as the product of restrained energy, and the energy is set free in the process of burning the mixture. If the mixture is highly inflammable, it is plain to be seen the energy will be set free in the shortest space of time, and will then develop the maximum of the explosive phenomenon.

The carbureter, then, can widely control the results, since, if the mixture is rendered slow-burning, the time taken to propagate the flame will be long, and the effectiveness of the explosive effort will be diminished. On the other hand, the amount of energy in the mixture can be varied, by altering the ratio of gasoline to air, and the real problem is to produce a mixture, holding the maximum amount of gasoline, without diminishing the rate of propagation of the flame, to a point likely to dampen the ardor of the effort. The mixture is not, properly speaking, an explosive, since it does not give up the energy fast enough to disrupt the enclosing members; the rapid expansion of the inflated gases does certain work, but the rate of expansion is not so rapid that the piston cannot get out of the way ere the pressure reaches a magnitude exceeding the controllable value.

The carbureter, then, is intended to produce a combustible of acceptable characteristic; a combustible in fact rather than an explosive, by rendering the mixture "slow burning" rather than gunpowder, but quick and complete combustion relative to coal. The internal combustion motor is one in which the fuel is used directly, and the carbureter takes the place of the coal bin, while the boiler is dispensed with, since the fuel is highly inflammable and burns without a residue of any moment. If the carbureter is not suitably designed several things may transpire,

(a) The mixture may be so slow burning as not to be of value.

(b) The mixture may be so impregnated with liquid fuel as to be very inefficient.

The slow burning feature may be due to excess gasoline, or the amount of gasoline intermingled may be less than the desirable quantity, and the flame propagation will be retarded on that account. These considerations are all assuming the motor is of suitable design and in good order; since the compression materially effects the rate of propagation of the flame.

The carbureter alone is not responsible for all the ills of inefficient work, since if the timing of the spark is not right the combustion may be late or early and the effect of the energy will be to no purpose. The discussion here, however, is on the assumption that all such matters will be given their due measure of attention and that the carbureter is in the position to perform its functions if the same is suitably designed and properly adjusted.

Why and Wherefore of the Carbureter.

It will not be possible to illustrate the various constructional features of carbureters now on the market, as it would require at least a volume of good thickness to make room for them; nor will any attempt be made to set forth the unusual virtues of any one scheme of design. Considering the float feed type of carbureter as the type most in use, its general characteristics will be set down, and an attempt will be made to point out the most likely causes of failure to work.

Fig. 1 shows an example of the type under discussion, the gasoline connection being made fast at the under side of the float bowl, the fuel flowing in through a filter. The filter consists of a cylinder or tube, perforated with small holes, and recessed, so that the forty-mesh copper gauze wrapped around the tube will not press closely over the tube and quickly grow a jelly like obstruction. The tube is screwed into place and can be removed at will, thus rendering its removal a matter of but a moment's time on occasions when to clean the filter becomes a necessity. There are carbureters not provided with any means for filtering the liquid fuel and the absence of the same is much to be deplored. The fuel passes through the filter, thence to the float bowl and the buoyancy of the float is called into play to press the needle of the valve into place to stop the flow of the gasoline when the liquid reaches a level 1-8 inch below the top of the nozzle.

The valve will work if the needle is of German silver, suitably pointed, and ground into a hole of suitable diameter, provided the metal of the seat is also German silver. If the seat is of aluminum it will give trouble within a short space of time, and in the author's opinion steel is not suitable for either the seat or the needle; German silver will do. Obviously the valve, if it leaks, will allow the gasoline to ooze by and the spillage will be a matter of grave moment, since the loss of fuel will go on continuously and the mixture will be most imperfect. On the other hand, if the float is not set at the right level the supply will be either scant or the fuel will continuously overflow the nozzle, to the great detriment of the quality of the mixture and at a loss of fuel not to be tolerated.

It was said the fuel should stand in the nozzle to a height 1-8 inch below the top; to be accurate, the level should be such that the liquid should form a bubble to be blown off at will, and the exact height should be found by this method. To be able to go through this form it is essential to so design carbureters as to render the performance possible. Since the nozzle has a very small hole, even for the largest automobile motors, the orifice is easily stopped up, and the construction should be such as to enable one to remove the nozzle for purposes of cleaning, without much trouble. The nozzle shown in the carbureter, Fig. 1, not only screws into place, but it is provided with a "tip," thus enabling one to readily change the sizes of the orifice should the occasion demand.

This brings us to another point that is of more than passing moment, since some carbureters are provided with needle valve nozzles, with a view to adjusting the size of the orifice at will. The author has tried out this scheme on his own car at considerable length (over two years), only to find that it serves no useful purpose at all. As a matter of fact, the needle in the nozzle does some harm, in that it eliminates the true nozzle effect, which is something to take into account. The size of the orifice, in any given case, is a constant. Small is the value, then, of any means of changing the adjustment of the nozzle, since there is no ground on which to explain the necessity of doing so; whereas the needle in the nozzle is prone to give trouble in that it is likely to back out and in doing so alter the supply of fuel to the entire discontent of the autoist.

In some carbureters multiple nozzles are used, and it is possible they answer some useful purpose, but very good results are attained with one nozzle only, and simplicity surely is worth something. Presumably very large motors would require multiple nozzles, but automobile motors are not large enough to demand more fuel than can flow through a single nozzle. The sizes of the orifice range between the openings represented by drills from number .48 to 60, although it is a very small motor taking only a 60 drill opening in the nozzle. The fuel density settles the question of the level of the float, and if the specific gravity of the fuel changes, the level of the float will change also, thus making it necessary to do something about it. In the carbureter illustrated in Fig. 1 this matter can be taken care of

in a very simple way, since both the float level and the nozzle can be adjusted to suit the specific gravity of the fuel. In carbureters not provided with adjustments it is necessary to dismount them to the extent necessary to change the adjustment and bring about a balance of the levels.

Alcohol, for illustration, is not of the same weight per unit volume as gasoline, and, for that matter, the latter fuel varies in weight from time to time. At the present time gasoline has a specific gravity of about 68° Baumé (Baumé scale lighter than water), whereas not long ago the gasoline ran about 72° Baumé. Motors adjusted for the lighter fuel would scarcely perform as well under the circumstances. The float sometimes gives annoyance from other causes, as, for illustration, if the float is of cork it is prone to get loggy, and if it does it will sink to a lower level, to remain until removed, dried and shellacked.

Cork is not necessarily the best material for a float, but a well-made cork float is better than a poorly-made copper float, since the cork will work a little when loggy, whereas the copper float will not work at all, after it springs a leak. Of course, there is no good reason why the copper float should be improperly made, but they are sometimes. At all events, if the fuel is not under good control there is a reason, and that reason must be located and the trouble removed ere any good work can be expected of the motor. The troubles are the following:

- (a) The float may not be at the required level.
- (b) The nozzle may be too high.
- (c) The nozzle may be too low.
- (d) The orifice may be too large.
- (e) The nozzle may be too small.
- (f) The filter may be stopped up.
- (g) The needle valve may be leaky.
- (h) The float may be loggy.
- (i) The float may have sprung a leak.
- (j) The counter-weights may be stuck.
- (k) The passage ways may be plugged up.
- (l) The nozzle may be plugged up.
- (m) The pressure may be off the carbureter.
- (n) The pressure may be in excess.
- (o) The piping may be plugged up.
- (p) The gasoline may be gone.
- (r) The gasoline may be of an inferior grade.
- (s) There may be an accumulation of water.
- (t) The hot air passage may be defective.
- (u) The depression chamber may be defective.
- (v) The cold air may not be properly regulated.
- (w) There may be a leak in the mixture manifold.
- (x) The mixture may be impoverished.
- (y) The mixture may be too rich.
- (z) The carbureter may not be suitable for the motor, at all.

The previous history is always important in a matter of this sort, as, for illustration, if a carbureter has been doing good work it is safe to assume it will do so again if the trouble is sought out, found and eradicated.

(To be continued.)

WHY SOME ALUMINUM CASTINGS CRACK.

The most frequent source of the cracking of aluminum castings is caused by over-heating, or "burning," the aluminum while melted, says *The Brass World*. The demand for aluminum castings has now become so large, and many of them are so thin and complicated, that foundries continually have trouble in making them. The aluminum alloy most generally used for casting is one which contains aluminum and zinc. The presence of the zinc renders the casting difficult and far more liable to crack than when not used. Brass must be employed to obtain the highest strength. There are several rules that must be firmly obeyed in making aluminum castings, and they are: To melt the aluminum with a slow fire, so that the top of the metal will not become "burnt" before the remainder of the metal is melted; to avoid overheating the metal after it has once melted, and pack the ingots in the crucible as compactly as possible, so that portions will not stick up and become exposed to the action of the flame. Do not have the aluminum melted before the mould is ready, as this is a common source of trouble.

ECONOMY OF TWO AUTOMOBILE OWNERS

If some of the stories that have been told of the expense of keeping an automobile were to be implicitly believed the average man might just as well throw up his hands at the outset and wisely conclude that automobiles, like steam yachts, were purely the pastime of the millionaire. But there is another side to the story, and equally great extremes have been reached in this direction as well. If some of these stories could be regarded as gospel, there would be small reason why the average parent could not present his ten-year-old with a machine, confidently expecting that his pocket money would be sufficient to maintain it on.

But they are the two extremes that make the prospective purchaser doubt either, though both are true. Between them there are literally thousands of autoists whose expense accounts do not reach either extreme. They get a large mileage and a great deal of pleasure out of their cars, and their expense accounts show why. Two of these are appended, and they speak for themselves.

THIS VERMONTNER RUNS HIS OWN CAR.

Editor THE AUTOMOBILE:

I have noticed several statements from different subscribers regarding the expense of owning an automobile, and just for fun I will add mine to the list. I will say, to begin with, that if it cost me anywhere near as much as the man who told his story in the December 12 issue I would not run one at all. I have been running for two years a 16-horsepower four-cylinder car, weighing 1,900 pounds, and when I got it there was no odometer on it, but October 13 last I got a small one for \$7.50 and mounted it on the steering knuckle. It is a Veeder and accurate. I have run almost 4,300 miles since putting it on, and I am sure I ran at least 2,700 miles before, making 7,000 miles in two years.

Like the man from California, I am something of a mechanic and I take care of the car and no one else runs it. I have had but two nail punctures, one of which I repaired and the other was repaired at a public garage and the charge was \$1.25, this being my total tire expense to date.

I average twenty miles to the gallon of gasoline and on long runs more, often reaching twenty-four miles and occasionally as far as twenty-four and six-tenths miles, and there are no State roads here, although they would probably be classed as "fair" dirt roads and rather hilly.

Last spring I exchanged my storage battery for a new one and paid the makers \$12.63 for the exchange, so I don't put this in the list, and it costs me nothing to recharge it, and even if it did the expense would not be \$10 for the entire mileage. Gasoline costs by the barrel from 14 to 16 cents per gallon. This is my expense account:

Tire casings	none
Inner tubes	none
Repairs to tires	\$1.25
Anti-skid devices (tire chains).....	10.00
Power (gasoline)	48.81
Oil and grease.....	18.80
Ignition .....	.20
Spark plugs	none
(Never injured one in my life.)	
Repairs, new chain.....	7.98
Repairs, fan belting.....	.72
Repairs, estimated	7.00
(This is repairing broken spring and reverse gear band recently, and bill not yet rendered.)	
Repairs, due to accident.....	2.75
(Broke my top.)	
Lights, carbide	4.40
Cleaning waste	none
(I patronize my wife's ragbag.)	
Sponges, chamols, etc.....	2.50
Garage rent	none
(I keep it at home.)	
Total.....	\$104.41

This is about 1 1-2 cents per mile. My tires are in pretty good condition now, although I expect next year to have some expense in this direction.

If anyone doubts any statements I have made, I stand ready to back them up with a ride next summer of a hundred miles and wager two to one that I won't use five gallons of gasoline.

BRATTLEBORO, Vt.

C. A. S.

A BAY STATER WHO RUNS A TWO-CYLINDER.

Editor THE AUTOMOBILE:

We were interested in the expense account of the San Francisco autoist (13 1-2 cents a mile for a \$2,500 four-cylinder touring car) as given in letter No. 1016, in a recent issue of your paper, inasmuch as we have run a two-cylinder touring car all this season at an expense of 4 1-5 cents a mile and had begun to think something of a four-cylinder for next season.

We are not machinists and, in fact, had no idea at all as to what it was that made automobiles go (or stop, for that matter), but, nevertheless, May 1 we took a chance on a new two-cylinder touring car, 22-horsepower, double opposed motor, planetary transmission and chain drive, and with top, odometer, extra casing and tube, and attachments, yard gasoline tank, and a few garage supplies, it set us back just \$1,475 before we got under way. We have run the car to date 5,200 miles (in five different States) and our expenses have been as follows:

Feed (gasoline, oil, batteries, carbide for lamps, etc.)	\$85	.01 6-10
Tires (casings, tubes, valves, cement, sleeves, etc.)	70	.01 4-10
Repairs (mostly petty adjustments).....	30	.00 5-10
Miscellaneous (storage, washing, etc., on tours, extra tools, parts).....	40	.00 7-10
	\$225	.04 1-5

We have taken care of the car ourselves and have kept it in our stable. We have averaged seventeen miles on a gallon of gasoline, and seventeen miles an hour on the road (and thirty-five to forty on good bits of road); the longest day's run has been 157 miles (Pittsfield to Boston); we covered 4,000 miles before we had any tire trouble.

People have told us that the car took the hills as well as a well-advertised four-cylinder hill-climber, costing over \$3,000 with extras, and that it made no more noise than this car.

We do not cite the above as anything exceptional, but as we consider these facts we have come to the conclusion to let well enough alone, inasmuch as our two-cylinder car has proved reliable and economical, with all the power all the time that anyone could ask for. The car runs as well to-day as it ever did. What more do you want?

DORCHESTER, MASS.

G. H. E.

SOME ESSENTIALS OF ACCESSIBILITY.

We consider the following should be the minimum standard of accessibility in any high-class car, says *Engineering*:

(1) The bottom half of the crankcase should be removable without touching the dust-screen or any pipes or fittings; (2) the clutch should be removable without disturbing the engine, gear box, or any other parts except the immediate connections to the clutch pedal; (3) the gears should all be removable from the gear box without taking this out of the car or disturbing the change-speed levers; (4) it should be possible to remove the bevel pinion and crown wheel of the back axle without taking the weight off the road wheels, and it should be possible to see these wheels running in place.

LETTERS INTERESTING AND INSTRUCTIVE

LUBRICATING VALVE STEMS OF MOTORS.

Editor THE AUTOMOBILE:

[1,035.]—In your answer to my query, No. 992, in your columns, you have evidently misunderstood the question. You explained oiling of the push rods by splash, etc.; this, of course, has nothing to do with the valve stems where they pass through the wall of the combustion chamber. Not only is there no provision made for lubricating valve stems, but it is well nigh impossible for the driver of a car to apply any oil to a valve stem in the usual type of vertical motor, owing to a closely wound valve spring surrounding the valve stem and this spring resting against the under side of the combustion chamber, thus preventing one from reaching the valve stem with an oil can.

Can you explain why the water boils in a motor having a properly designed cooling system and said system being in good working order? I am well aware of the causes usually assigned, such as "a retarded spark," "too rich a mixture," "carbon in the cylinders," etc. This, however, does not explain why the water boils. For example, with a retarded spark the burned gases are in the cylinders for a shorter interval than with an early spark. It would seem, therefore, that we should have boiling of the water with an early spark, rather than with a retarded spark.

Minneapolis, Minn.

O. A. WEISS.

We have never had a case come to our attention where it was necessary to oil this part of the car, and as practically every car on the market that has a vertical motor is lacking in such provision it would not seem that there is any great necessity for it. Should you find that the motor of your car will not work well unless the valve stems are lubricated, take out the plugs over the valves and then turn the motor over slowly until the first valve is fully open. This should give an opportunity to introduce the desired oil on the stem; treat each one in the same manner. We doubt, however, whether this will be found to make any great improvement in the running of the motor.

The water boils because it has reached a temperature of 212 degrees F., and this is because its surroundings are at a still higher temperature. Are you not assuming too much in a "properly designed cooling system in good working order?" If it fulfills these conditions there is nothing wrong with it and the water should not boil away. The various reasons you assign do explain *why* the water boils, because they explain why the temperature becomes so much higher than it should under normal conditions and with everything in good working order. Your assumption regarding the retarded spark is somewhat erroneous. With a properly timed spark the explosion has occurred and utilized most of its force before the exhaust valve opens; it has expended its heat in driving the piston. When fired late the explosion is practically at its height when the exhaust begins to open, so that instead of spent gases issuing, live, hot flames are exhausted, as may be noted by removing the exhaust manifold. Moreover, the explosion has taken place at reduced compression owing to the delay; the speed of the motor is likewise reduced, and this affects the movement of the gases in the same manner, so that instead of clearing the combustion chamber of the burnt charge some of it is penned in there, still burning, or at least at a very much higher temperature than if the explosion had been normal, in which case there would be little or none left.

A FIVE-TON TRUCK FOR COUNTRY ROADS.

Editor THE AUTOMOBILE:

[1,036.]—Will you kindly let me know the names of concerns manufacturing motor trucks of five-ton or more capacity? We are in the market for a large truck to be used on country roads, and should be pleased to hear from manufacturers of above vehicles. Have steel wheels been used, and are they a success?

New York City.

M. STROUSE.

You will find several manufacturers of commercial vehicles run announcements of their products in our advertising pages. Better communicate with them direct, stating your requirements. Steel wheels have not been used thus far to any extent.

IS A MASTER VIBRATOR NECESSARY HERE?

Editor THE AUTOMOBILE:

[1,037.]—I am a constant reader of "The Automobile," and especially "Letters Interesting and Instructive." Would you kindly give me a little information on the following subject? I have made an automatic governor attached to an "Apple" dynamo, which will keep the dynamo at a speed I may adjust it for, independent of the speed of the engine, no matter how quick the engine may change from fast to slow, or vice versa. I have a lamp connected to the machine which gives a steady light. I wish to take current from the dynamo to a four-unit Splitdorf coil. Would it be necessary to use a master vibrator? If so, on what principle is the vibrator made?

ARTHUR BEIJER.

Worcester, Mass.

If, as indicated by the steadiness with which your light burns, there is no excessive fluctuation of the voltage of the current generated by the dynamo, regardless of the speed of the engine, there appears to be no reason why the ignition system should not be run directly from it. Connect the dynamo to the low-tension timer, the same as if it were a battery. No master vibrator is necessary merely because a dynamo is employed instead of some other source of current, nor does a master vibrator, so-called, differ from any standard device of the kind. Its title arises from the fact that it is employed to time the action of all four coils and works independently of them. It is nothing more or less than a fifth coil of the vibrator type, the action of which successively sets in operation four others of the non-vibrating type. The object is to render the firing more uniform by overcoming the difficulty of adjusting four vibrators so that they will work exactly alike.

SHORT FOCUS LAMP REFLECTORS.

Editor THE AUTOMOBILE:

[1,038.]—What is the advantage of "short focus" lens mirror automobile lamps, and is not the supposed merit in such design purely on advertising "talking point"? It seems to me that, so far from its being an advantage, it is a positive disadvantage, in that the placing the flame so near the lens simply increases the dangers of breakage, sooting, etc. So long as you have a given diameter of reflector, with consequent similar diameter of beam, of what possible advantage can it be to get the lamp so close to the reflector as some lamp makers seem to approve. Another point—why is a large diameter reflector materially better than one of the small diameter? If the small one catches practically all the light, the large one cannot do much more, for the difference in the diameter of the beam is not noticeable after the first few feet because of diffusion, etc.

A. WALTER REED.

Bisbee, Ariz.

The merit of the short-focus lens-mirror reflector is anything but a mere talking point, since it is a fundamental principle of scientific lamp design to secure a maximum intensity of illumination. Any source of light emits its rays in every direction, consequently the light falling on the interior of a sphere is the total amount emitted. And, obviously, the smaller the surface upon which this total amount is concentrated, the greater the intensity of the illumination per unit of area. Therefore, the smaller the sphere the brighter its inside is illuminated. This being the case, it must be equally true of any part of the interior of the sphere, or of any non-spherical surface occupying a corresponding space. So, if a reflector be placed six inches, on an average, from a source of light, it receives approximately the same intensity of illumination as would a twelve-inch sphere. On the other hand, to illustrate by taking an extreme case, a reflector six feet away from the light will receive only the same illumination as would a twelve-foot sphere—only 1/144 as much, since the surfaces of spheres are in proportion to the squares of their diameters. As for the size of the reflector, it is clear that the closeness of the flame, or shortness of the focus, which is the same thing, is limited to some practical minimum by the considerations you mention—sooting

and heating. The result is that the larger the mirror that can be placed at the given distance the more it will intercept of the light that otherwise would fall on the interior of a surrounding sphere. Practically, however, there are limits to the advantage to be gained by going to extremes in this direction, for to make the beam too large would simply reduce its intensity. Also, with a reflector wholly behind the light, no matter how large it were made, it must still continue to intercept less than half of the spherical illumination. This consideration accounts for many of the extreme parabolic reflector surfaces, extending even forward of the vertical plane in which their focus—and the light—is found. The light that is radiated forward from the flame is another worry of the lamp designer. Left to itself, this portion of the illumination naturally diverges radially with the corresponding rapid drop in areal intensity. So transparent glass lenses are placed in front of the flame in some lamps to bring the diverging rays at this point into parallel forward lines.

MISSING DUE TO LEAKY EXHAUST VALVES.

Editor THE AUTOMOBILE:

[1,039.]—I saw my answer in to-day's "Automobile," and thank you for it and advice. I am sending you a new diagram of my car. The two cylinders are cast together, the intake is on the top of cylinders, and the exhaust is on the side, directly under the intake. I have to take my intake valves out first to get the exhaust valves out the same hole. I made a mistake in saying I used a 1-2-inch pipe. I am using one-inch standard galvanized pipe (iron). My intake manifold is held on by a bolt running through the center of it. I use a gravity feed gas tank in the rear of my car about 4 or 5 inches above the carbureter. Could a manifold be made to do for this outfit? I have suction intake valves. Cylinders are about 3 3/8 by 3 3/8 inches square. I have not ground my exhaust valves for about one year, and have used the car on an average of 100 miles weekly. Have I let them go too long? Car runs good, only in last two weeks it has skipped fire a great deal. I took the coil to the makers and they said it was O.K. I have tested the plugs, and they are O.K. Battery O.K. Would the valves (exhaust) not being ground for so long cause it to miss fire? My intake valves have done a lot of popping and are noisy here lately. They used to run silently before. Would poor springs cause that?

New York City.

F. C. FRANKS.

There is no reason why a manifold could not be made to fit the motor in question. It is very poor practice to obstruct a manifold, and particularly the inlet, by running a bolt through it in the fashion you mention, as it tends to cause wire-drawing of the incoming charge, thus reducing the power of the motor. There is no set rule for regrinding exhaust valves, but it would certainly seem well to do so at the end of 5,000 miles' running, while at the end of every 1,500 to 2,000 miles would probably be better. Leaky valves would be responsible for missing, as considerable of the charge could be driven out through them on the compression stroke, so that there would not be enough left in the cylinder to fire. If you have done 5,000 miles with your car in steady service, it is hardly too much to recommend giving the motor a thorough overhauling, and doubtless you will find a number of things that need remedying, which later would mean replacements.

CAUSES AND REMEDIES FOR OVERHEATING.

Editor THE AUTOMOBILE:

[1,040.]—I have a four-cylinder St. Louis touring car which does very well in all respects, except the motor heats, so much as to boil the water in the radiator, after going only a few miles. I have examined it and have come to the conclusion that the radiator is foul. I am going to ask what do you think about it; also, what solution can I put into the radiator to clean it out? I don't think the radiator is greasy, but a deposit of some kind from the water.

Bridgeport, Cal.

SUBSCRIBER.

The fouling of the radiator will cause the motor to overheat, but other adverse conditions, such as improperly timed valves, an over-rich mixture, clogged circulating system and a number of others that will suggest themselves upon reflection. If the radiator shows deposits of hard material from the water it is better to take it down and subject it to a thorough cleansing with the aid of a pickling solution. This consists of 90 per cent.

water and 10 per cent. sulphuric acid, or commercial vitriol. This solution is both poisonous and corrosive, and care must be used to prevent having the hands or clothing come in contact with it. The action of the solution may be increased by heating in case the deposit does not yield to it readily. The progress of the cleaning should be watched, preferably by drawing off the contents of the radiator, and renewing the solution from time to time. When the operation is complete the radiator must be very thoroughly flushed out, soft water being used, if possible, as it is the hard water you have been using that causes the trouble. Examine the water jackets and give them the same treatment, if necessary; also investigate the carbureter and valves, and it should not be difficult to remedy the trouble.

EVERY AUTOIST MUST ANSWER FOR HIMSELF.

Editor THE AUTOMOBILE:

[1,041.]—What is the formula adopted by the A. L. A. M. for computing the horsepower of motor in an automobile? I have concluded to buy a 1908 Pope-Hartford. I was undecided between it and the Light Six Stevens-Duryea. I want to ask you if the latter is as much better than the other sixes as the manufacturers claim on account of the three-point suspension? What is the value of this method of suspension? If it is so wonderful, why don't others adopt it? Do you think the six-cylinder car is superior to the four-cylinder, and will in time supersede it? Do you think there is \$750 difference in value between the Light Six Stevens-Duryea and Model M Pope-Hartford? Do you think I have made a wise purchase for the price?

A. I. GAMMON.

Pasadena, Cal.

The formula is $\frac{D^3 \times N}{2.5} = \text{HP.}$, in which D is the bore of the

cylinder; N the number of cylinders of the motor, the denominator representing a constant which is said to have been figured from a voluminous amount of data on the performance of a great many standard American motors; though, as a matter of fact, it is practically identical with that adopted by the Royal Automobile Club of Great Britain. We had flattered ourselves that this information had been published in THE AUTOMOBILE a sufficient number of times to have come to the attention of every reader, but this does not seem to be the case.

Concerning the remainder of your queries, these are something that every autoist finds he must answer for himself, as they are so largely a matter of personal opinion. Every manufacturer naturally proclaims his own wares the best the world has ever seen and can always write a brief to substantiate his claims. The advantages of the three-point suspension are that it permits the use of a unit power plant and transmission, so supported as to be proof against any torsional strains of the frame, or other parts of the car. It is employed by several makers, while others attain the same end in a different manner. We can hardly reopen the six-cylinder matter here, and would refer you to the numerous articles and editorials on the subject that have appeared in the past half year or more in these columns. With anything except money itself, value is inevitably a matter of personal opinion, and something in the shape of a car that might strike you as hardly being worth the expense of towing it to the scrap heap might be a gem in someone else's estimation. We think you have made a wise purchase and will feel satisfied that your investment represents every dollar it cost you.

THE "DRAW-BAR PULL" OF AN AUTOMOBILE.

Editor THE AUTOMOBILE:

[1,042.]—How great is the pull, in pounds, exerted by the average automobile? That is, if the machine were tied to something so as to tow it, how many pounds would a spring balance show in the tow line? And what is the similar towing power of a good horse?

Garden City, L. I.

IRVING BRENNERMAN.

With plain pneumatic tires on ordinary level road surfaces automobiles of ordinary size and horsepower will give "draw-bar pulls" ranging from 200 to 500 pounds. Most automobile engines, working through the lower gears, would give much higher pulls if the tractive adherence would permit, so with

very heavy vehicle weights, and with non-skidding tire treads, pulls greatly in excess of the figures given can be obtained. An ordinary horse, which is capable of exerting several horsepower for brief periods, can pull as much as 400 pounds under favorable conditions—very slowly and with suitable harness. But as it cannot maintain such strength of pull very long, nor at all at any speed, the immensely greater speed, hauling capacity and power requirement of the automobile, without materially higher pull, is readily perceived.

WHAT IS THE EFFICIENCY OF 4-WHEEL DRIVES?

Editor THE AUTOMOBILE:

[1,043.]—Will you kindly give me, through "The Automobile," any information available in regard to the construction of the most promising mechanical four-wheel drives with which you may be familiar? I am not certain that any successful drive of this kind has ever been brought out. Do you think there is any great advantage in driving through all four wheels, and would it not be offset by added complication in the wearing parts of the machine? Cleveland, Ohio.

H. B. H.

So far as our knowledge extends at present, we believe the only practical four-wheel drive on the market that has been in use for any length of time is the "Couple-Gear" electric. In this the motor is self-contained in each wheel, so that each is an independent unit. There have been several others in the past, notably one made in Milwaukee, in which a gasoline engine was employed and the power transmitted to the four wheels by mechanical means, but whether its failure was due to technical or financial reasons we do not know. There is an advantage in driving all four wheels for commercial work, where speeds are low and loads are heavy, and whether or not this is offset by the extra complication will naturally depend on the extent of the latter. There would certainly be no object in employing a four-wheel drive on a pleasure car.

HAVE SOLDERED JACKETS EVER BEEN USED?

Editor THE AUTOMOBILE:

[1,044.]—I would like to ask you, through the columns of your valuable paper, if any manufacturer has ever tried soldering copper jackets to the cylinder castings. I have a small double-cylinder engine which I built myself. The copper jackets are soldered onto the flanges, and during the six months it has run it has never caused a particle of trouble. The slight expansion of the copper on being heated has never caused them to leak, and they are as solid as the day I put them on.

E. SPARENBERG.

Peru, Ind.

Not to our knowledge. Elaborate precautions are always taken to insure the jacket staying in place, and it is usually calked on with a soft steel or copper ring pressed into a groove with the end of the jacket, under great pressure. Many of these jackets are seamless and thus require no soldering at all, while on others solder is merely employed to reinforce the mechanical joint in the copper and make it absolutely water tight. You do not mention for what purpose your motor has been employed, but if it has been mounted on a car we must certainly commend the manner in which the soldering has been done, as the inflexibility of such a joint and the readiness with which it gives way to vibration or slight shocks constitute its chief weakness and make it a poor thing to have on an automobile.

EXPLAINING THE DEFECTION OF CONE CLUTCH.

Editor THE AUTOMOBILE:

[1,045.]—I am about to place the following mixture in the radiator of my machine, and would like to know if it will be as effective as an anti-freezing solution in climates such as we usually have in New York during the winter.

Twenty-five per cent. glycerine.

Twenty-five per cent. wood alcohol.

Fifty per cent. water.

My machine is fitted with the common leather-faced cone clutch. The engagement is always accompanied with a great deal of vibration, to overcome which I have used castor oil liberally, but without success. The clutch is neither too light nor too loose, neither is the

leather worn or cut, and the vibration occurs if it is let in fast or slow. Any remedy you can suggest will be appreciated.

West New Brighton, S. I.

A. L. HENRY.

The solution you refer to should be able to withstand the greatest extremes of cold experienced in the vicinity of New York City, as a 25 per cent. solution of glycerine and water freezes at 5 degrees Fahrenheit, and the same strength of solution using wood alcohol resists freezing down to zero Fahrenheit, from which it will be evident that your proportions are unnecessarily high and could be considerably reduced with a great saving in the cost of the solution, and without lowering the factor of safety unduly.

With reference to the clutch, the fact that its engagement always sets up a great deal of vibration would seem to indicate that there is a lack of alignment between the crankshaft and the clutchshaft, the vibration being the result of their struggle to accommodate themselves to one another when forced into engagement. This may be caused by the clutchshaft being bent, or by its having been forced out of correct alignment in some other way. Raise the footboards of the car and watch the action of the clutch as it is let in and the defect will be apparent. The remedy is obvious.

HOW CAN CYLINDERS BEST BE CLEANED?

Editor THE AUTOMOBILE:

[1,046.]—Will you please inform me, through "Letters Interesting and Instructive," the best way to get carbon deposits out of cylinders, without dismantling the engine? Also, should the timer be packed in hard oil?

W. L. H.

Waterloo, Iowa.

This will depend upon the accessibility of the piston heads as well as on their condition. Carbon deposits are sometimes so hard that nothing short of dismantling the engine will suffice, and even then it is no little work to remove them. A solution consisting of hot water and washing soda is said to be efficient for loosening the deposits, also kerosene and gasoline, while special chemical compounds are also said to be on the market for this purpose, but we do not know anything of their value. If the deposit be a troublesome one of long standing, unless every part of the piston head can be reached with a scraper from the outside, it will be absolutely necessary to take the motor down. This will depend upon the type of timer used on your car. Many makers recommend that their timers be packed with grease, especially where they are of the ball contact type.

NEVER DROVE A 200-H.P. CAR IN VANDERBILT.

Editor THE AUTOMOBILE:

[1,047.]—I wish you would settle a dispute for me by answering the following questions: Did the French driver, Hemery, driving a 200-horsepower Darracq, win a Vanderbilt race one year? And if so, what year?

ROBERT M. CUNNINGHAM.

Lyndon, Ky.

Hemery won the 1905 Vanderbilt Cup race, driving an 80-horsepower Darracq—at least that was the nominal rating of the car, though its actual power was much greater. Later he drove the eight-cylinder, 200-horsepower Darracq on the Florida beach course once, and was then disbarred for insubordination by the officials, Demogeot then taking the car and making the famous record of 122.44 miles an hour with it. There has never been such a high-powered car as this driven in the Vanderbilt race, and it is doubtful if so much power could be used to advantage on a road course.

INFORMATION WANTED ON SELF-STARTERS.

Editor THE AUTOMOBILE:

[1,048.]—Could you inform me where I can get the best information concerning methods and devices for the self-starting of gas engines, and also tell me that number of last year's "Automobile" which contained an account of the contest held in France on this subject (Methods and Devices for Self-Starting). I believe that certain of the devices were explained in that issue.

Golden, Col.

D. B. DOYLE.

The contest in question was held in connection with the Paris Salon of 1905, and the prize was granted to the Mors for a

somewhat complicated device employing a second carbureter, a hand pump and a distributing valve. If you have access to the file of *THE AUTOMOBILE* you will find a description of the more prominent devices in one of the issues of the latter part of December, 1905, but as the number in question is out of print we could not supply it. If there are any works on the subject that our readers know of, we should be pleased to bring them to the attention of the inquirer.

CONCERNING THE QUESTION OF TIRE REPAIRS.

Editor *THE AUTOMOBILE*:

[1,049.]—Being a subscriber to "The Automobile," I am taking the liberty of writing you for information.

The tires of my Reo touring car have been used for two seasons, but they have never been punctured and have consequently never been run flat. However, the tread is practically worthless, and I write to inquire if it will do to put new treading on the old canvas. That is, would you expect the old canvas to be good enough to pay for retreading?
J. G. TURNBULL.

Barton Landing, Vt.

Unless the tires have been run so long with worn treads that the canvas also has worn, or rotted through becoming wet frequently, it is decidedly advisable to have them retreaded, as it is not uncommon for the same fabric to stand retreading twice and in some cases three times. Unless there is a good tire-repairing establishment convenient, it is best to return them to the makers for repairs, and the latter will seldom fail to advise you whether the tires are worth repairing or not, as a retreading job that would give way in a few hundred miles would not add to the reputation of their repair department.

ABOUT RECHARGING DRY BATTERIES.

Editor *THE AUTOMOBILE*:

[1,050.]—Can dry cell batteries be recharged with a magneto? If so, which would be the best way of wiring?
DRY CELL.
Port Hope, Mich.

Dry cells cannot be recharged by a magneto, nor in any other way so as to give a practical return for the amount of current sent into them. A magneto generates an alternating current, which consequently cannot be used for charging without converting it into a direct current. When the latter is sent through an apparently exhausted dry cell for a length of time the cell will show signs of recuperation, but the result is of so little value that the possibility of recharging such a cell is really confined to the realm of laboratory experiments. When dry cells are actually exhausted there is no alternative but to replace them.

REPAIR PARTS WANTED FOR AN OLD STEAMER.

Editor *THE AUTOMOBILE*:

[1,051.]—Will you please be kind enough to inform me where I can get repairs for the steam engine of the Mobile steamer, also what is, in your judgment, the best compound to put in a fire tube boiler to remove the scale?
H. A. MERTEN.
Des Moines, Ia.

There is a concern whose announcement you will find in our advertising pages who make steam specialties for automobiles, and while we hardly believe that they make replacement parts for the car you mention, they may be able to meet your requirements. There are numerous special compounds on the market for this purpose which can be had ready to use.

SOME FIGURES REGARDING COST OF IGNITION.

Editor *THE AUTOMOBILE*:

[1,052.]—Why is it that some of the dry battery manufacturers are not more alive to their opportunity in connection with automobile ignition? A set of six dry batteries of ordinary size costs \$1.50 at the garage, and lasts in ordinary service not more than 600 miles, probably less. If one drives his car 6,000 miles in a season, which is less than many motorists do, he pays \$15 for batteries alone; the chances are that he will actually pay more. If he has a fairly economical engine, his gasoline will cost him 1 cent to 1 1/4 cents per mile, and his season's bill will be \$60 to \$75. In other words, his batteries cost him about a quarter as much as his gasoline. Yet all that the batteries have to do is to ignite the mixture, which requires a hardly measurable amount of energy. Fifteen dollars a year is 5 per cent. of \$300, from which it would

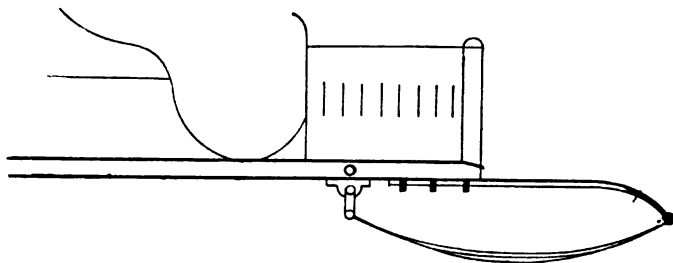
at first seem cheaper to use a magneto costing from \$150 to \$200. But magnetos wear out, like anything else about a car, and I am told that when their gears become worn they are very noisy. Anyway, it is a lot simpler and cheaper to throw away an exhausted set of batteries than to repair the magneto that has got out of order, so it would seem that for economy the batteries have the best of the argument. The worst thing about the dry battery is its small capacity and the fact that it dries out when not in use. I understand that there is a battery made somewhere which is claimed not to dry out as fast as the ordinary kind. Do you know what it is? If one concern can make such batteries, why cannot the others do it also? If they can, it will be worth while to make the batteries larger, so that the cost of renewal will be nominal. As matters stand, everybody seems to want the magneto, and batteries are getting the worst of it.
E. LEEDS POWELL.

New York City.

HOW TO LENGTHEN A SMALL CAR'S WHEELBASE.

Editor *THE AUTOMOBILE*:

[1,053.]—In answer to inquiry No. 976, page 769, in "The Automobile" of November 21, I should like to state that the inquirer can lengthen the wheelbase of his Maxwell runabout very easily and at little expense. If done according to the following, the result will be most satisfactory. Take off the front spring forks and have them lengthened just ten inches by welding on drop forgings, of course maintaining the same curve; then bolt them in



METHOD OF LENGTHENING THE WHEELBASE OF A MAXWELL.

three places to frame, use the same springs, but get spring clips one inch shorter and have attached as per sketch. In most places the old holes can be used by fitting. Then cut the steering rod in the middle and have a piece brazed in three inches long. I attached a three-foot running board and made new mudguards, the front five feet long, and then fitted red leather aprons, so my car not only runs far easier, but is mud proof. If Maxwell desires any more information, I should be pleased to give it.

South Orange, N. J.

G. M. JEFFERY, JR.

CAN ANY TOWN DISPUTE THIS HONOR?

Editor *THE AUTOMOBILE*:

[1,054.]—I have read from time to time of different small cities and towns that "brag" of their great number of automobiles for a place of their size, but I can't remember of ever reading anything concerning a city or town that has the least number of cars in proportion to their size. Frostburg, Md., I think, has anything beat to a standstill in the United States, for it is a town of over 8,000 inhabitants, and not one automobile owned or ever was owned in the town. How's that; can anyone beat it? They have good State roads leading to the east and south of them, one stretch of eleven miles of fine National pike road leads to Cumberland, Md.

Myersdale, Pa.

L. F. H.

ENTHUSIASTICALLY BACKS MR. FAY'S VIEW.

Editor *THE AUTOMOBILE*:

[1,055.]—I wish to say that I thoroughly endorse every word of what George A. Fay, of Meriden, has to say, in your issue of November 28, regarding tours, and if you want to make your paper worth more than your new price, \$3.00 per year, just have some more articles similar to "The Thousand Miles of New England." published November 7.
SUBSCRIBER.

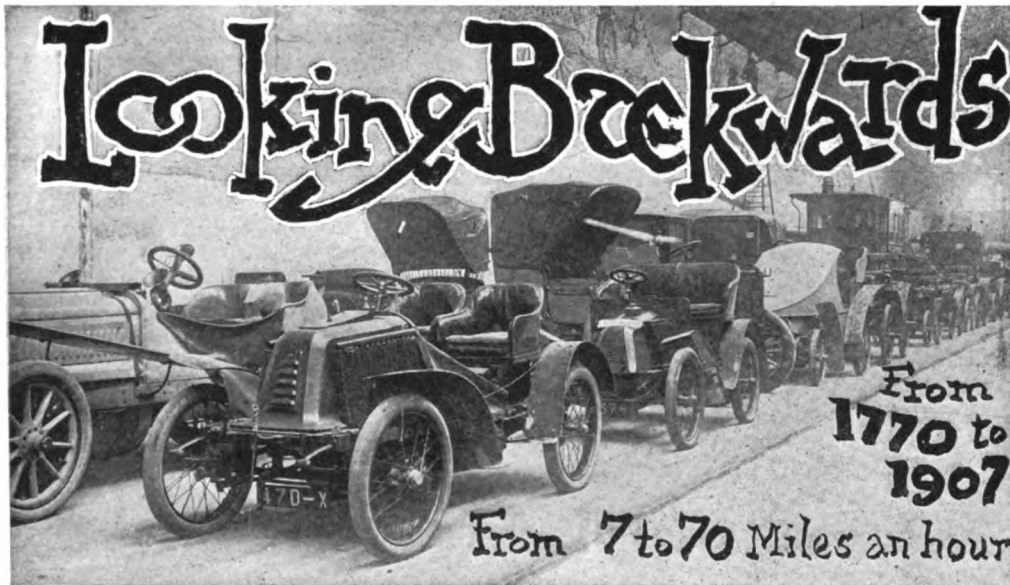
Hartford, Conn.

LIKE TO HEAR FROM FORD MAGNETO USERS.

Editor *THE AUTOMOBILE*:

[1,056.]—I saw the answer to my battery question, No. 921, and thought that the drawing I marked No. 2 was the best one, as six batteries were wired for two coils, and six more for the other two cylinders. I have a Ford Model N which seems to use up batteries. Would like to hear from Ford users who have put on a magneto.
Warren, Mass.

LOWELL ELLIS.



DOUBLE FILE OF OUR STURDY AUTOMOBILE ANCESTORS AT PARIS SHOW.

THERE is one portion of the big exhibition on both sides of the River Seine at Paris where selling price and 1908 improvements are never mentioned—and it is by no means the least interesting section of the show. Ten years is not a long period in the life of most industries, but a decade in automobiling takes one back to a period when a handful of enthusiasts were undecided whether gasoline or steam should be used on the road, and when the great majority was totally indifferent to either.

In commemoration of the decennial, not exactly of the automobile industry, but of French automobile shows—the first one was held during June, 1898, in a tent in the Tuileries Garden—M. Ballif, president of the Touring Club, was entrusted with the work of gathering together a representative group of relics, to form a retrospective exhibition on lines similar to the cycle exhibition of last year. The two-wheelers failed to arouse much enthusiasm, probably because we have advanced too far to care for the uncertain march of a high boneshaker. It is different with the automobile; most of those who helped to put it in motion are still with us, lost too often in the huge crowd of newcomers, but always enthusiastic over their early experiences, and always listened to with interest when they relate their exploits.

Though there are four and six-cylinder engines built by Forest in 1888, magnetos and make-and-brake mechanism of the same period, not much attempt is made to trace the work of such earlier inventors as Beau de Rochas, Lenoir, and their contemporaries, the more active period from 1890 being dealt with more completely; Cugnot's three-wheel steamer, invented in 1770, appears to have been given a place beside some fifty more youthful companions because of it being the first self-propelled vehicle to travel over ordinary roads.

One of the earliest of steamers to be used successfully on the road is shown in a ponderous vehicle produced by Amédée Bollee, Sr., in 1878, at his small factory at Le Mans. It was in the same town that, seven years later, Henry Fournier served an apprenticeship in his father's machine shop, and still later introduced the first foreign motor bicycle into America. One of Serpollet's earliest attempts is shown in a small three-wheel steamer, built about 1889 in a small workshop in one of the populous quarters of Paris. It was not until about eight years later that Frank Gardner, an American citizen, joined Serpollet and formed one of the first automobile companies in the world. Serpollet died this year, just when he had reached the height of his ambition; Frank Gardner is still living in France.

How a Count and a Mechanic Struggled with Steamers.

De Dion's first attempts to solve the problem were in the form of steamers, the earliest being an 1886 wire-wheel tricycle

with more resemblance to a lawn sprinkler than an automobile. It is one of the romances of the industry how Comte de Dion, a pleasure-seeking young man-about-town, became interested in the automobile by seeing a small toy model offered for sale at a street stall in Paris. He inquired for the inventor and was introduced to Bouton, a working mechanic, whose factory formed part of his modest dwelling. The titled society man encouraged the Parisian workman, and later entered into business relations with him, much to the disgust of supercilious aristocratic relatives and friends. For several years De Dion-Bouton steamers competed with gasoline rivals until it was shown that the internal combustion type had the greater future, when a

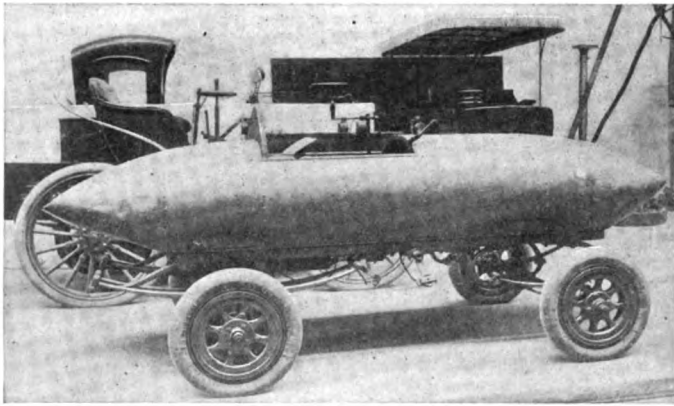
change was made—not, however, before steam had defeated gasoline in a keenly contested struggle for speed supremacy.

Electric vehicles were never at any time greatly in favor in France, this doubtless accounting for only two of this type being shown, the more important being the *Jamais Contente* with which Jenatzy in 1899 first traveled a mile a minute. A Jeantaud electric is given a place of honor because it was used by Michelin to make his first experiments with pneumatic tires.

A full series of old timers is supplied by Panhard & Levassor, the earliest being a two-seater of 1891, driven by a single-cylinder Daimler motor. There is a touch of romance in the story of how Sarazin, a French engineer interested in the internal combustion motor invented by Gottlieb Daimler, presented it to Levassor, then associated with Panhard in an engineering establishment. When Sarazin died in 1887 he charged his wife to look closely after the business which had been commenced with Daimler. Two years later Daimler gave the sole representation of his engine to the widow of Sarazin, and a couple of months after Madame Sarazin became Madame Daimler. One of Daimler's vehicles, and the first one to be seen by Levassor on his visit to the Stuttgart factory, forms a part of the retrospective exhibition. As we now understand the word, it requires a stretch of the imagination to term an automobile the ponderous vehicle designed to run on rails. At that time the Daimler motor was transverse on the car, geared to the rear axle by transverse shafts. It was this feature that Levassor criticised and later



BOLLEE'S 1878 STEAMER CARRIED STOKER IN THE REAR.



JENATZ'S "JAMAIS CONTENTE," WHICH DID FIRST MILE A MINUTE

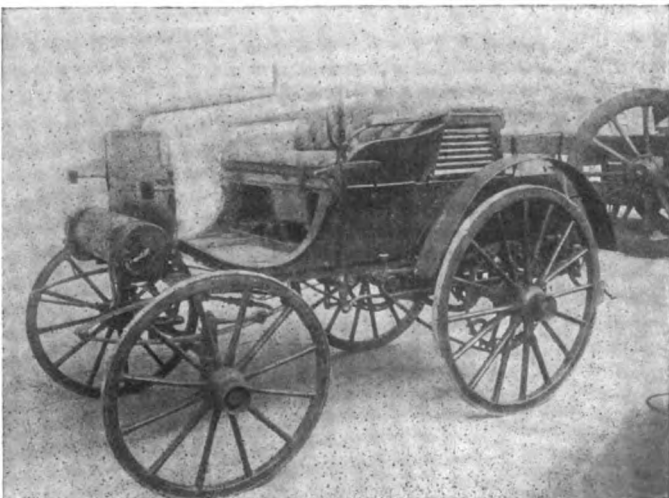
improved by placing the motor in front and connecting up to the rear axle by a sliding gear transmission and single chain.

Madame Levassor maintained a deep interest in the work of her husband and rode with him on the first successful trip from the factory to the Point du Jour—not more than ten miles—one of the incidents of the journey being a stop to visit Bollée, who was repairing his steamer at a blacksmith's shop.

Relics of the World's First Automobile Race.

Several survivors of the world's first automobile race, organized in June, 1894, by the *Petit Journal*, from Paris to Rouen, a distance of about eighty miles, are placed on exhibition. Levassor won, followed by a Peugeot, other competitors being a De Dion steamer and a Scotte steamer. The first of the Peugeot team figures side by side with the winner, thirteen years after they noisily struggled for supremacy on the highway. It is claimed for the Peugeot that it is the first automobile to be built in France, for it was constructed on Daimler's model before Levassor had produced his car with motor in front and sliding gear transmission. At that time Peugeot obtained his Daimler motor from Panhard & Levassor, but when Levassor produced the Phoenix engine Peugeot shook off the dependence on a rival firm by designing a horizontal motor of his own.

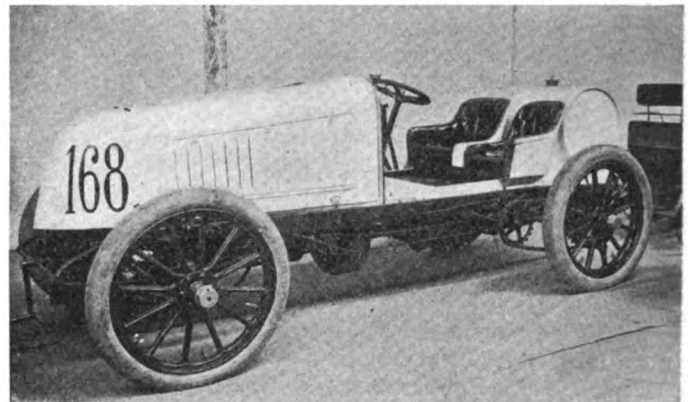
Plenty of material is to be found in the exhibition to recall memories of the Paris-Bordeaux and return race run in the June of the following year, and also won by Levassor, at an average speed of 24 miles an hour. The *Petit Journal* refused to organize another race, and a committee was formed, which later developed into the Automobile Club of France, among the members being James Gordon Bennett and W. K. Vanderbilt. Starting from the suburbs of the city, the crude and noisy machines ran through the Bois de Boulogne, painfully climbed up the



LEVASSOR'S 13-YEAR OLD "RACER" CAN STILL MOVE ALONG.

Suresnes hill and ran towards the southwest. Madame Levassor occupied the spare seat on the racer as far as Versailles, and was naturally at the finishing point, when, after an uninterrupted journey of 48 hours 47 minutes, Levassor came in first on his No. 5. It was about a year after, when running in the Paris-Marseilles and return race, that Levassor met with an accident which was responsible for his sudden death in his workshop seven months later. At the time of his fatal seizure Levassor was engaged in the work of designing a magnetic clutch.

Louis Renault, who entered the game in 1898, shows his first automobile, fitted with a 1 1-2 horsepower motor, constructed when he was nineteen years of age, in a small shop on a portion of his mother's garden. A series of these little cars, with radiator on each side of the bonnet and under it a single cylinder engine, show how improvements were made from year to year. It is of interest to note that the little home factory at Billancourt still stands, now surrounded by the huge modern works. Darracq has a representative in a Léon-Bollée-Darracq car built in 1901 with vis-à-vis body, wire wheels, a single cylinder engine under the front seat and a ponderous flywheel where the running board would be nowadays. Vallée's *Pantoufle*—or Slipper—a curious structure with a slipper-shaped body, is shown as one of the earliest four-cylinder engines. It was built in 1897, and in 1899



MORS RACER ON WHICH GABRIEL WON PARIS-MADRID IN 1903.

it proved that, although it had no changespeed gear, it was capable of completing the tour of France. Modern eliminators of the gear box must certainly look to their laurels. Berliet goes back to 1897 for his first model, with a little two-seated victoria which could boast an inclined steering column, a foot pedal and a side lever. In other respects there is not much in common between the ancestor with its inclined tubular radiator in front, motor hidden under the body, and the present productions of the Lyons and Providence factories. It is interesting to note what a large percentage of the firms building crude cars ten and twelve years ago are in the auto business to-day. There are a few unknown vehicles, but the majority of those on view have direct descendants of no mean order.

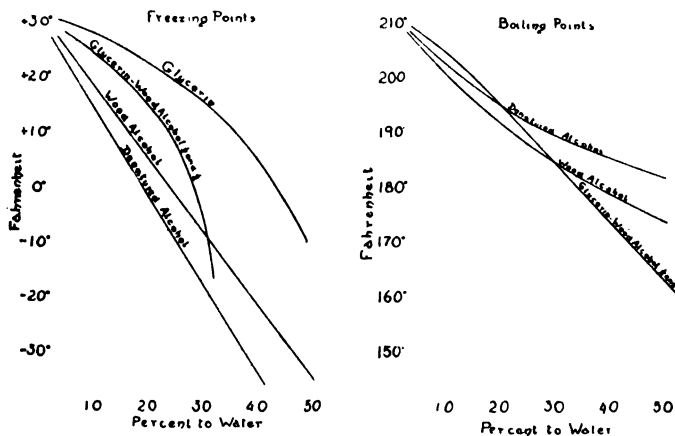
The victors in the long series of cross-country races held from 1895 to 1903 naturally have their place in the retrospective exhibition. Although they were over roads entirely unprotected, speed was so moderate in these early contests that there was really little danger. Year by year the automobiles grew in size and increased in speed until, in 1897, the special train which left the capital at the same time as the first racer, and was announced to arrive at Dieppe before any of the competing cars, landed the batch of officials in thirteenth position. The series of cross-country racers is appropriately closed by the Mors with which Gabriel won the ill-fated Paris-Madrid contest in 1903, at an average speed of sixty miles an hour. Representative of the present era—racing on closed circuits—are two Brasier cars, with one of which They brought the Gordon-Bennett cup home after it had been held successively by England and Germany and retained it for the homeland in the last Gordon-Bennett race.

DENATURED ALCOHOL TO PREVENT FREEZING

By ROGER B. WHITMAN.

IT is a well-understood axiom that trouble may be avoided by using in the cooling system during the winter months a liquid that will withstand low temperatures, but an axiom that is equally true though not as generally recognized is that the injudicious selection of such a preparation will be a breeder of trouble. It is not difficult to prepare a solution that will remain liquid at temperatures below zero, for the freezing point of water may be lowered by adding to it any liquid of a low-freezing point, or any substance that, while soluble, undergoes no chemical change in the process, and if this were the only consideration winter would present no difficulties to the automobilist, but as the solution should have no deleterious effect on the metals and materials that confine its flow, nor a tendency to clog the passages, the selection of the ingredients becomes more complicated when all these things are considered.

Of the substances offered for the purpose, calcium chloride is the best known in this country, and it is in extensive use for a number of reasons, chief among which is the fact of its low cost and staying qualities. While this salt will undoubtedly



CURVES SHOWING THE FREEZING AND BOILING POINTS OF SOLUTIONS.

serve its purpose so far as low-freezing point is concerned, the hydrochloric acid that it carries will have a corrosive effect on metals if not neutralized, and directions for its preparation always include a warning to test for acidity and to neutralize by the addition of an alkali. It should be well understood, however, that a caustic solution will do as much damage as an acid, for aluminum and solder will be attacked and converted into hydrates of aluminum, tin and lead $Al_2(OH)_3$, $Sn(OH)_2$ and $Pb(OH)_2$. Slaked lime or lime water are the usual agents for neutralizing the solution, and if used too liberally the results may be serious.

Destructive Effects of Calcium Chloride.

That real trouble may result from the use of calcium chloride was shown by the persistent leakage of a centrifugal pump of a car three years old, in which it was found that the aluminum pump housing was entirely eaten through, and the inner surface crusted with a deposit of what analysis showed to be aluminum hydrate. Sodium chloride has been suggested for use as the basis of a non-freezing compound, but it is shown to have disadvantages by the fact that when it is used as a freezing solution in refrigerating machinery it is necessary to line the pump and other iron parts with brass to prevent corrosion.

The most serious effect of the use of a salt in the circulating system is not corrosion by acid or alkali attack, however, but corrosion by electrolysis, which is inevitable if more than one

kind of metal enters into the construction. Other difficulties will arise from the evaporation of the water, for as it is necessary to use strong solutions a slight increase in strength will cause the crystallization of the salts, an action that will tend to clog the pump and radiator passages.

Glycerine and water is a mixture that has been a favorite with the French, and the curve shows that it will withstand fairly low temperatures without congealing. Chemically pure glycerine, as sold for medicinal purposes, has no action on metals, but the glycerine of commerce carries a proportion of the fatty acids that will corrode them and is fatal to rubber. This acidity may be neutralized by the addition of sodium carbonate, but there still remains the most serious drawback, which results from the tendency of an oil to spread over a metal surface and to cling to it. This is strongly manifested in the case of glycerine, and it will form a coating on the surfaces with which it comes in contact, its low specific heat preventing the free radiation of heat as the solution passes through the radiator. Glycerine and water must be kept mixed by the action of the pump, and if the solution is used in the thermo-siphon system the glycerine will separate out with unsatisfactory results.

Some Characteristics of Wood and Grain Alcohol.

Absolute wood alcohol has a freezing point of $-151^\circ F.$, and when mixed with water effects a reduction of the freezing point of the solution. Its present price is 40 cents net in barrel lots, which is not prohibitive, and it is in extensive use. In itself it has no effect on metals, but when heated it tends to liberate formic acid, which is corrosive. Wood alcohol of commerce has a boiling point of about $150^\circ F.$, and, as shown by the curve, a solution that will stand $-20^\circ F.$ will boil at $180^\circ F.$, a temperature at which the engine will not have its fullest efficiency, and at which constant replenishment will be necessary. This low boiling point may be raised by using a half-and-half mixture of glycerine and wood alcohol, but the ill effects of the ingredients hardly warrant its use.

With the removal of the tax on denatured alcohol, it becomes possible to use a material that seems to have no bad points and many excellent ones. Grain alcohol has no effect on metals or rubber, and the 2 per cent. or 3 per cent. of wood alcohol that is used as a denaturant is so slight that injury from formic acid may be neglected. Its boiling point is higher and its freezing point lower than wood alcohol, and, as may be seen from the curves, a solution that will stand -10° will boil at 192° . As it is made under the supervision of the Government, the composition is constant; electrolytic action is impossible, filtering is unnecessary, and its present price of 35 cents per gallon in barrel lots is no bar to its use.

GASOLINE AND ALCOHOL COST IN FRANCE.

Dealing with the question of industrial alcohol produced mostly from beet root, and for use in the place of petrol for engineering purposes, the *Moniteur Industriel* states that the cost price of gasoline in Paris is now 56 francs the hectoliter (50 cents per gallon), while the cost price of carbureted alcohol is 3.9 francs (.78 cents per gallon); but to obtain equal results 5 per cent. more alcohol is required than gasoline. Outside Paris—lower town dues intervening—there is not much to choose between both liquid fuels in regard to total expenditure. In Paris, however, the advantage lies with the use of alcohol, and the "Compagnie des Omnibus" has found that on the 60,000 kilometers (37,500 miles) run by its heavy vehicles, the use of alcohol has resulted in a saving of 300,000 francs (\$60,000). The latter figure appears to us a very high one.

ADVANTAGES OF THE TWO-CYCLE MOTOR*

BY HARRY A. KNOX, OF THE ATLAS MOTOR TRUCK CO., SPRINGFIELD, MASS.

THE cycle of a gas engine is the completion of all the actions and functions necessary to obtain one impulse or power-stroke of the piston. If the cycle in an engine is completed in two strokes of the piston, or one revolution of the crankshaft, it is called a two-cycle engine. If it takes four strokes of the piston, or two revolutions of the crankshaft, to complete its cycle, it is called a four-cycle engine. The four actions completing the cycle of the modern gas engine are the suction, the compression, the impulse and the exhaust.

The modern two-cycle engine combines the suction and compression in one stroke. The impulse stroke also performs the initial compression in the crankcase, this compression when transferred into the cylinder at the end of the power-stroke being the means of forcing out the exhaust remaining in the cylinder. All exhaust above atmospheric pressure escapes when the exhaust ports are opened by the piston at the end of the power-stroke. The cycle, involving these four actions, is therefore completed in two strokes of the piston.

There are three kinds of two-cycle engines: First, engines of the Lenoir Type. This engine is now obsolete, as it did not compress its charge before ignition and was therefore very inefficient. This engine sucked a charge into the cylinder for one-half of the piston stroke. At this point the charge was ignited and expanded, giving an impulse to the piston in the last half of this stroke. The return stroke forced out the exhaust.

Another kind of two-cycle engine has in addition to the power cylinder another cylinder, used only for taking in and compressing the mixture. At the end of the power stroke the piston opens the exhaust ports and the compressed charge in the separate compressor is then transferred to the power cylinder through a valve or port in the head of the cylinder. On the return stroke of the piston the charge is compressed, its ignition at or near the end of this stroke giving an impulse to the piston through the next stroke.

The third type of two-cycle engine, and the one most used to-day, especially in automobiles and launches, is the inclosed crankcase type, used because of its extreme simplicity, reliability and compactness. In this type the charge is sucked into the crankcase through a port or valve by the up stroke of the piston. It is partly compressed in the crankcase by the return, or power stroke, of the piston. Near the end of this stroke the piston passes over and opens, first, the exhaust ports, releasing the exhaust above atmospheric pressure, then immediately after opening the inlet or transfer ports. The compressed charge in the crank chamber is then released through these inlet ports into the cylinder, expelling the remaining exhaust. The up stroke of the piston compresses this charge and the ignition occurs near the upper end of this stroke. Seventy-five per cent. of the small American launches are equipped with this type.

Whatever prejudice there is to-day against the two-cycle engine is due largely to the unsatisfactory experience of owners whose boats have been equipped with very crudely designed, cheap and roughly-built two-cycle engines. Most of the early manufacturers of automobiles equipped their cars with four-cycle engines, not because this type had any natural advantages but because it was much better known and had been improved and developed to a greater extent than the two-cycle type. They were at that time interested in the combination that could be manufactured and marketed in the quickest time and with the least effort on their part.

The public to-day has had several years' experience with this type of an automobile engine. They know its advantages and

disadvantages. The result is that they are now demanding an engine that not only runs, but that is of the simplest possible construction, with an abundance of power at all speeds and under all conditions giving silent, smooth running, with an easy quick control of wide range and the least possible friction, adjustment or replacement. The only motor that can possibly fulfill these demands is the two-cycle, and automobile manufacturers in all parts of the world are awakening to the fact.

The following are the difficulties to overcome in applying the two-cycle engine to automobiles:

Difficult to obtain a wide and positive regulation of power and speed, especially at very high and low speeds, without missing impulses. To obtain efficient and economical running under all conditions. To obtain proper lubrication. To prevent crankcase leakage. To obtain a sufficient amount of power with a reasonable weight. The reversing of the motor. The carbonization in the ports. Carbureter troubles. Back firing in the crank case. Difficulty in adjusting bearings.

Automobile manufacturers, knowing the great advantage of a two-cycle engine, have made efforts to use them. They have encountered more or less of these difficulties and after a few ineffectual efforts to overcome them they became discouraged and gave it up. The Elmore company is an exception. They have realized the tremendous advantage of this type of a motor when it had been properly developed and perfected, and have persistently used it for several years on all cars manufactured by them. They deserve great credit for their far-sightedness and perseverance and for the results they are now obtaining.

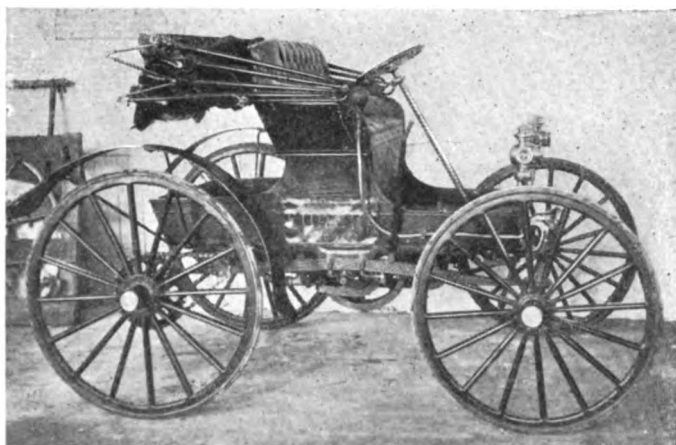
Some of the numerous advantages of the latest and most improved type of two-cycle engines over all other types, especially for automobile work, are as follows: Its ability with one cylinder to give an impulse to the crankshaft at every revolution, with but three moving or working engine parts, against the thirty or more moving and working parts in a four-cycle two-cylinder engine that are necessary to obtain the same number of impulses. The ability to obtain ample power at all speeds with the least number of parts. The small, noisy, delicate, wearable, adjustable and breakable parts have been eliminated; the large, durable and non-adjustable parts only are the parts retained. The engines are silent, there being no noise except from the exhaust. Due to the simplicity and strength of the working parts great durability and reliability are obtained, with freedom from breakage and replacements.

An important advantage of the two-cycle motor, and that most appreciated by experienced automobile users, is the smooth and even distribution and application of its power at all speeds, due to the great number of impulses.

The two-cycle motor can be made very easy to start as the transfer of the charge from the crankcase into the cylinder is wholly independent of the speed of the motor and is very positive and certain at extremely low speed. This makes it very difficult to stall the engine, and makes it possible, also, when the engine is properly designed, to obtain a slower engine speed than can be obtained from any other type. Again, as the ignition in each cylinder occurs at every revolution, the timing devices can be mounted directly on the engine shaft.

The compression end of the cylinder can be constructed without projections and with the least possible cylinder wall surface exposed to the gases to absorb their heat. This means increased power efficiency, as about 40 per cent. of the heat energy in the fuel is lost through the cylinder walls. Every effort is being made to-day by four-cycle engine builders to reduce this exposed cylinder wall surface. The lack of valves in the head of the two-cylinder motor allows this to be easily accomplished.

*Paper read before the Springfield (Mass.) Automobile Club.



THE 12-HORSEPOWER EUREKA, WHICH HAILS FROM ST. LOUIS.

EUREKA HIGH-WHEEL RUNABOUTS FOR 1908.

One of the things that appeared to bid fair to retard the introduction of the buggyabout type of vehicle was the fact that such a number of the machines placed on the market consisted of nothing more or less than stock buggy running gears, on which engines had been mounted. It is hardly to be expected of manufacturers of buggies that they should go into the business of building gasoline engines for this purpose, as there are many makers of experience, with unexcelled facilities, who can do it much better, but merely placing one of these motors on a vehicle originally designed to be drawn by a horse is equivalent to going back to the days of 1892, when it was not possible to do anything else. The builders of the Eureka runabouts have avoided this error, as a glance at the representative of their 1908 line shows. This car has been designed by Charles Zimmerman, and is being turned out by the Eureka Motor Buggy Company, St. Louis, Mo.

The foundation of the chassis consists of a special angle steel frame, which is hot-riveted throughout and effectively braced, while the power plant is carried on a transverse sub-frame located at about the center of the chassis. The motor is of the two-cylinder, horizontal opposed, air-cooled, four-cycle type, so placed that its flywheel represents the center of gravity of the vehicle. The crankshaft carries a planetary gear, from which a single-chain drive is taken to the differential on a countershaft just forward of the rear wheels. Final drive is by means of double side chains. Wheel steer of the rack and pinion type is employed in connection with the standard form of steering knuckles, this representing quite an exception to the practice followed where this essential is concerned on the average buggy type of machine, some of them being of an extremely crude nature. The motor develops 12 horsepower at 1,400 r.p.m., giving the car a speed up to thirty miles an hour on the high gear. The wheelbase is 70 inches and the wheels are 36 inches front and 40 inches rear.

INFLUENCE OF EXTREME COLD ON RUBBER.

Although it has been known in a general way that under extremes of cold rubber lost most of its valuable qualities, little scientific data has been sought for by automobilists, for the simple reason that cars have been rarely operated under extreme conditions of temperature. With the proposed automobile tour from New York to Paris, interest has been drawn to this subject, with a view to obtaining a serviceable tire for use in the extreme cold of Alaska and Siberia.

At the factory of the Liquid Carbonic Company in New York, David Hays, manager of the Healy Leather Tire Company, has made a series of tests with strips of vulcanized rubber with a view to obtaining data of their performance under extremes of cold. In an artificial temperature which could be reduced to

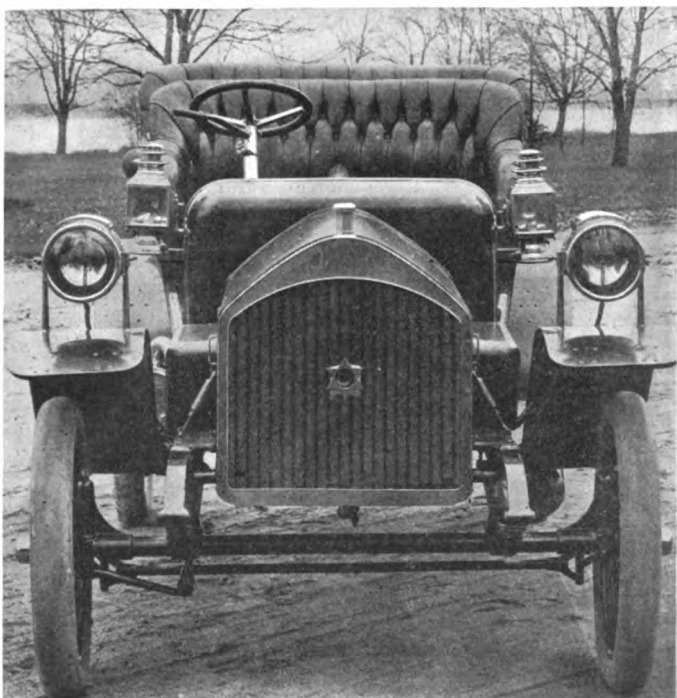
108 degrees below zero, thin strips of vulcanized rubber taken from the treads of various well-known makes of pneumatic tires, were cut up, doubled over and held in a little clip in such a way that they could be released at pleasure. When the temperature in the testing chamber dropped to 30 and 40 degrees below zero, the action of the rubber was quite sluggish, the pieces assuming their original shape very slowly on the release of the spring. When the rubber was subjected to a temperature between 40 and 50 degrees below zero, it was found to harden in the position in which it was held by the clip and did not unbend on the application of heat until after a certain interval.

It was found that the purer the rubber the better was its ability to withstand cold. For a pneumatic tire, however, it is impossible to use pure Para rubber without compounding it with other materials, as in its pure condition it is too tender to give service on the road. Leather, as sometimes used for automobile tires, was put to the same tests without any apparent loss of elasticity.

INCREASING THE HEADLIGHT'S EFFICIENCY.

It would hardly appear possible at first sight that merely a slight change of position could have much effect on the efficiency of an automobile's headlight, though it must be evident that there must be some one position in which the lights will illuminate the road ahead in the most effective manner from the driver's point of view. Various experiments in lamp placing have been tried by various automobile builders, but the problem appears to have finally resolved itself by the adoption of the frame location, which is now practically universal.

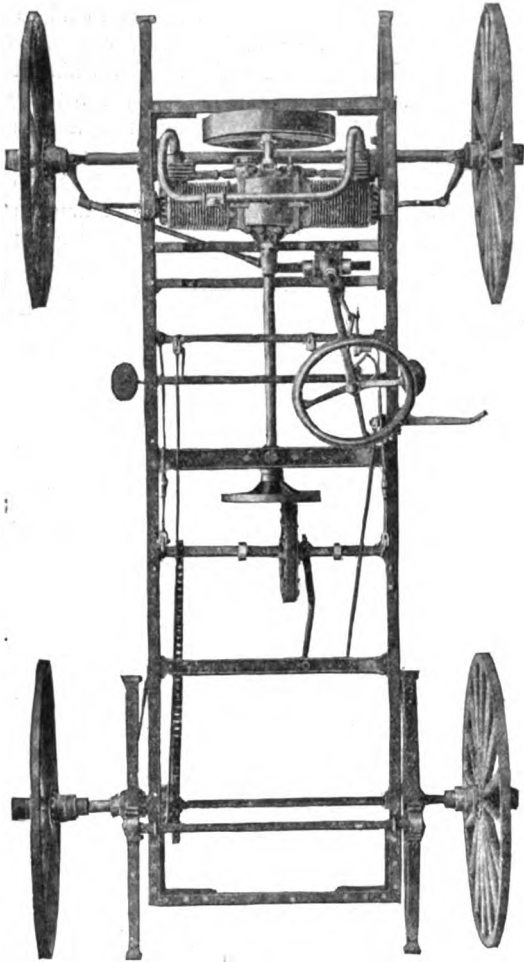
The makers of the Northern cars have never been quite satisfied with this custom, and have made the radical change shown by the accompanying photograph, from which it will be seen that the headlights are carried on special supports fastened to the fenders. Regarding this change, V. M. Gunderson, general manager of the Northern Motor Car Company, says: "We think we have the best of reasons for placing the lamps as shown on all of our 1908 models. We did not make the change without very careful experimenting, and we found that this position increases the road-lighting efficiency of the searchlights nearly 100 per cent. We have overcome the objectionable feature of excessive vibration by bracing the under side of the fender.



FRONT VIEW OF NORTHERN, SHOWING ARRANGEMENT OF LIGHTS.

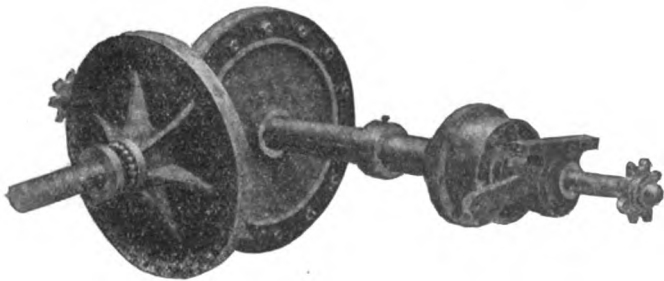
STANDARD AIR-COOLED BUGGYABOUT CHASSIS.

For the coming season the Neustadt Automobile and Supply Company, St. Louis, Mo., will make a specialty of complete buggyabout chassis. While both are to be equipped with air-cooled motors of the horizontal twin-cylinder opposed type, one will have the power plant placed longitudinally under the body and will be equipped with a regulation planetary change-speed gear and single chain final drive, while the other, which is illus-



PLAN VIEW OF NEUSTADT AIR-COOLED, FRICTION-DRIVEN CHASSIS.

trated by the accompanying cut, will have the motor placed transversely forward at the end of the frame, and will be equipped with a friction type of transmission. Steel and aluminum are the materials used for the wearing faces of this change-speed gear, steel plates being employed for one surface and a special aluminum coating, which is said to be superior to the usual aluminum sheets employed, being utilized on the other. Control is by pedal, the moving member sliding on a feathered shaft by means of fingers connected with bell cranks, to give the variable forward speeds and reverse. Final drive is by double side chains from sprockets on the ends of the countershaft, as

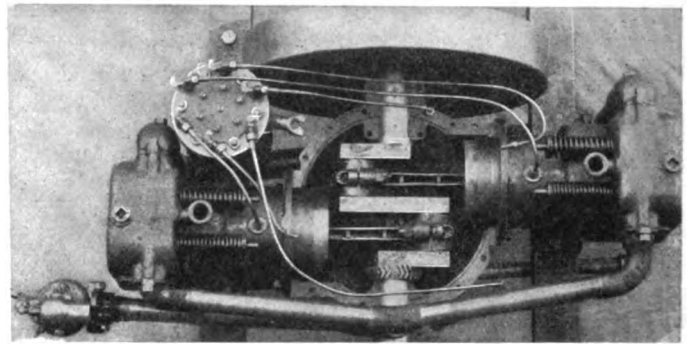


THE NEUSTADT FRICTION DRIVE SHOWING ECCENTRIC TAKE-UPS.

shown in the second illustration depicting the friction transmission itself. The chief feature of the latter, however, is the use of eccentric take-ups to provide the necessary pressure between the friction surfaces. These eccentrics are placed on the countershaft and are combined with its supporting bearings. The device is thus extremely simply and durable, at the same time insuring a positive and equalized contact between the two faces with a minimum pressure. This car and its transmission are also made with single-chain drive. Steel-clad bodies can be supplied to fit.

HORIZONTAL MOTORS WITH NEW FEATURES.

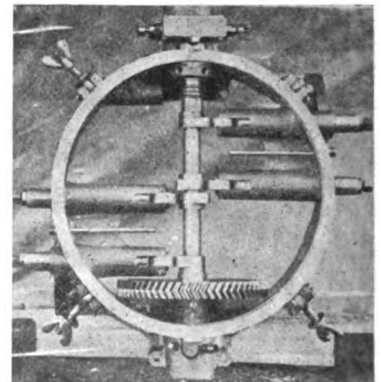
Practice has been standardized to such an extent where the building of that typically American style of gasoline motor, the two-cylinder horizontal opposed type, is concerned that it would be difficult for the average autoist to distinguish a great many of the makes that are now on the market without close inspection. And one of the chief things in which many of these motors could be vastly improved is the matter of accessibility. In designing their line the makers of the Westerfield motors, the Westerfield Motor Company, Anderson, Ind., have borne this



VIEW OF WESTERFIELD MOTOR WITH COVER PLATE REMOVED.

in mind, so that it is quite safe to say there are few horizontal twin-cylinder motors that can surpass them in this respect. But accessibility means considerably more than what has been aptly termed "getatability," for this advantage is of doubtful value if, in the process of getting at a part, the adjustment of two or three others must be disturbed.

But that the Westerfield motor has been made the subject of close study on this score, and all these points have been taken into consideration, will be evident from a study of the accompanying cuts of it. The first, showing a plan view of the motor, with the upper half of the crankcase removed, reveals the fact that it is made with a semi-spherical gray iron crankcase.



WESTERFIELD CAMSHAFT SUPPORT.

On removing this, the entire cam mechanism becomes accessible, and in order to render the crankshaft and its bearings equally so the camshaft and push rods are all mounted on a circular carrier, which is shown separately in the second photograph. It will be evident that the removal of this essential does not disturb any of the adjustments of its parts. The crankcase cover proper is held down by the four wing nuts shown. The oiling system is also especially meritorious, as it is entirely self-contained, being driven by a spiral gear on the timing shaft inside the crankcase.



MOUNTAIN CLIMBING BY AUTOMOBILE, AT THE SUMMIT OF MONT PRARIOR, ON THE FLANK OF MONT BLANC, GRADES 30 TO 40 PER CENT.

NEW BOOKS FOR AUTOMOBILISTS.

A Book of Interest to Foreign Tourists.—In "Castles and Chateaux of Old Navarre and the Basque Provinces" Francis Miltoun has produced another work quite up to the standard of his already well-known books on tours and touring in France. There is nothing of the stereotyped guide book about this work, nor is it an account of an automobile tour, yet it is likely to appeal more strongly to automobilists than to any other class, for the simple reason that those who like to explore the romantic and picturesque corners of the globe almost exclusively employ the most modern means of locomotion. There is no lack of romance, picturesque local color and historic recollections in the line of Pyrenean provinces lying along the Spanish frontier from the Gulf of Gascony to the Mediterranean, and Francis Miltoun knows how to paint it in a way that will appeal to those who have toured in this land of sunshine and enchantment, and excite the curiosity of those who have not yet pushed so far afield. The book is not intended to serve as a guide to the Pyrenees, but its perusal either before or during a tour in this district cannot fail to be instructive and interesting to tourists. "Castles and Chateaux of Old Navarre" is handsomely illustrated by Blanche McManus and published by Page & Company of Boston.

Italian Road Maps.—Four more sections of the complete road map of Italy, the publication of which will occupy five years, have been issued from the headquarters of the Touring Club of Italy, at Via Monte Napoleone, Milan. With the present issue, which carries the number of sections covered to ten, the Touring Club of Italy will have distributed 800,000 maps to its 65,000 members. The peninsula has been divided into fifty-eight sections, a map of each being published on a large scale in eight colors. The work is one of the most important ever undertaken in the interests of Italian touring, and is particularly valuable in view of the increase in touring in Italy.

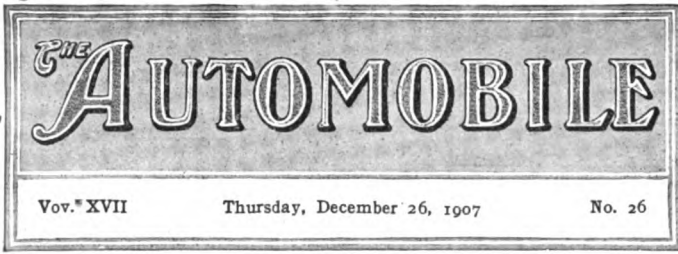
Italian Automobile Textbooks.—Students of Italian will find something to interest them in two publications from the publishing offices of Ulrico Hoepli, of Milan. "L'Automobilista," by Dr. Pedretti, deals with automobile construction in a thorough manner, and is not merely confined to land vehicles, but has something to say on motor boats and submarines, American craft not being overlooked. "Guida del Meccanico Chauffeur," by the same author, is a guide for the mechanic and driver and concerns itself chiefly with ignition, carburetion and the general care of the automobile. Both works are freely illustrated and issued in convenient size.

ENGLAND, BELGIUM, ITALY TO RACE.

LONDON, Dec. 14.—After a long period of challenges and counter-challenges, statements and counter-statements, in which S. F. Edge and the Darracq representatives have not played the least important part, the Brooklands Automobile Racing Club has decided that races between challengers could only be decided on the Weybridge track when all preliminary proceedings had been conducted through the club. Thus with one blow press agents have been silenced and columns of wearisome correspondence have been cut out of the newspapers. Edge has now made four official challenges through the club, and three of these have been accepted. The Metallurgique Company of Belgium has taken up challenge No. 1, which is to race a four or six-cylinder Napier car against any automobile propelled by an internal combustion engine whose cylinder dimensions do not exceed 64 under the D2N formula, equivalent to 26 horsepower under R. A. C. rating, weight 2,000 pounds, distance five laps from standing start. O. Cupper will be the driver. The same firm and same driver have accepted the Napier challenge for 40-horsepower cars of 2,500 pounds minimum weight, for a distance of six laps, with standing start. Certainly the most interesting race will be the one between a Napier, with a driver yet to be appointed, and Nazzaro on a Fiat, for a distance of ten laps, standing start, maximum cylinder dimensions to be 225.1 and minimum weight 3,000 pounds. On the R. A. C. formula this gives 90 horsepower. One of the challenges, for cars rating at 60 horsepower, has not yet been accepted. Stakes of \$1,250 a side have been deposited by each party with the club officials. All the matches must be decided on a date to be chosen by the Brooklands Club between May 14 and July 1. It is expected that the Darracq agent here will enter the lists for speed supremacy and add to the interest of these important tests for commercial and national honors.

NEW ELECTRIC TIMER FOR BROOKLANDS.

LONDON, Dec. 14.—Brooklands track has just been equipped with a new electric timing apparatus invented by Colonel H. C. L. Holden and K. Elphinstone. It is entirely automatic in operation, the instrument consisting in brief of a traveling band of paper moving at a fixed rate of speed, seconds and fractions being recorded on its surface by three electrically actuated pens. The passage of a car over the finishing wire is recorded on the margin of the same strip by an electro-magnetic device. Duplicate records are made and notes can be written on the band while it is in motion.



THE CLASS JOURNAL COMPANY

Flatiron Building, Madison Square
New York City

H. M. SWETLAND, President

EDITORIAL DEPARTMENT

A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:

A. B. SWETLAND, Business Manager
LOUIS R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. E. WESTERDALE, 836 Monadnock Block, Chicago, Ill.

Cable Address - - - - - Autoland, New York
Long Distance Telephone - - - - - 300 Gramercy, New York

SUBSCRIPTION RATES:

United States and Mexico - - - - - One Year, \$2.00
Other Countries in Postal Union, including Canada - - - - - One Year, 3.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft,
Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Illiffe & Sons, Limited, 20 Tudor Street, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel Mohrenstrasse 9, Berlin.

Copyright, 1907, by The Class Journal Company.
Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor
Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903,
and the Automobile Magazine (monthly), July, 1907.

Copies printed in 1905	- - - - -	730,000
" " in 1906	- - - - -	791,000
" " this issue	- - - - -	18,000
" " since January 1	- - - - -	870,900

Only a Temporary Setback In the failures that have come for 1908 Selling Season.

In the failures that have come during the last half of the present year many have been unable to see anything but calamity ahead for the automobile industry. They have been unable to realize that in two of the crashes that have taken place the concerns have not gone down to ruin. The temporary financial stringency has merely been responsible, in their case, of letting the water escape; has only precipitated what would have inevitably occurred sooner or later. Several other firms of standing have been legitimately embarrassed at the same time, but it is safe to say that not one of them will be forced to the wall for good and that with the resumption of normal conditions nothing further will be heard of their difficulties. There are still others who have gone down during the same period, but they belong to that numerous class that would have succumbed to the stress of circumstances regardless of the existence of abnormal conditions. Ignorance and lack of capital are as much a drawback in automobile building as in any other line, so that such failures have no bearing one way or the other.

Where the selling end of the automobile industry is concerned—its very life, so to speak—it would be difficult to be other than optimistic without totally disregarding the facts. According to those same calamity howlers who can see nothing but a vast pall over the entire industry, there are no cars being sold, none have been sold since October last, and few will be sold during the coming year. As a matter of fact, one New

York dealer alone took orders for three cars at between \$4,000 and \$5,000 each, receiving the usual cash deposits thereon, during what was generally conceded to be the week of the greatest depression. The business done at the Chicago show was very encouraging and the reports of dealers in various parts of the country are equally so. That people generally regard the present state of affairs as but temporary could hardly be better evidenced than by the fact that during the week just past one Newark, N. J., dealer took orders for no less than seven cars for spring delivery.

If some of the people who are steeped so deeply in prospective misery and hard times that the sun scarcely shines for them any longer would take the trouble to ascertain the true condition of affairs, it might relieve them of a world of worry. Six months from now the industry in general will be congratulating itself on the events of the past eight or ten weeks, and only regretting that the knife did not go deeper, thus permanently eliminating more of the undesirable element.



Taxicab as the Forerunner of the Commercial Era.

It is not difficult to understand why the commercial vehicle, with its great advantages, has not made greater headway up to the present, when all the circumstances are taken into consideration. The same reasons that combined to delay the introduction of electric power in the railway world has had its influence here. Huge sums invested in horses and trucks could not be sacrificed for something that has yet to prove its overwhelming superiority, where the business man is concerned, for the same man who lavishly opens his pocketbook for the maintenance of his own car figures ton miles to a cent when it comes to delivering goods. This has made commercial vehicles difficult to market, so that the builder of automobiles has naturally worked along the line of least resistance in continuing to devote himself to the pleasure car.

But during the past year a new factor has come on the scene. This is the taxicab, and it is bound to make its influence felt in the near future. Some expert prophesiers can already see the time, two or three years ahead, when the taxicab shall have become such a wreck that unless New York's already high cab fares are raised the promoters will be unable to run the vehicles at a profit. It is all very well to count your profits now, when the vehicles are new, say these knowing ones, but wait—just wait till they grow old and the green driver and New York's pavements have got in their fine work.

Depreciation naturally increases with age, but the longer gasoline cabs are run the more successfully will they be operated, and they will furnish a striking example of what can be done. In fact, it hardly seems too much to say that the taxicab will be responsible for facilitating the coming of the commercial vehicle in large measure.



What Does It Cost to Run an Automobile?

It would appear as if this simple query were susceptible of about as many shades of answer as the famous one regarding matrimonial ventures. It costs one autoist several hundred dollars for tires alone in the course of a year, while another finds that he spent but a fraction of that amount to cover almost the same distance under very similar circumstances. One man's repair bills are excessive, while another gets an equal mileage and more enjoyment out of his at a cost but slightly in excess of what he would have had to pay to keep a horse in oats and shoes during the same time, and the queer thing about it all is that frequently the various cars have been maintained under rather similar conditions. The carefully itemized account of the Californian who spent almost half the first cost of the car in maintaining it the first year finds its antithesis in that of the autoist who ran his car for two years for little more than \$100

A.A.A. PUTS STOCK CAR MEET AT SAVANNAH UP TO MAKERS

IF the automobile manufacturers consider a stock car meet well worth while at Savannah, Ga., one will be held during the third week in March. But President William H. Hotchkiss, of the American Automobile Association only wants the meet held if the manufacturers so desire, and they have been asked to express their opinion in a letter which the president of the national organization has had sent out by Secretary Elliott. The suggested course would appear to be an ideal one. The officials and inhabitants of Savannah are unanimous in seeking a series of contests, and the course will be guarded by militia and oiled for its entire length. There is no place in the country at the present time where conditions can be found as favorable as those presented by the picturesque Georgian city, which is easy of access, both from the North and from all points in the South. Following on the heels of the Florida meet, the Georgia affair should add to the general interest in automobiling, particularly because it will provide for just such cars as are supplied to the automobile-buying public.

There will be a meeting of the executive committee of the A. A. A. Racing Board on Saturday morning next, at 437 Fifth avenue, to be followed in the afternoon by a session of the executive committee of the A. A. A. Board of Directors. At those two meetings a decision will be reached regarding the Savannah meet, the action to be based upon a consensus of opinion of the American manufacturers, to all of whom has been sent the following letter:

Gentlemen:

New York, Dec. 23, 1907.

Pursuant to the community of interest plans outlined at conferences held recently at Chicago between representatives of the N. A. A. M., the A. L. A. M., and the A. M. C. M. A., and this association, permit me to lay before you the following concerning a three-day tournament for stock cars at Savannah, Ga., during the week of March 15, 1908.

A committee consisting of F. G. Webb, representing the Racing Board; N. H. Van Sicklen, representing the Technical Board; and the undersigned visited Savannah recently upon the invitation of the Savannah Automobile Club, carefully inspected the proposed course, conferred with the civil and military authorities, investigated hotel and transportation facilities, and has recommended favorable action by the association. We are, however, unwilling to take such action, unless some or all of the contests suggested are desired by a sufficient number of American manufacturers.

The report of the investigation committee may be summarized as follows:

Course: Practically twenty miles, or for short races or where a small number of entries will permit, a course of ten miles, the latter with long banked turns, and thus practically a race track such as does not elsewhere exist in the world. On both courses two straight stretches practically level, four miles each. On the

larger course, some sharp turns, which will be eliminated, if desired, and some considerable grades. Twelve turns capable of reconstruction and banking, so that at least ten can be taken at speed. Road surface hard, and, save in one or two places for short distances, broad; equal in every way to that of the last Vanderbilt Cup course. Practically no intersecting roadways.

Policing: By State troops, from 1,200 to 1,500 being promised by the military authorities. Roadways joining the course fenced during progress of races. Entire course oiled.

Transportation. By steamers, three each week to Savannah from New York, and two each week from Boston, Baltimore, and Philadelphia, with low round-trip rates and average freight for cars, \$25; also by railroad, nine trains daily from New York on different roads, and corresponding facilities from other centers.

Hotels: Facilities ample, three large hotels, all of them within a few miles from the course.

Co-operation by local authorities assured; the committee in charge, including the Mayor; the presidents of the Chamber of Commerce, Board of Trade and the Cotton Exchange, highway officials, militia commanders, etc.

Time: The second week after the Ormond-Daytona carnival. At this time Spring is far along in Savannah; the return of the Southern tourists has begun; fine weather and a large attendance, not only of strangers, but of residents of Savannah, Atlanta, Charleston, Birmingham, and the leading Southern cities, is certain.

In view of this report, the rules committee of the Technical Board met at Buffalo on December 21, and adopted tentative rules for suggestion to the Racing Board. These provide for a series of contests between strictly stock cars with racing bodies, for say light cars, heavy four-cylinder cars, high-powered runabouts, and six-cylinder cars. Handsome trophies will be offered for each event, that for four-cylinder cars of the larger type a challenge cup given by the City of Savannah. Entrance fee will not exceed \$500. All races would be from 150 to 300 miles.

Conferences with manufacturers during the past few days indicate a desire for contests of this character in the early Spring, under the auspices of the A. A. A. It is suggested that present financial conditions make important the publicity of a national event of this character before the end of March. The Savannah plan seems to afford the only opportunity where weather and road conditions are practically certain, and where alone in the United States proper policing of the course can be had at the present time.

That we may have the advantage of your views, (1) as to whether such a stock car tournament is desirable, (2) if so, as to what races should be held, and (3) generally, you are earnestly requested to write or wire the undersigned at once. Owing to the shortness of the time, a decision must be reached at meetings which will be held here Saturday, December 28. Therefore, kindly favor us by forwarding a prompt reply.

The races, if held, will be under the auspices of this association, and personally managed and supervised, the events themselves by the Racing Board, which conducted the last Vanderbilt Cup contest, assisted as to all technical matters by the Technical Board.

F. H. ELLIOTT, Secretary, A. A. A.

By order of PRESIDENT WILLIAM H. HOTCHKISS.

REEVES AND MARMON RETURN FROM EUROPEAN PILGRIMAGE

ALFRED REEVES, general manager of the American Motor Car Manufacturers' Association, and Howard C. Marmon, a prominent member of its technical committee, on Saturday last returned from their visit to the European shows, having come home on the southern route, via Italy and Mediterranean ports. The *Kaiserin Augusta Victoria* had a delightful homeward voyage, experiencing only one rough day.

Interviewed upon the foreign situation, the comments of Mr. Reeves included the following:

"One of the most interesting things, to my mind, was the great progress that has been made in commercial vehicles. The last five years has made wonderful changes in the traffic conditions abroad, and I could hardly believe that it were possible in that short time to supplant so many horse-drawn vehicles with motor-driven machines. Particularly in London and Paris, the motor cab is crowding the horse-drawn rig. In Paris, the latter has had to have a taximeter equipped, so that now the proverbial overcharge of the Parisian hackman is only history. There are hundreds of motor

buses, most of them double-deckers, although future ones will have one deck only, so as to handle easier. The terrific test to which motor cabs and buses are subjected has revised ideas as regards clutches, gears and brakes. There are about 3,000 motor taxicabs in Paris and 800 in London. Almost every vehicle in Paris, even the horse-drawn cabs and coaches, have pneumatic tires. The solid tire, except on buses or trucks, is a rarity. Power trucks of steam and gasoline are used for hauling coal and for all kinds of work, ranging from the carrying of sixty passengers or five tons of coal to delivering hats and shoes; and this in spite of gasoline selling at about 40 cents a gallon.

"Among the pleasure vehicles, the tendency is toward the light four-passenger touring car of 24 horsepower or less. Most of the concerns that build big cars are also building small ones. Some of the small ones have only one cylinder, but none of them sell within the price of our small cars. It is my judgment that we have a good future in the foreign markets with the small types of cars which we manufacture in such large quantities, but the foreign markets will have to be entered and handled in a way entirely different from the methods followed here."

NO GERMAN NATIONAL SHOW IN 1908; NEXT ONE 1909

BERLIN, Dec. 15.—There will be no Berlin show next year, as the German Society of Motor Car Dealers and Makers, without even entering into the matter of Berlin or Frankfort as a possible site for the 1908 show, resolved with only three dissenting votes to hold no exhibition again until 1909. All members of the Society had to agree to participate in no show whatsoever until September, 1909, otherwise a fine of 100,000 marks would become payable.

America had two representatives present—Ford and Pope-Toledo—when His Royal Highness Prince Henry of Prussia opened with royal pomp Berlin's eighth automobile show, held in the hall of the Zoological Gardens. As is usually the case, the ceremony was a purely social one, attended by about one thousand guests of the Imperial Automobile Club, elegant, well-dressed men and women and brilliant uniforms harmonizing well with the handsome decorations and massed foliage. The Duke of Ratibor welcomed the Prince, who was delegated in the enforced absence of the German Emperor, and pointed out that Germany's industry had now reached a point where it need fear no foreign competition. In a short speech Prince Henry declared the show open, called for three cheers for the Emperor and finished the ceremony by an official tour of the exhibition.

This year's show, the second in the present home, excels all predecessors, but is considerably hampered for lack of space. There is a movement in favor of removing to Frankfort, where a huge exhibition hall is now being erected. A plain but pure style of decoration has been adopted for the Zoological Garden show, contrasting advantageously with that of other years.

Mercedes, Benz, Adler, Opel, N. A. G. and Eisenach, as most important of the home firms, occupy the main portions of the central hall. Other German firms occupying important floor space are North German Electric, Argus, Deutz Gas Motor Company, Victoria, Siemens-Schuckert, Turicum, Quest, Remickendorf, Bergmann, Laurin & Klement, Stoewer, Horch, Duerkopp, and Loeb. France, Italy, Belgium and America form the foreign contingent, the principal importers being Ford, Pope-Toledo, Berliet, Renault, Fabrique Nationale, Protos, Itala, Bianchi, Clement-Dialto, Martini, Pipe, Minerva, Metallurgique, Isotta-Fraschini, Fiat, De Dion, Coventry, Panhard, Daimler, Dunlop, Michelin, and Continental.

What Prince Henry Said at the Banquet.

A banquet took place at night in the Kaiserhof Hotel, 400 guests being present, with Prince Henry of Prussia in the seat of honor. There were at the banquet the Home Minister, Minister of Railways, Chief of the General Staff, the Police President and a crowd of persons of standing in the official and motoring world. Referring to the cup presented by him, the prince said:

"I have promoted this tour because I knew that the Herkomer event drops into abeyance and because our extremely active industry was once more eager to show what it could do. It would not have been possible for me to arrange such a competition had

not the Government shown a very friendly attitude towards me, and it is my pleasant duty to render our thanks for this. Furthermore, gentlemen, a Damocles sword in the shape of the automobile liability law has hung over motorists; I am in the happy position of being able to state that we may look towards this law in peace and quiet."

Prince Henry thereupon proposed the Imperial toast, which was responded to with much vigor.

Prince Henry Tour Only Big Similar Event.

Germany's sole big touring event next season, for the cup presented by Prince Henry of Prussia, will take place from June 9 to 17 and will be open to all drivers. The donor originally intended the event to be an amateur one, but as the industry is otherwise given no chance next year, owing to the indifferent attitude of the officials, this intention has been withdrawn. The tour starts in Berlin, with Dantzig as goal for the first day, Stettin for the second, and Kiel for the third. The fourth day will also be spent at Kiel, and the journey continued on the fifth day to Hamburg; speed trials will be held en route. From Hamburg the road leads southwards to Dusseldorf, and the finish is at Frankfort. Prussia alone will be the site of the event, as the itinerary shows. The Imperial A. C. promotes the tour, and Count von Sierstorpf, Baron Brandenstein, Count Arco and Dr. Levin-Stoelpling are on the working executive. Further prizes have been promised by Princess Henry of Prussia, the Grand Duke of Hesse, and the cities of Hamburg and Frankfort.

Some German General Gossip.

France, Spain and America are three of the countries which have challenged Germany for the aerial Gordon-Bennett Cup next year; France will send a full team of three balloons. Frank Lahm is in Berlin at present to study the German military balloon system; on his return to America he intends embodying the results of his studies in a dirigible balloon, to be constructed conjointly with Captain Chandler. The balloon is to be put to a first test early next spring at Fort Meigs.

The German Home Office is promoting an inquiry by means of which it hopes to arrive at a clear insight into the output and condition of the German automobile industry. The authorities have been assisted in this by the Imperial Automobile Club and the leading firms themselves.

Baron von Brandenstein, formerly the general secretary of the Imperial Automobile Club, and ever since his connection with it a member of all the highest committees and honors, has been compelled to withdraw from all such posts owing to lack of time. The official withdrawal will take place after the close of the Berlin show, for which he is largely responsible. The name of Brandenstein and that of the Imperial Automobile Club are synonymous and German automobilism owes the Baron a huge debt of gratitude.

MANAGER MILES PREDICTS NO AMERICAN SHOW UNTIL 1909

CHICAGO, Dec. 23.—According to Samuel A. Miles, general manager of the National Association of Automobile Manufacturers, and also manager of the annual show of the association in Chicago, there will be no show during 1908. Manager Miles has never been in favor of an early show, and as there seems to be little doubt that the prominent men in the industry are not satisfied with the plan introduced this year the consensus of opinion in automobile circles is that it will be February or March, 1909, before the next shows are held under the N. A. A. M. auspices.

"The dealers seemed at many disadvantages in having the show as early as it was held this year," says Mr. Miles, "and there is little doubt in my mind but that 1908 will go by without a show, either in New York or Chicago. The next N. A. A. M. show probably will be held in February or March, 1909."

Mr. Miles suffered an innings of illness after the Chicago show, probably owing to the hard work and the inclement weather, but is now out again and intends to be in New York City about the first of the new year.

HOLIDAY HAPPENINGS OF THE AUTO CLUBS

QUAKER CITY CLUB'S BIG ENDURANCE RUN.

PHILADELPHIA, Dec. 23.—At the rate at which entries are pouring in upon Chairman Johnson, of the Quaker City Motor Club's contest committee, the Philadelphia-Allentown-Philadelphia endurance run, to be held January 1 and 2, under the auspices of that organization, will far exceed in importance not only last year's affair, but any similar contest held in the East last season, barring, of course, the annual A. A. A. fixture.

The committee having decided upon four classes—touring cars, roadsters, runabouts and a "purely-for-pleasure" contingent, including all three—many local agents and branch managers have entered at least one car in each class. For instance, there will be four Pullmans, three Fords, four Maxwells, three Frayer-Millers, two Studebakers, and the same number of Autocars and Loziers, several Packards, at least three Stoddard Dayton, and so on—all these from tradesmen.

What is proving decidedly attractive to the latter class of entrants is the inclusion in the run of the pleasure aggregation.

CONCERNING THAT NEW JERSEY LAW.

NEWARK, N. J., Dec. 23.—The New Jersey Automobile and Motor Club held an open meeting on Thursday night last, to which were invited representatives of the various clubs in the Associated Automobile Clubs of New Jersey. The response to the call was not as general as it should have been, for outside of the members of the big Newark club, only the Mercer County Automobile Club and the North Jersey Automobile Club sent representatives, Wilber F. Sadler, president of the State body, being the Trentonian present, and G. A. Post, speaking for the Patersonians.

There was a general discussion of the law after President Sinclair had surrendered the chair to Chairman Crosby, of the local club's legislative committee. J. H. Wood offered various amendments, acceptable to those present, looking forward to the improvement of the present Frelinghuysen law, one of the amendments offered giving non-residents ten days' recognition of their home licenses. It was decided to have each



IN THE VICINITY OF READING, PA., THE QUAKER CITY MOTOR CLUB PATHFINDERS FOUND SOME REAL WINTER.

who may patter along at their own sweet will, regardless of controls—aside from the necessity of finishing within the time limit set by the committee. There will be an incentive even in this class, for a loving cup has been hung up for the "most popular" driver—and the award will be made to him who receives the greatest number of votes, the privilege of dropping a ballot being confined to contestants. The large number of participants who would have remained out but for this innovation are hearing reports from up Allentown way which will insure their presence even if the weather clerk should prove fickle. The automobilists in the Lehigh county metropolis are planning a great reception for the tourists, rumors of turkey suppers, theater parties, and dances have filtered through until the "nothing-but-pleasure" bunch are fairly aching to start.

Ten days ago Chairman Johnson and a score of fellow-committeemen and clubmates took a "pathfinding" trip over the course for the purpose of establishing checking stations and arranging for accommodations at the control at Allentown.

The course is an unequal sided triangle, with Philadelphia, Easton and Reading at the three angles. The country to be traveled over is beautiful, even in winter, and for a great part of the distance the route follows the windings of the Delaware, Lehigh and Schuylkill rivers. On the second day the route leads over the watershed between the Delaware and Schuylkill, and the entire route will present difficulties sufficient to eliminate any but the best cars in first-class condition.

club in the State body designate a member of a general committee, which will then be called together by President Sadler. It is possible that this committee may have a special conference with Senator Frelinghuysen, who is said to be agreeable to changes in the present drastic law, which bears his name.

CLUB MEMBER RESIGNS IN FACE OF CHARGES.

BALTIMORE, Dec. 23.—Rather than stand trial before the board of governors of the Automobile Club of Maryland on the charge of reckless speeding within the city limits, Frank Brown, Jr., son of ex-Governor Frank Brown, the Democratic city organization leader, resigned as a member of the club. Under the by-laws of the club such a resignation makes it impossible to take action resulting in the expulsion of a member. The directors of the club, however, passed resolutions expressing their "abhorrence" of Brown's conduct in the action which resulted in the death of James Grinnell.

The board of directors further decided to prefer charges against two other members, Edward L. Bartlett and Howard A. Gill, for violations of the speed limit. The violations charged against these two members occurred October 1, when, it is stated, they participated in a race through the streets.

Osborne I. Yellott, counsel for the Automobile Club of Maryland, has drafted a bill designed to elevate automobiling in this section and lessen the prejudice against the sport. The

bill provides for the appointment of a commission by the Governor, who shall have the right to license cars, examine drivers to determine their qualification and fitness to operate the machines, whether owners or professional chauffeurs; investigate violations of speed laws and accidents resulting from reckless driving and to have absolute power as to the suspension and revocation of licenses. The speed limit proposed has been successful in Massachusetts and Connecticut and is proposed to be adopted in the uniform State law recommended by the American Automobile Association.

In speaking of this portion of the bill, Mr. Yellott said:

"The effect of such a provision is to vest in the magistrate or court some discretion relieving the motorists of constant fear of arrest if they slightly exceed the speed limit on an open highway where there is no one near whose safety will be endangered, but making him realize that he must not exceed the limit in cases where there are other people on the road."

WORCESTER'S CLUB TO GO AFTER UNATTACHED.

WORCESTER, MASS., Dec. 23.—The Worcester Automobile Club is going to commence active missionary work among the motorists of Worcester county and Central Massachusetts to enlist them in the line up of the Massachusetts State Automobile Association in looking after the interests of all the motorists of the State in the session of the legislature in January. The names of registered cars in the center of the State, the portion which comes in the jurisdiction of the club, shows there are over 1,000 owners' names on the list. There are many of them in the ranks of the club, but there are others who have not lined up with the rest of the motorists, and the club is after these and is going to bring them into the fold.

The State association will continue the coming legislative session the work which has been done in past sessions, and this will take money, and the more men there are in the organization the more influence the movement by the motorists will have. The light bill, calling for lights on all vehicles using the public highways at night, is one of the measures which the motorists want to see passed at the State house this winter.

F. B. HOWER NOW LEADS THE BUFFALO CLUB.

BUFFALO, Dec. 23.—New officers are at the helm of the Automobile Club of Buffalo. The annual election was held on Monday night of last week and the following were selected without opposition to serve for the ensuing year: President, Frank B. Hower; vice-president, John M. Satterfield; treasurer, Laurens Enos; secretary, Dai H. Lewis; directors, E. R. Thomas, E. H. Butler, Charles Clifton, James N. Byers and George C. Diehl. More than 270 votes were cast.

Seymour P. White, retiring president, made a short address in which he thanked the members for cooperating with him in his work last year. When he had finished Mr. Butler presented to him a loving cup on behalf of the club. William H. Hotchkiss, president of the American Automobile Association, was also one of the speakers.

A splendid entertainment pleased the large attendance. The program was varied enough to please everybody. After the election and during the entertainment refreshments were served.

MILWAUKEE CLUB'S UNIQUE ROAD CAMPAIGN.

MILWAUKEE, Dec. 23.—Believing that the most efficient way to bring about the greatest road improvement in the shortest time is to interest the farmer, Emil Schandain, vice-president of the Milwaukee Automobile Club, has proposed a unique plan, involving the cooperation of the farmers of Wisconsin in the good roads movement. The club will immediately undertake the raising of a suitable fund, though the residents of the districts affected by the improvements will not be asked to contribute. People who have summer homes along some of

the beautiful Wisconsin drives will be expected to subscribe liberally, however. With the funds thus raised, a road building contest is to be set afoot between the various districts in question. The grand prize is to be \$1,000, with numerous others ranging down to \$250, and further sums from this down to \$25, as a cash premium, all to be awarded for the greatest improvements to be made within a certain time.

The first experiment, already planned, will be carried out between Milwaukee and Oconomowoc, the contest beginning in the early spring. W. O. Hotchkiss, superintendent of the economic and good roads division of the geological survey, is said to be favorably inclined toward the plan, and the State Good Roads Commission will also be asked to cooperate. Under the plan, as adopted by the automobile club, the farmers will be asked to inspect the roads in each other's districts, and the club will furnish cars to carry the agriculturists around for the purpose.

NEWBURGH CLUB ACTIVE FOR NEEDED REFORMS.

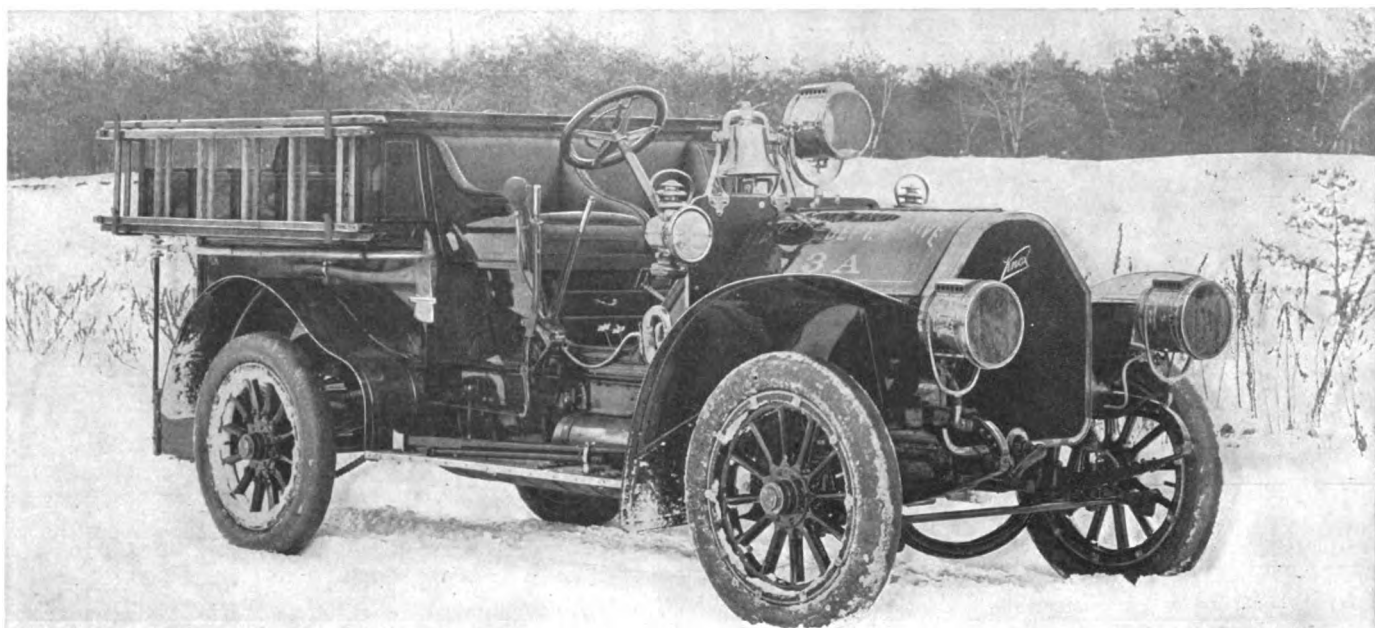
NEWBURGH, N. Y., Dec. 23.—At the last meeting of the Automobile Club of Newburgh it was decided to take active steps to induce the local authorities to have signboards erected in the vicinity of this city, as prescribed by Section 5 of the State Highway Law. The club went on record in favor of a uniform automobile law governing automobiles in New York, Massachusetts, Ohio, Illinois, New Jersey and Pennsylvania. A motion was adopted requesting Congressman Bradley to use his influence to secure the passage of certain bills which are now pending in Congress to provide for registration which will enable automobiles to be operated in various States under one license. The club also endorsed several proposed amendments to the statutes affecting automobiles which are to be introduced at the coming session of the legislature. The meeting was well attended and comprehensive by-laws reported by the committee were adopted.

CHICAGO AUTOMOBILE CLUB PICKS CHAIRMEN.

CHICAGO, Dec. 23.—According to President Ira M. Cobe, the Chicago Automobile Club intends to challenge in a friendly rivalry the energetic Chicago Motor Club, which has conducted several very successful contests during the past year. The older club is planning a program of technical contests, with one in view which he states will be novel and create a good deal of discussion. With the exception of the Technical Committee, the chairmanship of which was declined by F. E. Edwards, a member of the Motor Club's similar committee, these selections of chairmen are expected to be accepted: Runs and Tours, A. J. Banta; Racing, C. E. Gregory; House, Claude Seymour; Membership, T. J. Hyman; Auditing, D. A. Moulton; Good Roads, F. B. Gethro; Legislation, Laws and Ordinances, Sidney S. Gorham; Entertainment, J. T. Leimert; Art, F. H. Pietsch.

L. I. A. C. STANDING COMMITTEES FOR 1908.

BROOKLYN, N. Y., Dec. 23.—Acting in accordance with the constitution and by-laws, President Charles Jerome Edwards, of the Long Island Automobile Club, has appointed as chairmen of the various standing committees for the year 1908 the following members: Dr. William P. Richardson, membership; J. H. Emanuel, Jr., finance and auditing; Edward Melvin, house and entertainment; Arthur R. Pardington, vice-president and general manager of the Long Island Motor Parkway, contest; Leffert Lefferts, runs and tours; Dr. William P. Richardson, law and legislation; Louis T. Weiss, technical; Samuel H. Burns, good roads, and Dr. A. C. Howe, garage. Owing to the fact that the next regular meeting falls on Christmas day, it has been postponed to the day following. A ladies' night will be held at the clubhouse on Friday, December 27, the feature of the evening being a specially planned vaudeville show.



LATEST ADDITION TO THE FIRE FIGHTING AUTOS OF BOSTON—A KNOX FOR THE PROTECTIVE DEPARTMENT.

BOSTON'S FIRE DEPARTMENT NOW HAS SEVEN AUTOS

BOSTON, Dec. 23.—There was put into operation in this city Saturday an unique piece of automobile fire apparatus, which, it is believed, will greatly strengthen the department and add materially to the fire protection of Boston. This most recent addition to Boston's fire-fighting equipment is a wagon built for the Protective department by the Knox Automobile Company, of Springfield, and delivered by the Reed-Underhills Company, local agents for the Knox.

The new wagon has a Model G Knox chassis with heavier springs than are used in the touring cars, five-inch Fisk tires all around, and an auxiliary gasoline tank with special cut-offs, so that the auxiliary tank may be used for starting. The motor is of the four-cylinder, 35-40-horsepower, air-cooled variety, with magneto and dry cells.

The wagon has a seating capacity for four men, two on the driver's seat and two on side seats in the rear, but if necessary eight men can be carried. In a large box behind the driver's seat are carried eighteen large rubber blankets such as are used to cover goods for protection from fire and water. In another box under the running board in the rear is a life net. The other

equipment includes axes, ceiling hook, plaster hook, two extinguishers, two five-foot extension ladders, sprinkler boxes with heads and tools, a Detroit door opener and other tools. The ladders are carried on leather-covered brackets on the sides and the other tools are stowed away conveniently on the sides of the body and in a box between the rear side seats.

With the new protective wagon the Boston Fire Department has seven pieces of horseless apparatus. There are two horseless engines driven by steam, the Ross steam touring car used by the chief in responding to alarms and in making his trips of inspection about the city, a Columbia, used by one of the assistant chiefs; an Oldsmobile used as a general utility car, and a Baker electric for the personal convenience of Commissioner Wells. The commissioner is a thorough believer in automobile fire apparatus and is introducing it into the regular department as rapidly as his appropriation will permit. He is especially favorable toward the use of automobile chemical trucks and may construct one of these in the shops of the department. Taken all in all, the Boston Fire Department has thus shown itself to be one of the most progressive in the country.

MR. FRANKLIN, OPTIMISTICALLY, TO HIS DEALERS

THE conservative element among American automobile manufacturers finds little to fear in the financial situation, to judge by the statements being issued by the heads of the big concerns. A sane and significant comment on the present status of the industry comes from H. H. Franklin, president of the Franklin Mfg. Co., of Syracuse, N. Y., in a letter to his dealers, in which he says:

"Many ugly rumors are in circulation in regard to the condition of various automobile concerns. Generally these rumors have turned out to be entirely without foundation. While it is true that all kinds of business enterprises, to say nothing of the banks, are subject at this time to unfounded attacks by the thoughtless, the automobile business seems to come in for more than its share.

"Now, all this wild talk is harmful. It tends to destroy confidence, and will have a damaging effect upon your future sales. It seems to us, therefore, that it is important and that the automo-

ble dealer owes it to himself to do what he can to build up confidence. If stories come to you that any automobile concern is in financial trouble, or is going to fail, or is in any bad way, you should take it upon yourself to verify the stories before giving them any credence whatever.

"Do not think for a moment the automobile business has come or is coming to an end. In our opinion it, as a business, is not suffering more than any other business. We admit that some phases of the automobile business have run their course and are now down and out.

"To continue in business, the automobile dealer and the automobile manufacturer will have to come down to earth and do business on a strictly business basis. The automobile that people are going to buy will have to be built along sensible and reasonable lines. The expensive, heavy, overrated motor cars are going out of fashion. Automobiles of light weight, medium price, and conservative power rating will be the enduring type."

ABOUT EMPLOYING THE ENGINE AS A BRAKE

By BENJAMIN BRISCOE, PRESIDENT OF THE MAXWELL-BRISCOE MOTOR CO.

BY having the engine turn over against its own friction and other resistances, the motor may often be used as an exceedingly efficient means of braking the car in descending steep grades. Although in most cases the ordinary brake on motor cars would be sufficiently powerful to hold the car, the amount of friction involved will result in considerable wear upon the brake surfaces. Many motorists, therefore, when going down a hill, retard the progress of the vehicle by throwing in the clutch, with the low speed engaged, thus letting the onward movement of the car turn the engine over against its own compression. This, of course, requires considerable power, and therefore results in a powerful braking effect. However, in braking the car with the engine care should be exercised, and no motorist, unless he is fully familiar with the operation of his car, should do it.

In investigating the exact source of the braking action of the engine, when driven by the car under the circumstances cited above, the question arises whether the braking power is greater when the valves are closed than when they are open. Since the air taken into the cylinder upon each suction stroke must be com-

pressed on the next stroke, a considerable degree of resistance must be overcome—hence the braking effect. At the same time it has been asserted that the braking effect thus secured is very nearly rendered useless by the release of compression and the consequent expansion of the gas, which has given rise to the opinion that the resistance encountered by the air in being sucked in and expelled through the valve openings consumes more power and produces, therefore, more efficient braking. Other opinions lean to the theory that the friction set up in the various parts of the motor rather than the pumping action is the real source of braking. Be that as it may, the fact is that a motor when used in this manner makes a very good brake, saves the ordinary brakes and gives greater security to the operator in going down steep inclines.

Braking with the engine is not only gentle, but absolutely regular and particularly valuable when the ordinary brakes are wet and slippery, or overheated by continuous use.

A point to be observed is that the spark should be given again shortly before the end of the incline is reached, in order to start the power of the engine.

EXHAUST MINGLES WITH ROAR OF GUNS.

PARIS, Dec. 14.—For the first time an automobile has been commissioned to take a place in the fighting line of an army. A few weeks ago the French army authorities secretly fitted out a Panhard automobile with a Hotchkiss quick-firing gun and sent it to Oran to wait instructions. At the same time Captain Genty was given sealed orders to proceed to Algeria within twenty-four hours, where he found the machine awaiting him with instructions to take it to the fighting line around Casablanca, for operations against the rebellious tribesmen. Probably no better commander than Captain Genty could have been found in the army, for he has been connected with automobiling since its earliest stages, has competed in international races and won records for Darracq and Bayard-Clement under the title of De la Touloubre. Lately he has been at the head of the army automobile transport service near Paris. His car is a Panhard, the tonneau being modified to receive its quick-firing gun.

One man at least is displeased with the choice of the fighting unit and has written to that effect to the Minister of War. The C. G. V. firm produced a special armored war automobile over a year ago and induced the Russian Government to take a dozen of them. Now Ferdinand Charron would like to know why Minister of War Picquart is risking the lives of brave troopers in an open automobile that has nothing whatever to recommend it, when for the sum of \$9,000 he could have a steel armored car, tires and spare parts included, to be returned at the end of a month if it was not satisfactory. But General Picquart has made up his mind that the open Panhard is good enough for him and after one official "declined with thanks" has silenced Charron with a curt note that he does not want what the Russians have got anyway. The reports of the influence of Hotchkiss bullets and Panhard exhaust on fanatical tribesmen is being awaited with some interest.

LIGHTING TO BE DISCUSSED BY A. S. M. E.

At its next regular monthly meeting, which will take place in the Engineering Societies Building, 29 West Thirty-ninth street, New York, on January 14 next, the subject for discussion by the American Society of Mechanical Engineers will be "Car Lighting," a paper having been prepared by R. M. Dixon, president of the Mississippi river, which is saying a great deal. Reading of the paper will be supplemented by exhibits.

OHIO AUTOISTS MOVE FOR UNIFORM LAW.

CINCINNATI, Dec. 23.—Acting in conformity with the recommendation of the American Automobile Association on the subject of uniform legislation, the Ohio State Association has taken the first steps looking toward action of this kind in their State by approving the proposed law drafted by the three A's for introduction at the sessions of all the State legislatures. The legislative committee of the State Association met at the offices of Chairman William Walker Smith, Jr., and Mr. Smith presented a letter from the State Attorney General, Wade Ellis, giving an informal opinion to the effect that the proposed law is constitutional and contains none of the defects which rendered invalid the State law passed last year.

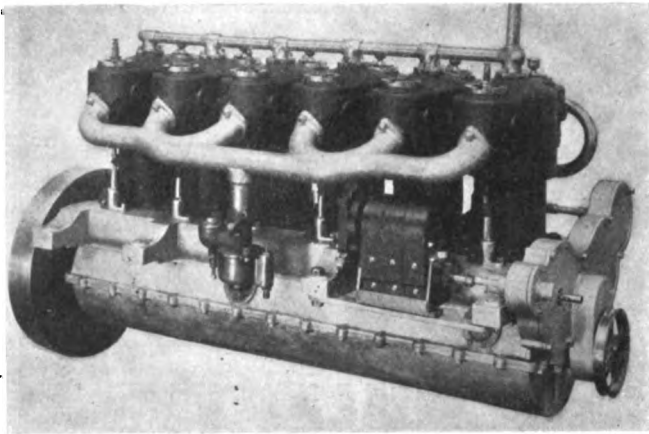
The proposed measure covers the question of a single State license, registration of chauffeurs, reasonable speed restrictions and penalties for chauffeurs who accept bribes, or companies who offer bribes to chauffeurs, to have their supplies used on cars. The license fee is placed at \$5, and the chauffeur's registration fee at \$2, while makers will have to pay \$10 for each type of car manufactured. No definite speed limit is mentioned, the provision being that automobiles shall not be operated on the public highways at a speed "greater than is reasonable, having regard to the width, traffic and use of the highway and to the general use and rules of the road, or so as to endanger property, or life, or limb."

KANSAS CITY'S SHOW DATES ARE FEB. 3-8.

KANSAS CITY, Mo., Dec. 23.—Convention Hall, this city, will be the scene of the annual automobile show of the Automobile Dealers' Association of Kansas City, and the week of February 3 has been set for the occasion. Convention Hall is one of the largest public buildings in the United States, with a floor space almost equal to that of Madison Square Garden, in New York, and the Coliseum in Chicago. Last year's show was a great success, and the coming year's exhibition promises, from the early manifestations, to eclipse in every way the 1907 exhibit. W. L. Walls, the secretary of the show committee, is actively engaged in the work of preliminary preparation, and has issued plans of the building to intending exhibitors. The local trade is enthusiastically working as one man for the success of the show, which promises to be the biggest thing of its kind ever held west of the Mississippi river, which is saying a great deal.

MATERIALS FOR THE HOME BUILDER.

Probably nine out of ten autoists with a mechanical turn of mind have thought, at one time or another, that they would like to build a car of their own, and a great many have actually done so during the past few years. In fact, the demand for automobile components on the part of those not directly concerned in the building of cars for the market has become such that a firm has entered the business of catering to it. This is the Howard Motor Works, Yonkers, N. Y., who build the well-known Howard motors, one of the six-cylinder types of which is illustrated by the accompanying photograph. The material is designed to build a six-cylinder chassis, and the parts, in addition to the motor already referred to, are of the best grades turned out by various well-known makers in this country. A tubular front axle is supplied regularly, although an I beam drop-forged type will be provided at a slight additional cost; springs are of the semi-elliptic type at all four points and are of liberal dimensions, while the wheels measure 34 by 3 1-2 inches, though four-inch rims will be supplied to order. The frame is of the best pressed steel construction and is designed to give the car a 110-inch wheelbase with standard tread. It also embodies a sub-frame with four-inch drop, all spring hangers being drop-forged and extending up to the cross member; it is supplied



INTAKE SIDE OF THE HOWARD SIX-CYLINDER ENGINE.

complete with the spring links. Other materials provided are the steering gear, propeller shaft, side levers, clutch, connections, pedals, brakes, radiator, fan, hood, steel dash and all bolts and nuts for completing the work of assembling. The complete materials are offered at \$1,200, including blueprint as a working guide.

SHAFT ALL THAT REMAINS OF "LA PATRIE."

PARIS, Dec. 14.—One material souvenir of the military airship *Patrie* remains to the French authorities. After crossing the English Channel, the ship drifted over Wales, crossed the Irish Channel, then hovered over County Down, Ireland. Some of her gas had escaped during the trip across sea, with the result that in the hilly district of Down the *Patrie* struck earth several times. A few miles south of Bangor the *Patrie* dragged along the ground, went through a stone wall and lost part of her car. Veering towards Belfast Lough, she prepared herself for another sea trip by dropping her propeller shaft and gear box on Farmer Macfarlane's land, near Craigavad. It was the last of the *Patrie*, for, freed of this weight, she appears to have skirted the Scottish coast and to have passed to an unknown grave in the Atlantic. Souvenir hunters rushed in haste to neighbor Macfarlane's place, but received little for their pains, for a War Office official was already on the spot to take charge of all that remained of the world's finest airship and return it to its sorrowing owners.



THE FIRST SELDEN "28" UNDERGOING ITS TESTS.

CHRISTIE PROMISES FRONT-DRIVE TAXICABS.

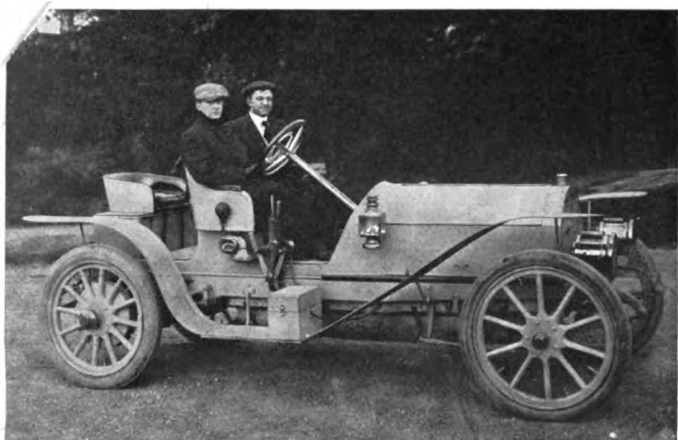
Since his accident on the race track during the past season, Walter Christie has been paying renewed attention to the production of a taximeter cab on his front drive principle. From the drawings, now in an advanced condition, the new vehicle possesses a number of special features which should make it particularly economical to operate and maintain in the rough service for which it is intended. Mr. Christie retains the basic design of a front drive and front steering developed for several years on his racing cars, with certain improvements suggested by experience, and modifications for city work. Compactness and accessibility are obtained to the highest degree by carrying the four-cylinder motor, transmission and all mechanical parts forward of the dashboard, this position also allowing reduced wheelbase and easier turning.

COLT RUNABOUT COMPANY INSOLVENT.

A petition in bankruptcy has been filed against the Colt Runabout Company, 1876 Broadway, New York, by the Frank Presbrey Company, \$1,300; Robert Bosch, New York, Inc., \$400, and the Reliable Radiator Company, \$174, on the ground that the company on December 19, and while insolvent, transferred some of its property to Kane & Robinson, and a Mr. Gillette, two creditors, to prefer them. The concern was incorporated on June 3, 1907, with a capital stock of \$10,000, which was later increased to \$50,000. A factory was established at Yonkers, N. Y., and the company began to turn out a six-cylinder car of the runabout order, using the Howard motor. Harry Osterman has been appointed receiver by Judge Hough of the U. S. Court.



MR. AND MRS. C. A. BENJAMIN, OF DETROIT, IN 1908 AEROCAR.



THE CLEVELAND ASPIRES FOR HONORS AT ORMOND MEET.

James Laughlin, 3d, and Charles G. Percival, publicity manager of the Cleveland Motor Car Company, in the 1908 Cleveland Car that will race in Florida.

BOSTON'S Y. M. C. A. SCHOOL SUCCESSFUL.

BOSTON, Dec. 23.—An interesting demonstration of the possibilities of an automobile, outside its capabilities as a vehicle, was given one evening last week at the new White garage on Newbury street. The Y. M. C. A. automobile school, which, by the way, is the oldest automobile school in this country, was holding its mid-winter social gathering, and as music was desired it was decided to try some automobile music. A car was fired up and by means of a belt the power from a rear wheel of the car was transmitted to a hurdy-gurdy. As far as operation went the results were excellent. From a musical point of view the results were somewhat marred by the mechanical interest of the operator who tried at times to see how much acceleration the hurdy-gurdy would stand. Another interesting experiment was the belting up of the other driving wheel of the car to a wood saw, thus demonstrating how the farmer owner of a machine may put it to work sawing the winter's supply of kindling wood.

There were two instructive competitions in which students of the automobile school participated. The first was a tire drill. Four men were seated in a car. At a signal they sprang out, secured jacks and lifted the wheels. Then they removed the casings and inner tubes, replaced the tubes and put back the casings, the one doing it in the shortest time receiving a prize. The other competition was an ignition drill in which the competitors were sent hunting for ignition troubles, the one starting his engine first being given a prize.

AMERICAN TIRE MAKERS INVADE EUROPE.

As an offset to the establishment of branches of foreign tire factories in the United States, the B. F. Goodrich Company, of Akron, O., is going abroad to get its share of the foreign trade. Goodrich tires are already well-known in France, an agency established in Paris some time ago having done a good business. Now a branch house is to be opened at number 2, Rue Brunel, Paris, and a full stock of tires and appurtenances carried so that the American makers will compete with the French manufacturers right on their own ground, and American tourists on the other side will also find it easy to replenish their supplies. The branch will be in charge of Mr. Lumsden, the European manager of the Goodrich interests.

TIRETOWN HAS ITS FIRST AUTO SHOW.

AKRON, O., Dec. 23.—Akron's first automobile show last week, conducted by the Akron Automobile Garage Company in its new garage, was a complete success and was attended by several thousand people. As an outgrowth of this exhibition, it is hoped that the show will become an annual affair. Some interesting machines were on exhibit, among them being the first horseless carriage built in America, described by a sightseer as "a vehicle

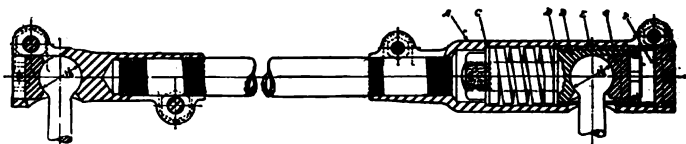
that looks like the result of a collision between a miniature traction engine and a buggy." The builder was Achille Phillon, of this city, who put the machine out in 1889. It has an upright steam engine at the rear, with a 2 1-2-horsepower motor which, when first built, burned coal. "The Mudlark," driven by R. R. Owen and Andy Auble to Florida from New York a year ago, and "Red Cloud," used by Fred Work and H. J. Maxson for their transcontinental trips, were also on exhibition.

NEW FIRM TO MAKE IGNITION SPECIALTIES.

PITTSFIELD, MASS., Dec. 23.—The Jacobson-Brandow Company is the title of a new concern that has been organized here to begin the manufacture of patented ignition specialties. The incorporators are Edward B. Jacobson, formerly superintendent of the Pittsfield Spark Coil Company, and Dr. Frank B. Brandow, an enthusiastic autoist, who has several inventions to his credit. Some of these are the Brandow combination lock switch and the Brandow "spark indicator." The firm will also manufacture a spark plug of their own design and special construction as well as a line of induction coils for automobile ignition. The latter are distinguished by the use of a very simple and easily adjustable vibrator, and also by a readily detachable condenser. Quarters have been secured in the Dunham block and machine tools installed so that manufacturing is already under way. It was at first intended to market the product direct and manufacture on a conservative scale, but negotiations have been completed with the Pettingill-Andrews Company, of Boston, to handle the entire output and the facilities of the concern will be increased accordingly. The company will establish a factory here.

NEW B. & S. SPRING STEERING CONNECTION.

Recognizing that, in the ideal steering gear, vibration must be eliminated to the last degree, if crystallization of the metal of the various components of the gear is to be prevented, the Billings & Spencer Company, Hartford, Conn., makers of the well-known B. & S. steering connections, are putting out a new spring type of their own design. In addition to the spring arrangement, it also embodies a simple and highly effective locking device, which secures the steering arm to the connection, making it proof against parting at this vital point. This new



DETAILS OF NEW B. & S. SPRING STEERING CONNECTION.

connection consists of an outer case, A, surrounding a ball and socket joint B, to which is attached a lug passing through a helical spring, as illustrated in the accompanying line drawing. Washers are placed at each end of this spring, while a nut at the end of the lug binds these parts together. This piece is inserted into the end of the case A, after which the ball-arm is placed in position through a hole in the side of the case, and secured by the castellated plug, G. The slotted sleeve, E, is then inserted in the end as far as the washer, D, surrounding the ball and socket. The whole is then secured by the castellated and threaded plug, F, which is further secured by a cotter pin and binder lug.

From the shoulder at C, vibration in one direction acts upon the spring at the washer, C, and in the reverse, at the washer, D, through the sleeve, E, which is held by the plug, F. This sleeve has a longitudinal slot just wide enough to pass over the neck of the ball-arm after the latter has been placed in its socket and secured, thus preventing the ball-arm from becoming detached, should G become loosened or worn. The new B. & S. connection is made for 1 1-8-inch ball.

BRIEF ITEMS OF NEWS AND TRADE MISCELLAN

Ashton Valve Company, of Boston, is now making a complete line of pressure gauges for gas tanks.

The Whitten-Gilmore Company, which represents the Thomas cars, has opened new salesrooms at 907 Boylston street, Boston. George Crittendon, formerly with the Premier Company, has joined the selling force.

D. P. Nichols & Company, 121 West Brookline street, Boston, well known in carriage circles, have fitted up one of the best and most modern plants in New England for overhauling, painting, repairing or renewing worn parts of automobile bodies.

The Munson Steamship Company and the Quebec S. S. are the latest addition to the constantly increasing number of companies who are allowing gasoline motor trucks the same unrestricted access to their piers as horse-drawn trucks. This is a matter that the New York Automobile Trade Association has been advocating for the past few months.

T. A. Quinlan, Jr., president and general manager of the Monarch Motor Car Company, Chicago Heights, Ill., announces that the formal opening of the new factory at the above address will take place on January 2. A noticeable feature in connection with the plant is the testing track, which is built on an adjoining tract of land, covering about four acres. Paul Symonds has been appointed sales manager.

That 13 is not invariably an unlucky numeral is attested to by R. E. Hardy, president of the Motor Parts Company, 25 West Forty-second street, New York. The company is composed of thirteen men and commenced business last March with an authorized capital of \$100,000. It carries complete lines of gasoline motors, transmissions, differentials, lamps, springs, coils and all kinds of ignition accessories, and has built up a very successful selling organization.

The makers of the Michelin tires take considerable pride in their record as purveyors to every crowned motorist in Europe, namely, the King of England (Daimler car), King of Italy (Fiat car), Queen Dowager of Italy (Fiat car), Emperor of Russia (Darracq car), Emperor of Germany (Fiat car), King of Spain (Panhard car), King of Portugal (Peugeot car), Shah of Persia (Serpellet car), and the President of France (Panhard car). By the establishment of their new American plant, where Michelins will be made identical in materials and construction with the foreign product, they cut out all costs of duties and trans-Atlantic charge, with the evident intention of being "purveyors to the American citizen in general."

To meet the demand of manufacturers and owners of light cars, the Hartford Suspension Company, 67 Vestry street, New York, have just perfected what will be known as the "Truffault-Hartford Junior." This newcomer is practically a replica of the standard pattern of Truffault-Hartford shock absorbers, embodying all the essential features of the latter, the chief difference being in its size. It is intended to be fitted to such runabouts as the Ford, Maxwell, Mitchell, Reo, Buick, Atlas, Cadillac and cars of similar size and type, and lists at \$25. It has been placed on the market as the result of a strong demand which has

manifested itself recently and particularly at the New York and Chicago shows. Three models of the Truffault-Hartford shock absorbers are now manufactured, so that the makers are in a position to supply them for any size car.

Harry D. Miller, president of the Bridgeport Vehicle Company, builders of automobile bodies, at Bridgeport, Conn., has formulated a plan for reducing the maintenance expenses of autoists in his city and has accordingly established an annual contract service. This includes taking entire charge of the car, keeping it in repair and commission, and thus doing away with all the petty garage annoyances which the average owner finds himself subjected to continually. The cars will be thoroughly examined at least once a month, the annual charge being \$75, payable semi-annually in advance. In addition to the regular inspections, the service will include all repairs necessary between inspections, a report being sent after each calling attention to parts that are worn and require replacement. Such parts will be supplied at factory cost and there will be no extra charge for their replacement on the car. Oil and gasoline will be supplied at the usual rates.

NEW AGENCIES ESTABLISHED.

The Tincer Motor Car Company, of South Bend, Ind., have opened a Chicago branch in the building of the Chicago Automobile Club, on Plymouth place.

E. S. Partridge, of Wyckoff, Church & Partridge, Broadway and Fifty-sixth street, New York, has been in Boston for several days past in the interests of the Stearns line and will complete negotiations for the opening of an agency of the Stearns car at the Hub before returning.

Paul Lacroix, American representative of Renault Freres, announces that a Chicago agency for the Renault cars will be established in that city in the near future. It is also expected that plans for western representation include an agency on the Pacific coast, which will doubtless be located at San Francisco.

After January 1, 1908, the branch of the Hartford Rubber Works at 88 Chambers street, New York, will be discontinued, direct representation of the Hartford office being then centered in the uptown branch, located at Fifty-seventh street and Broadway. Although the latter branch has been at the same address, known as the "tire corner," for a number of years, the building has been reconstructed and the company has taken considerably more space to keep up with the demand for Hartford tires. Charles E. Miller, 97 Reade street, has been appointed as downtown agent in New York.

PERSONAL TRADE MENTION.

Alvan T. Fuller, the Packard representative for Boston, has gone abroad on a three months' vacation.

Peter C. Rutan, formerly of the P. C. Rutan Company, Port Jervis, N. Y., will open a store and garage at 46 Front street, that city, on January 1, and will deal in automobiles, bicycles and sporting goods.

The Hotchkiss cars will be represented in Boston by Milton Kent, a newcomer in

the auto field. Salesrooms are now being fitted up on Boylston street in premises recently vacated by the Butler Motor Car Company.

R. D. Aldrich is now connected with Brandenburg & Company, 85 Lake street, Chicago, the well-known selling agents of automobile parts, and will handle the central western territory, with Chicago as headquarters.

H. C. Mills, formerly with the Pittsfield Coil Company, has joined the selling forces of Pettingell-Andrews Company, Boston, exclusive selling agents of the Jacobson-Brandow Company, Pittsfield, Mass. Mr. Mills will start on his Western trip January 1.

R. H. Combs, manager of the Chicago Battery Company, 3685 Olive street, St. Louis, Mo., is an old-time newspaper man, but for the past four years he has devoted his entire time and attention to the subject of electric ignition and lighting for the automobile.

A. O. Hunter has been appointed manager of the Chicago branch of the Franklin Automobile Company. Mr. Hunter was formerly head instructor of salesmen for the National Cash Register Company, at Dayton, O., and prior to that time was instructor of salesmen and salesman in the Chicago territory for the National people. He has a wide acquaintance with Chicago business men.

E. Le Roy Pelletier, for some time past associated with the Ford Motor Company, and whose publicity work has attracted universal attention, suddenly resigned his position as advertising manager a few days ago. Mr. Pelletier's decision to sever his connections with the company with which he has been identified so long was made very suddenly and solely with a view toward his own advancement, though he did not wish to announce any definite plans for the immediate future, other than that of taking a much-needed rest for a few weeks. In recognition of his splendid services for the newly organized Detroit Automobile Dealers' Association in carrying off their first Detroit show of a few weeks ago with such brilliant success Mr. Pelletier was presented with a handsome solid gold stop watch.

F. A. Babcock, president of the Babcock Electric Carriage Company, Buffalo, N. Y., has just returned from a flying four-week trip abroad. He left New York on the *Lusitania* when she made her record-breaking eastward trip, spent two days at the Olympia show in London, then leaving there for Paris, he put in a week at the Salon, returning to New York again on the *Oceanic*. Mr. Babcock declared that the fact which impressed him most forcibly at both shows was the absence of runabouts of the electric type, and he thinks there is a great field for these vehicles in both England and France. In the electric field he found that only landaus, landaulets and broughams are used, and these are employed almost entirely for public hire. There were three cars of American make at both the London and Paris shows, the demand being greatest for the small car having 18 to 25 horsepower. The Paris Salon, Mr. Babcock thinks, was, without doubt, the greatest exhibition of automobiles ever held.

ADVERTISERS

Acetylene Gas Illuminating Co. 59
Acme Motor Car Co. 68
Adams Co. 68
Add-Wear Auto Tire Sleeve Co. 69
Ajax-Grieb Rubber Co. 69
Alum. Solder & Refining Co. 94
Am. Brass & Alum. Works. 65
Am. Locomotive Auto Co. Cover
Anderson Forge & Machine Co. 65
Apperson Bros. Automobile Co. 98
Ashtabula Bow Socket Co. 67
Auburn Automobile Co. 68
Audel & Co., Theo. 60
Aurora Motor Works. 98
Auto Pump Co. 58
Autocar Co. 97
Auto-Shine Co. 58
Auto Supply Co. 76
Automobile Blue Book. 64
Automobile Supply Co. 59
Automobile Trade Directory. Cover
Automobile Utilities Co. 58
Avery Portable Lighting Co. 85
Badger Brass Mfg. Co. 60
Baldwin Chain Mfg. Co. 58
Barnett Drop Forging Co. 86
Beaver Mfg. Co. 59
Behen-Faught Motor Car Eq. Co. 59
Besly & Co., C. H. 60
Bethlehem Steel Co. 86
Biddle & Smart Co. Cover
Billings & Spencer. 57
Blasler Mfg. Co., M. E. 67
Blomstrom Mfg. Co. 36
Boker & Co., H. 59
Borbein Auto Co. 83
Bosch, Robert 80
Boston Auto Gage Co. 71
Bowers Co., F. E. 84
Bowser & Co., S. F. 70
Boyle & Co., John. 104
Brennan Motor Co. 89
Bridgeport Vehicle Co. 83
Briacoe Mfg. Co. 65
Brown, Wm. W. 58
Brownell Motor Co., F. A. 66
Buckeye Jack Mfg. Co. 88
Buckeye Mfg. Co. 98
Buffalo Carburetor Co. 86
Bullard Automatic Wrench Co. 87
Bullard, J. H. 67
Buob & Scheu. 67
Cadillac Motor Car Co. 68
Cameron Car Co. 68
Central Body Co. 67
Champion Co., A. 87
Clark, E. S. 58
Cleantola Co. 71
Coes Wrench Co. 54
Colt Runabout Co. 68
Comptoir d'Innovations pour Automobiles. 81-82
Conn. Steel & Wire Co. 67
Conn. Tel. & Elec. Co. 70
Conover Motor Car Co. 86
Continental Caoutchouc Co. 69
Continental Motor Car Co. 69
Continental Motor Mfg. Co. 60
Corbin Motor Vehicle Corp. 99
Corcoran Lamp Co. 60
Cornish-Friedburg Motor Car. 68
Correspondence School of Motor Car Practice. 59
Cotta, Chas. 70
Crown Battery Co. 85
Crown Soap Co. 88
Cullman Wheel Co. 58
De Luxe Motor Car Co. 68
Delaunay Belleville. 77
Diamond Chain & Mfg. Co. 65
Diamond Rubber Co. 69
Dien, Ch. 98
Dietz Co., R. E. 60
Dixon Crucible Co., Joseph. 66
Dorris Motor Car Co. 68
Dover Co., Geo. W. 57
Dow Portable Electric Co. 60
Duplex Coll Co. 67
Eastern Carbon Works. 89
Eclipse Machine Co. 58
Edgar Mfg. Co. 58
Edmunds & Jones Mfg. Co. 58
Eldredge Electric Mfg. Co. 66
Electric Vehicle Co. 99
Ellsworth, J. M. 108
Elmore Mfg. Co. 99
Empire Automobile Tire Co. 70
Empire Wheel Works. 67
Excelsior Supply Co. 66
Fairmount Engineering Works 68
Firestone Tire & Rubber Co. 69
Fisk Rubber Co. 90
Ford Motor Co. 68
Forest City Motor Car Co. 102
Fort Pitt Motor Car Co. 71
Franco-Am. Auto Supply Co. 58
Franklin Mfg. Co., H. H. 111
Fry, T. C. & W. L. 59
G & J Tire Co. 90
Garford Motor Car Co. 68
Gearless Transmission Co. 96
Geisler Bros. 57
General Accumulator & Battery Co. 67
Gibney & Bros., Jas. L. 59
Gilbert Mfg. Co. 84
Gray & Davis. Cover
Gray-Hawley Mfg. Co. 96
Grout Bros. Auto Co. 68
Ham Mfg. Co., C. T. 84
Hans, E. E. 72
Hardy Co., The R. E. 71
Harris Oil Co., A. W. 60
Hartford Rubber Works Co. 61
Hartford Suspension Co. 57
Hatcher Auto Parts Co. 88
Hatfield Motor Vehicle Co. 68
Haynes Automobile Co. 68
Healy Leather Tire Co. 69
Heinze Electric Co. 87
Heltzer Carburetor Co. 94
Hercules Auto Specialty Co. 83
Herz & Co. 66
Hess-Bright Co. 65
Hicks Speed Indicator Co. 86
Hine-Watt Mfg. Co. 60
Hoffecker Co. 67
Hoffman, Geo. W. 58
Holley Bros. Co. 91
Holtsman Automobile Co. 95
Hopewell Bros. 71
Hotchkiss Mfg. Co. 65
Hotel Richmond. 38
Hotel Tampa Bay. 38
Howard Motor Works. 68
Hydraulic Pressed Steel Co. 65
Imperial Motor Car Co. 109
Indestructible Steel Wheel Co. 65
Index Speed Indicator Co. 59
Jackson Automobile Co. 68
Jeffery & Co., Thos. B. 105
Jeffery-Dewitt Co. 66
Jenclick Motor Mfg. Co. 39
Jersey Brake Co. 83
Jones Speedometer Co. 60
K.-W. Ignition Co. 59
Kimball Tire Case Co. 70
Kinsler-Bennett Co. 88
Kokomo Electric Co. 92
Konigslow, Otto 65
Lavalette & Co. 65
Lear Automobile Co., Oscar. 68
Leather Tire Goods Co. 57
Limousine-Carriage Mfg. Co. 67
Lipman Mfg. Co. 58
Lobe Pump Co. 57
Locke & Co. 87
Locomobile Co. of America. 97
Logan Construction Co. 68
London Auto Supply Co. 67
Long Mfg. Co. 86
McCord & Co. 66
Macbeth Co. 90
Majah Co. 74
Mandeville Steering Wheel Muff Co. 89
Manhattan Electrical Sup. Co. 58
Manhattan Storage Co. 65
Maple City Mfg. Co. 83
Martini Import Co. 67
Mason, John A. 57
Masury & Son, John W. 92
Mayo Radiator Co. 65
Merchant & Evans Co. 85
Merritt & Co. 58
Metropolitan Automobile Guide Michelin Tire Co. 64
Midgley Mfg. Co. 72
Miller Bros. 67
Miller, Chas. E. 96
Mitchell Motor Car Co. 68
Model Automobile Co. 109
Moline Automobile Co. 98
Monarch Motor Car Co. 68
Morgan & Wright. 91
Mosler & Co., A. R. 65
Moss Photo Engraving Co. 92
Motor Car Equipment Co. 78-79
Motorcar Co. 96
Motz Clincher Tire & Rub. Co. 69
Moon Motor Car Co. 68
Muller, Albert 59
Muttly Co., L. J. 67
N. Y. Sporting Goods Co. 58
National Auto Accessories Co. 59
National Battery Co. 87
National Brake & Clutch Co. 71
National Motor Vehicle Co. 102
Neustadt Auto & Sup. Co. 96
Never-Miss Spark Plug Co. 57
New Process Rawhide Co. 91
Nordyke & Marmon Co. 68
Northway Motor & Mfg. Co. 66
Northwestern Storage Battery Co. 92
Nuttall Co., R. D. 65
Oakes & Dow Co. 100
Oldeldt & Sons. 58
Old Colony Light Co. 87
Olds Motor Works. 69
Pacific Tucking & Mfg. Co. 58
Packard Electric Co. 60
Packard Motor Car Co. 107
Palmer & Singer Mfg. Co. 68
Panhard & Levassor Auto Co. 76
Parish & Bingham Co. 59
Parker, Stearns & Co. 86
Pease & Sons, S. C. 67
Penn. Auto Motor Co. 97
Perfection Grease Co. 85
Peugeot Freres 65
Pfanstiehl Elec. Laboratory. 64
Pflrome Hide Co. 59
Pierce Co., Geo. N. Cover
Pierce Engine Co. 69
Pioneer Brass Works. 65
Pirelli & Co. 59
Pope Motor Car Co. 106
Precision Appliance Co. 60
Prest-O-Lite Co. 83
Progressive Mfg. Co. 60
Prosser & Sons, Thos. 65
Quinby Co., J. M. 67
Quincy, Manchester, Sargeant Co. 59
Raimes & Co. 58
Rainier Co., The. 69
Reeves Pulley Co. 59
Remy Electric Co. 60
Renault Freres 75
Richardson Engineering Co. 66
Robert Instrument Co. 59
Roberts Motor Co. 59
Robinson & Sons, Wm. C. 95
Rock Island Tool Co. 89
Ross Gear & Tool Co. 65
Royal Battery Co. 57
Royal Equipment Co. 59
Rubay, Leon 87
Rushmore Dynamo Works. 82
Salsbury Wheel & Mfg. Co. 59
Samson Leather Tire Co. 69
Sanford Mfg. Co., F. C. 58
Saxon Lamp Co. 60
Shawver Co. 57
Smith & Sons, S. 93
Snow, N. H. 67
Speed Changing Pulley Co. 67
Spicer Universal Joint Mfg. Co. 57
Spittdorf, C. F. 59
Sprague Umbrella Co. 95
Standard Automatic Lub. Co. 59
Standard Co. 93
Standard Roller Bearing Co. 59
Standard Welding Co. 86
Stanley, John T. 91
Steam Carriage Boiler Co. 58
Stearns Co., F. B. 69
Stevens-Duryea Co. 94
Stewart & Clark Mfg. Co. 63-66
Streit Machine Co., A. 60
Studebaker Automobile Co. 69
Success Auto Buggy Co. 69
Supplementary Spiral Spring. 72
Swinehart Clincher Tire Co. 85
Thomas Motor Co., E. R. 103
Thompson Sons Co., J. P. 69
Timken Roller Bearing Axle. 100
Trebart Gas Engine Co. 69
Tucker, C. F. 58
Turner Brass Works. 65
Uncas Specialty Co. 66
Vacuum Oil Co. 89
Veeder Mfg. Co. 94
Walker Co., E. C. 83
Warner Instrument Co. 104
Warner Pole & Top Co. 67
Waukesha Motor Co. 86
Wayne Automobile Co. 69
Weed Chain Tire Grip. 70
Welch Motor Car Co. 96
Western Motor Co. 85
Weston Elec. Instrument Co. 97
Wheeler & Schebler. 101
White Co., The. 110
Whitney Mfg. Co. 87
Wing Co., Chas. 67
Winton Motor Carriage Co. 112
Witherbee Igniter Co. 70
Wyman & Gordon Co. 57
York Motor Car Co. 96

FOR UNMATCHABLE QUALITY BUY COES STEEL HANDLE MODEL WRENCH

THE WRENCH for Automobilists

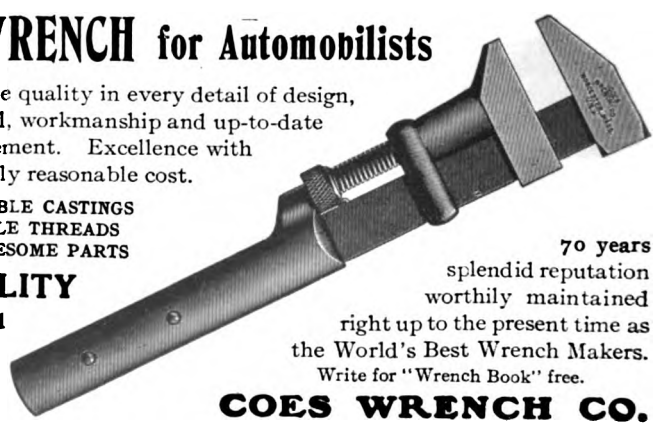
High-grade quality in every detail of design, material, workmanship and up-to-date improvement. Excellence with extremely reasonable cost.

- NON-BREAKABLE CASTINGS
NON-STRIPABLE THREADS
NON-TROUBLESOME PARTS

QUALITY

through and through.

Look for the name—COES



70 years splendid reputation worthily maintained right up to the present time as the World's Best Wrench Makers. Write for "Wrench Book" free.

COES WRENCH CO. WORCESTER, MASS.

SPECIAL NOTICES

Advertisements inserted under this heading at 20 cents per line; about 7 words make a line. Remittance should accompany copy. Replies forwarded if postage is furnished.

Cars for Sale

ABSOLUTE closing out sale of the largest stock of new and second-hand automobiles in the United States; write for Clearance Sale List No. 20; now is the time to buy. Rochester Automobile Co., Jos. J. Mandery, Prop., Rochester, N. Y.

A BARGAIN—1907, 20-h.p., 4-cylinder Model G Cadillac runabout; best of condition; demonstration at any time. Address Morgan & Wright, 214 West 47th St., New York.

AUTOMOBILES—30-h.p. Pierce-Arrow, 1906, \$2,000; 24-h.p., 4-cylinder Ford, \$600; 26-h.p. Cadillac, \$700; 50-h.p. Thomas Flyer, \$1,500; Cadillac delivery car, \$350; 30-h.p., Model H Cadillac, \$1,500; 30-h.p. Peerless, \$1,000; these are great bargains, but must be sold. E. R. Clark Auto Co., 461 Worthington St., Springfield, Mass.

AUTOMOBILES at your own price. We have a complete assortment of slightly used and second-hand automobiles which will be sold regardless of their value, as we MUST have the room; positively the greatest opportunity ever offered; come early and secure a bargain. If you cannot come personally, communicate with us at once. The Starin Company, 1094-1100 Main St., at St. Paul St., Buffalo, N. Y.

BARGAINS—Packard touring, 1906, \$2,350; Ford runabout, top, \$400; Thomas touring and limousine, \$1,200; 6-cylinder 1907 Ford, \$1,500. Vanderveer, Times Bldg., 42d St. and Broadway, New York City.

BUICK MODEL F—New; never used; regular factory equipment; 1907 model; regular price \$1,250; will take \$900. "A," care The Automobile.

BUICK—1907, with 1908 improvements; 4-cylinder, 24-h.p., new car; used but little, by very careful owner; a perfect running car; price, \$1,500, with extras (regular price now \$2,000, with \$100 more for extras). W. A. Russell, P. O. Box 2398, Boston, Mass.

BUICK—Four-cylinder, Model D; equipped with gas and oil lamps, gas generator, extra tire, Allen tire holders and tire cover, Veeder dash odometer, \$125 top complete; run 987 miles, and is as good as new; cost, as equipped, \$2,275; sell for \$1,350; guaranteed all O.K. "B.," care The Automobile.

FINANCIAL STRINGENCY compels us to offer panic prices in Ford 6-cylinder, Franklin D. Maxwell H. and runabouts; Olds and Cadillac runabouts; it will pay you to write for list; we have bargains you can't duplicate. Automobile & Garage Co., Meyersdale, Pa.

FLANDAU BROUGHAM—Cost \$1,500 when new; only been run a short time; also new Victoria, never has been run, worth \$1,000; for sale, or will exchange for automobile high power gentleman's roadster. Address C. D. Jones, 701 Connell Bldg., Scranton, Pa.

FORD RUNABOUT—1907, Model N; nearly new; bargain. 252 Palisade Ave., Jersey City, N. J.

GET WISE—We have anything you want in second-hand cars—Packard, Winton, Locomobiles, White steamers, Franklins, Buicks, Oldsmobiles—and bargains at that. Get our list for March. The Sid Black Automobile Co., 630 Walnut St., Cincinnati, Ohio.

HOLSMAN—1907 Model 9; top, storm front and detachable rear seat; \$500. L. M. Lowe, Glyndon, Minn.

LARGEST automobile dealers in the world; over 250 cars here on consignment, many of them are for quick sale, the owners being eager for quick cash. Now is the time to secure a bargain; call, phone or write for list. Runabouts \$100 to \$550; tonneaus and touring cars \$250 to \$5,500. Come, make bid and let us submit your offer to the owner. In this way you can secure an auto at a very low figure. Manhattan Storage Co., 334-340 West 44th St., New York City.

GARFORD WEEKLY LIST OF SECOND-HAND CARS:

- 64—Packard runabout, 1907 model, used but few months; exceptional opportunity\$2,750
 - 65—Packard touring car, Model N; absolutely guaranteed; excellent condition 950
 - 66—Packard touring, 1906 model; excellent condition; very cheap..... 1,500
 - 67—Packard touring car, 1907 model; very good condition..... 2,600
 - 68—Cleveland chassis, 1907 model; suitable for touring; limousine, landaulet or runabout body; cheap; excellent condition; absolutely guaranteed 1,000
 - 69—Rainier touring, 1907 model; good condition 1,800
 - 70—Rainier limousine, touring 1906 model 2,000
 - 71—Hotchkiss demi-limousine, 1906 model; fine condition..... 3,400
 - 73—Decauville touring, seating seven... 750
 - 74—Dorris, 30-35, 1907 model; two months old 850
- Also cars of many other makes at from \$500 up. The above cars have been placed with us for sale by parties ordering Garford cars. In making inquiries kindly mention serial number of car you may be interested in. Garford Motor Car Company of New York, 1540 Broadway, New York City.

ONE EIGHT-PASSENGER touring car; tires practically new, 5-inch on rear, 4-inch front; cost to build, \$3,500; sell for \$350; guaranteed in first-class condition. "D.," care The Automobile.

PACKARD MODEL L—Run only 6,000 miles; exceptional condition; full equipment, except top; Rushmore searchlights. For information address Box 466, Jacksonville, Fla.

PACKARD CARS for sale—Packard cars in good condition at moderate prices, by people who have ordered 1908 Garfords. Inquire Garford Motor Car Co. of New York, 1540 Broadway, New York City.

PIERCE GREAT ARROW—1906 model, 32-h.p., perfect condition; cost, with equipment, \$4,600. Address 72 Weissinger-Gaulbert, Louisville, Ky.

POPE-HARTFORD touring car; side entrance; top, lamps, horn, etc.; used one season; fine condition; will sell for \$900, if taken at once. Lanpher Bros., Carthage, Mo.

POPE-TRIBUNE RUNABOUT—New; 1-cylinder, 6-h.p., 1905; 2 speeds and reverse, 750 pounds; easy riding, reliable, good power; \$200; cost \$500; reason, use touring car. H. M. Rich, Morrisville, Vt.

POSTAL AUTO BUGGY—With top; run 200 miles. Ed. Tetzl, Terre Haute, Ind.

RAINIER LIMOUSINE—35-h.p., 1907 model, Burr body; in first-class condition; seats six; price \$2,800. Diefenderfer, 244 West 49th St., New York.

RAMBLER TOURING CAR—25-h.p., 4-cylinder, with complete equipment; 1906 model; to be sold at a sacrifice. Address Box 656, Waterbury, Conn.

REO RUNABOUT—Also Reo touring car; fine condition; bargains. 2395 Boulevard, Jersey City, N. J.

ROYAL TOURIST—\$1,500; side entrance; best condition; top, trunk rack, new extra tire in carrier, two 4-cell storage batteries, complete lamp equipment, clock and speedistimeter. Bickford, 233 Alexander St., Rochester, N. Y.

SIXTEEN-SIX WINTON—New, 6-cylinder, 50-h.p.; this car will be sold at a sacrifice if taken immediately. Address "Sixteen-Six," care The Automobile.

STEVENS-DURYEA—1906, 4-cylinder touring car; good equipment; extra low price if sold at once. J. S. Harrington, 36 Central St., Worcester, Mass.

STEVENS-DURYEA—1906, Model R, 4-cylinder car; complete with top, Prest-O-Lite gas tank, Warner speedometer, and trunk rack; tires as good as new; price, \$1,250. R. W. Magna, Holyoke, Mass.

TRUSTEE'S SALE of automobiles—There will be offered for sale under a deed of trust, at public auction, on Monday, December 30, 1907, at 12 o'clock noon, at the garage No. 238 Plume St., Norfolk, Virginia, twelve (12) electric 20-passenger automobiles, made by the Electric Vehicle Company. These automobiles were used during the Jamestown Exposition, which closed

last month. For any information concerning the same, write to A. B. Seldner, Trustee, 234 Main St., Norfolk, Virginia.

WE ARE TAKING in second-hand automobiles of all makes in exchange for new ones, which we will sell very reasonably. F. E. Lockwood & Co., 39 Wall St., Norwalk, Conn.

WHITE STEAMER—1903; canopy top, side baskets, dust deflector, Rushmore lamps, three new and one retreaded tire; cost, new, \$2,350; sell for \$350; guaranteed in first-class condition. "C.," care The Automobile.

WHITE STEAMER—1906; bargain; including the following accessories: Prest-O-Lite tank, 5 lamps, Warner speedometer, Sprague extension top, shock absorbers and automatic pump; car has completed 5,840 miles; tires pumped by engine; open to minutest inspection; price on application. J. S. Harrington, 36 Central St., Worcester, Mass.

1906 ROYAL TOURIST, 45-h.p. touring car; 1906 Stoddard-Dayton 35-h.p. touring car; 1907 Maxwell runabout; all cars fully equipped and in the best of condition; make offer. C. M. Vanderslice, Pottstown, Pa.

1907 \$250 STODDARD-DAYTON runabout; entire car in perfect condition. Penn Automobile Co., Inc., Reading, Pa.

1907 STODDARD-DAYTON speedster, with rumble seat and extra tourabout seat for three passengers; full lamp equipment; fine condition; cheap. Model K Winton, with top; full lamp equipment; looks like new; fine condition; price, \$900. Reading Automobile Co., Reading, Pa.

\$100 REDUCTION given on a 1908 Model HC Maxwell touring car; complete with top, front curtains and Michelin tires; to be delivered April 1, 1908, or later. A. Kratochvil & Son, 446-48 West 26th St., Chicago, Ill.

\$100 TO \$500 SAVED—Buy a good new or second-hand car for next season's use. Write me to see how much I can save you on others' sacrifice prices. Light touring cars, 7-passenger cars, and gentlemen's roadsters, including Thomas, Pierce, Packard, Peerless and other standard makes, from \$640 to \$1,680; smaller cars taken in trade. C. T. Paxton, 1200 Niagara St., Buffalo, N. Y.

\$300 TAKES PIERCE STANHOPE; in perfect condition. Alfred C. Smith, M.D., Brownsville, Pa.

\$400 BUYS A FRANKLIN 4-cylinder Model A runabout; write for photo and description. The Potomac Hardware Co., Cumberland, Md.

\$4,000 50-H.P., 7-passenger Acme touring car, with extra runabout body; top and curtains, five lamps, generator, horn, tire carrying irons and tools; car in fine condition, tires good as new; must sell quick; best cash offer takes car. S. M., Box 356, Reading, Pa.

Cars Wanted

AN ELECTRIC LANDAUET wanted in exchange for the following: Two horses (one coach horse and one thoroughbred racer), coupe, Victoria, surrey, runabout, and harness for same; all carriages rubber tired, and in excellent condition; Victoria and coupe Brewster make. Address J. J. R., care The Automobile.

AUTOMOBILES WANTED—Spot cash ready. Broadway Mammoth Automobile Exchange, 247 West 47th St., Telephone, 3097 Bryant, New York City.

SWELL RUNABOUT (with rumble) or 7-passenger touring car; reliable party going South for winter months, wishes to rent an automobile, good condition and appearance. Albury, P. O. Box 1139, New York City.

USE OF YOUR CAR this winter; will convince owner of good touring car or rumble runabout that positively \$800 profit will be cleared during winter; don't pay storage; don't give away; make it earn \$500; can sell for better price in spring; describe machine. Address P. O. Box 1139, New York City.

WRECKS WANTED—Will buy them, regardless of condition. Portland Garage Co., Portland, Me.

(Special Notices continued on page 56.)

(Special Notices continued from page 55.)

Parts and Accessories

(FOR SALE)

A BARGAIN IN TIRES—We have a quantity of new tires to sell cheap, while they last; write us for prices. Empire Tire Repair Co., 1615 Wabash Ave., Chicago.

A DOUBLE SPLITDORF dash coil, brand new, cheap, at 597 South 19th St., Newark, N. J. Also a 3 1-2-h.p. cycle engine.

AUTO TOPS from \$25 up; also recovering and repairing; prompt and satisfactory service and lowest prices guaranteed; a specialty of automobile upholstery. Paris Auto Top Co., 312 West 52d St., New York City. Phone, 6444 Columbus.

BODIES—We have disposed of all of the touring car bodies we have been advertising in these columns, at bargain prices with the exception of five Model L tonneau bodies seating five passengers. These are finished in Quaker green, with black trimmings, and upholstered in genuine leather and curled hair. Dimensions, where body rests on chassis, 80 inches in length by 34 1-2 inches in width. We offer them at \$50 each, while they last. Prices, cash with order, f.o.b. cars Waltham, crated. Illustration and blue-print showing all body dimensions sent upon request. Waltham Mfg. Co., Waltham, Mass.

DOUBLE-ACTING steam engine, 14-h.p., Ofeldt flash boiler and burner complete, size of boiler 22x22x18, and a Peter Forge 16-inch burner, practically new; write or call for particulars. Michael J. Benn, 166 Vanderveer Pl., Brooklyn Manor, L. I., N. Y.

FORD RUNABOUT OWNERS—Don't swear any more; order one of our three-hinge folding hoods to fit your car; price \$12; with strap, \$13.50. Auto Rebuilding Co., Chicago, Ill.

FORD RUNABOUTS—You need a perfect ratchet brake pedal for your Ford; we furnish you one for \$3; applied by novice in half hour; satisfaction, or money back. S. S. Auto Co., Alliance, O.

GLASS FRONTS, \$19.40; auto heaters, \$21; auto racks, \$12; rumble seats, \$9; baggage racks, \$5.40; new hood and dash outfits for '03 and '04 Ford, Cadillac, Winton and other cars, \$15 up; write us; we will save you money; catalog ready. Auto Rebuilding Co., Chicago, Ill.

GLASS FRONTS, \$12; simple, durable, correctly made, and easily attached, to fit any car; discount to dealers. The Motor Shop, 232 Massachusetts Ave., Indianapolis, Ind.

NON-SKIDS—We make the best on the market; case-hardened steel rivets, toughest and waterproof leather used; finest workmanship. Our rubber retreading excels all others. We can save you money on new tires. Vulcan Tire Repair Works, 226 West 53d St., corner Broadway, New York City.

ONE 6-CYLINDER, high-tension magneto, "Remy"; price reasonable. Auto Engine Works, St. Paul, Minn.

STANLEY 12-inch tubular boiler, used to run model engines in shop for experimental purposes; never used more than ten hours; guaranteed as new; sell for \$40. New 14-inch "National" kerosene burner for above, cost \$25, sell for \$15; alcohol lighter, cost \$5, sell for \$1; Nash fuel pump, cost \$13.50, sell \$9; brass pressure tank for main fire, cost \$3.50, sell \$2; copper pressure tank for pilot light, cost \$3, sell for \$1.50; gauge for Pilot light, cost \$3, sell for \$1.50; automatic steam pressure regulator for main fire, cost \$5, sell \$3; first check or money order for \$70 takes above, or will sell separately. R. E. Caldwell, 564 Cabot St., Beverly, Mass.

OUR 10-H.P. HORIZONTAL motor, 5 1-2-inch bore, 6 1-2-inch stroke, in first-class repair, including carburetor, pump, spark plug and vibrator coil, a bargain at \$50. Olean Garage Company, Olean, N. Y.

TIMKEN ROLLER BEARINGS—250 2D cones, 1 1-8-inch hole, dustproof collars; 100 3D cones, 3-4-inch hole, dustproof collars. These bearings are new, and will be sold cheap. The American Grain Meter Co., Springfield, Ohio, U. S. A.

TIRES—We sell any tire on the market; New casings at the following prices: 28x2 1-2, \$9 each; 28x3, \$17 each; 30x3 1-2, \$20 each; 32x4, \$26 each; 31x4, \$27 each; other sizes and tubes in proportion. Chicago Vulcanizing Co., 1463 Michigan Ave., Chicago, Ill.

TIRES for automobiles; brand new goods; overstocked: 28x2 1-2, \$8; 28x2, \$14.50; 28x3 1-2, \$14.80; 30x3, \$14; 30x3 1-2, \$16.50; 30x4, \$18.75; 32x4, \$20; write for other sizes; will surprise you. A. H. Kasner, 152 Church St., New York. Largest Tire Dealers in U. S.

TIRES—Second-hand tires and tubes always on hand; vulcanizing in all its branches; recovering a specialty; leather non-skid tires recovered and guaranteed to run 2,000 miles; write for price list of repair work. N. Y. Steam Rubber Tire Repair Works, 306 West 52nd St., New York. Phone, 3018 Columbus.

TWO brand new Diamond clincher tires, 36x5; four slightly used tires, complete, 36x5; will break lot to suit purchasers. Thos. J. Northway, 94 Exchange St., Rochester, N. Y.

VAPORIZERS for sale—For White steam cars; special carbon steel, guaranteed not to choke with carbon, \$15. Webb Jay Motor Company, 2335 State St., Chicago, Ill.

WANTED—To hear from every individual automobile owner in the States and Canada, requesting our catalogue; we make and sell mud guard splashes, slip covers, top boots, chain boots, spark plugs, tires and detachable treads, everything for the auto; liberal discounts on orders exceeding five dollars. Jenkins Specialty Mfg. Co., Sumter, S. C.

Parts and Accessories

(WANTED)

LIMOUSINE BODY—Second-hand; state size, condition, year made, and price. H. Loomis, P. O. Box 146, Portland, Me.

Situations Wanted

BOOKKEEPER—Expert for garages, agencies, repair shops, disentangles books for moderate charge; calls few hours each week to post them right; references; French translations. Enaj, 41 West 60th St., New York.

CHAUFFEUR—Am 25 years, German; can handle and keep up any car. E. F. Goodman, Union, S. C.

GENERAL MANAGER—Competent business man, engineer and designer and sales manager, open for engagement after January 1. Address A. B. C., care The Automobile.

WANTED—Position as expert general repairman. E. F. Goodman, Union, S. C.

Help Wanted

CHAUFFEUR—Who can do repairing, and has \$500 saved, can learn of good position and interest in business. Address or call R. C. Prentiss, 1661 B'way, New York.

IF YOU WOULD CONSIDER a better position, or more money, or a change of location, write us to-day; 3,000 office, sales, and technical positions open; service confidential. Haggoods, 305 Broadway, New York; or 1010 Hartford Bldg., Chicago, Ill.

SALESMAN to introduce patent license plate hanger, to auto owners; a much-needed device; fits any part of car; a great seller; made by large company. Address, at first, Russell & Co., 72 Free St., Portland, Me.

WANTED—To correspond with expert desirous of locating in the West. Harry R. Farmer Garage, Stillwater, Minn.

WANTED—January 1, New York representative, acquainted with the automobile trade, to handle our line of specialties; references required. International Metal Polish Co., Indianapolis, Ind.

Insurance

AUTOMOBILE INSURANCE—Complete protection at lowest rates. McNear & Wilbur, 34 Pine St., New York City, and Union Bldg., Newark, N. J.

COMPLETE automobile protection in one policy; liability, damage to car and to property, burglary, owner and driver's accident insurance. The General Accident, Sewall & Alden, N. Y. Mgrs., 23 Liberty St., New York City. Policies covering fire and transportation.

INSURANCE for automobiles—Broad, safe policies at lowest prices; insurance against fire, self-ignited explosions, transportation hazards, theft, etc.; best service guaranteed, no matter where insurer is located. For particulars address H. W. Beals, 76 Williams St., New York City. Phone, 3052 John.

INSURANCE for motor cars against every risk, including fire, explosion, self ignition, theft, collision, accident, transportation, perils and other damages; cars insured anywhere in the world by the kind of "Policies that Protect," at the lowest rates of premiums; automobile bail bonds to cover all States. Demonstrating policies for the trade. Dixie Hines, Times Building, New York City.

Miscellaneous

ATTENTION, automobilists—Two very fine cinnamon bear robes, cost \$250; I have sold my automobile and I will sell the pair for \$25; they are almost new. See my chauffeur. Dr. Clark, 142 West 37th St., between Broadway and Seventh Ave., New York City.

AUTOMOBILE DRIVING taught immediately, reason afterwards; \$5 a week; particulars from Automobile Sales Corporation, 1661 Broadway, New York. 1,500 new and used cars; all makes; price lists mailed. J. J. Evans, tires and supplies.

CHAUFFEURS, machinists and repairmen can secure, free, a set of Bullard wrenches; write us for special offer. Bullard Automatic Wrench Co., Providence, R. I.

DRAFTSMEN—Thorough and complete course of instruction in automobile design and construction, prepared and conducted by E. Favery. Fundamental elements of design; formulae; applications; latest practice of American and European builders. Information impossible to obtain elsewhere; of greatest benefit to designers, draftsmen, engineers, salesmen and others desiring thorough knowledge of automobile design and construction. Instruction in class-room or by mail. Prospectus on request. New York School of Automobile Engineers, 146 West 56th St., New York.

EMPIRE TIRE REPAIR CO., 1615 Wabash Ave., Chicago. Phone, Calumet 1866. We retread, recover and repair all makes of tires; factory workmen, using factory methods; satisfaction guaranteed.

FOR SALE—Fireproof garage building, with lot 40x105; best location in Oakland, Cal.; population, 235,000; \$5,000 will handle this. Address Box O, care The Automobile.

GARAGE TO RENT—Entrance 24 West 35th St.; building 24x30; second floor; five rooms and bath; rent, \$100; commission to any one furnishing a tenant. William J. Roome, 11 West 34th St., New York City.

GARAGE FOR VISITORS—Situated on direct route of visiting autoists at the upper entrance of Central Park and at intersection of Eighth Ave., Central Park West and 110th St. One block from Seventh Ave., and handy to Amsterdam Ave. and to 110th St. entrance to Riverside Drive. Convenient to any northern approach to Manhattan. Every facility for proper care of cars at lowest possible prices. Near subway and elevated stations to up or downtown. Parkway Garage, 110th St. and Central Park West, New York City.

GIVE YOUR 1903 or 1904 Franklin cars more power; we manufacture mechanical inlets for 1903 and 1904 Franklins; we guarantee them to give satisfaction; write us for description and information. The Akron Auto Garage Co., Akron, O.

GOING TO BUILD A GARAGE?—We make garage architecture a specialty. Hills & Co., 83 Knowls St., East, Cleveland, Ohio.

MANUFACTURING SITE—One and two-story brick buildings, 55,000 square feet floor space; machinery installed; situated Eastern Boulevard, near Westchester Creek, Unionport, N. Y. City; suitable for any manufacturing business; term lease. Address G. Robitsek & Bro., Inc., 205 Rider Ave., New York City.

MODEL VULCANIZING CO.—Automobile tire exchange and automobile tire repairing. 1547 Michigan Ave., Chicago, Ill. New and second-hand automobile tires bought and sold; can fit your car with any make or size, and save you money. Phone, Calumet 531, long-distance connections. All repairs guaranteed.

RENEW old dry batteries; send 25 cents for tested recipes. R. B. Graham, Stockton, Kansas.

REO DEALERS and owners—We make a complete outfit for your 2-carburetor cars, consisting of the famous Breeze carburetor, with all necessary attachments, ready to bolt on; no mechanical work necessary; our experiments show 20 per cent. more power, easy running, and quick starting on a cold morning; complete outfit lists at \$24. Jenkins Specialty Mfg. Co., Sumter, S. C.

SAVE YOUR TIRES—Are you going to use your car every day this winter? Will it be standing on the tires for days at a time? Do you want to save your tires? Take the car's weight from them with Garlick's Auto-Props; strong, durable, cheap; set of four sent by express, any address, on receipt of \$2.50; with jack attachment, \$4.00. Garlick Auto Prop Co., Paterson, N. J.

TIRES REPAIRED—Automobile owners, do you want your tires repaired or recovered by people who know how? Give us a trial and be convinced. Inner tubes vulcanized at short notice. Jungking & Vogler, 158 Chambers St., New York City, Telephone, 3386 Cortlandt.

WANTED—Place to start automobile garage, by party of six years' experience; would consider partnership with right party. Address "Business," care The Automobile.

817 MEN who enrolled in our automobile school last season say their time and money were well invested. Our courses are thorough and practical. We have a large garage, completely equipped, and expert instructors. The school is not run to make money, but to give men a thorough course of instruction at a minimum cost. Catalog sent on request. West Side Y. M. C. A., 310 West 57th St., New York City.

TRUFFAULT-HARTFORD
Trade
SHOCK ABSORBER
Mark
The Device that made Safe, Speedy and Comfortable Automobiling Possible.
Write for Rough Road Booklet to Department G
HARTFORD SUSPENSION COMPANY
E. V. Hartford, Pres. 64 Vestry St., New York

\$1.00 - Never Miss - \$1.00
PORCELAIN
Standard 3/4-in., Metric, Auto Car, Winton
We make the best Mica Plug on earth.
NEVER MISS SPARK PLUG CO., Lansing, Mich.

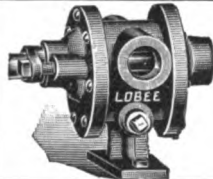


ROYAL BATTERY
The Owner's Favorite because it gives the most mileage. Send for "Treatise on Storage Batteries"
ROYAL BATTERY CO.,
108 Duane St., New York

Spicer Universal Joints
Dust Proof—Oil Tight
Ryder Spark Generator
No Batteries, Spark Coils or Moving Wires or Contacts of any sort.
K. F. PETERSON, 166 Lake St., Chicago.
Spicer Universal Joint Mfg. Co.
7 Madison Avenue Plainfield, N. J.



GEIZLER STORAGE BATTERY
NON-SULPHATING
6 Volt, 60 Ampere Hour
Price, \$15.00
GUARANTEED FOR ONE YEAR
Send for Catalog A
GEIZLER BROS., 316 W. 42d St., New York City



If you want good circulation on your automobile, launch or motor boat, use a
LOBEE PUMP
LOBEE PUMP AND MACHINERY CO.
130 Terrace Buffalo, N. Y.



WOODWORTH
Detachable **TREAD** Adjustable
"Saves More Than Half" the Tire Bill.
LEATHER TIRE GOODS CO.
Newton Upper Falls, Mass.
New York Store, 1662 Broadway



The Springfield No. 2—Ratchet Screw
For cars weighing from 1,000 to 4,000 pounds. Height, 12 inches. Rise of screw, 7 inches. The base is made of malleable iron, heavily ribbed and dust-proof. The ratchet works in grease-tight casing, from which both ratchet and screw are lubricated; one filling of grease being sufficient for a season. The ratchet pawl is made of steel and hardened. When this Jack is not in use it is in a most compact form, all parts being locked together, and is absolutely rattle-proof. Weight 5 pounds. Price \$2.00, net
The Shawver Company, Springfield, O., U. S. A.

BOSTON

ACME *G.R.
BOSTON MOTOR CO.
Phone, Tremont 2. 44 COLUMBUS AVE.

APPERSON *G R
GEORGE M. BROWN
Phone, Ox 1224-1 6 COLUMBUS AVE.

JACKSON
E. P. BLAKE CO.
Phone, 767 Hay. 15-23 Hawkins St. and Motor Mart

NEW ENGLAND

JACKSON
E. P. BLAKE CO.
15-23 Hawkins St., and Motor Mart
Phone, 767 Hay. BOSTON, MASS.

NEW JERSEY

JACKSON
ESSEX AUTOMOBILE CO.
Phone. 8-11-13 LOMBARD ST., NEWARK

CHICAGO

JACKSON *G.R.
RALPH TEMPLE AUTO CO.
Phone, Harrison 2933. 300 MICHIGAN AVE.

*NOTE—Letters in upper right hand corner of each card indicate as follows: G—Garage or storage facilities; E—Equipped to charge electric vehicles; R—Repair shop.



HIT HARD
you can't break it.
WE KNOW HOW TO MAKE THEM
TOUGH.
DROP FORGINGS
The Wyman & Gordon Co.
WORCESTER, MASS. CLEVELAND, OHIO.

"The Car without a fault"
THE MARTINI
Made in Switzerland. Built to climb mountains. Reliable, Fast, Noiseless
Send for handsome illustrated 1907 Catalogue FREE
MARTINI IMPORT CO., 239 West 50th St., New York



Turned and Screw Work
of every description for Auto Use, from 1-in. dia. down
QUICK DELIVERIES
GEO. W. DOVER CO.
80 Clifford St. (Automatic Dept.) PROVIDENCE, R. I.




Many 1908 cars will carry the famous B. & S. Auto Wrench, will yours? It is a reliable companion for old or new. Ask for our catalog of Auto Tools and Forgings.
The Billings & Spencer Co., Hartford, Conn.

OUTFITS AND SUPPLIES



WE WELD STEEL from the thinnest sheets up to one inch in thickness. Repair Crank Shafts, Frames, Rods, etc., of all descriptions. Our specialty is Exhaust Pipes, Mufflers and Tanks for all pressures. Prices right, deliveries prompt.
F. C. SANFORD MFG. CO., Bridgeport, Conn.



P. W. OFELDT & SONS
Nyack-on-the-Hudson, N. Y.
Manufacturers of
Blue Flame Kerosene Burner
Safety Water Tube Boiler
Automatic Water Regulator
Automatic Fuel Regulator
Feed Water Heater
Compound Steam Engines
Our Kerosene Burner works to perfection on White Steamers



STOP
Hand Pumping. Attach our HILL CLIMBING PUMP on your '03-'04 White Steamer.
Sent Complete—Easily Attached.
242 Freeport St. Boston, Mass. **EDW. S. CLARK**

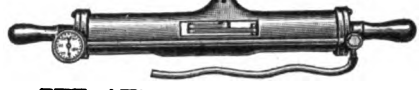
EXPANDED METAL
LOCKERS
Sheet Steel Material Closets
MERRITT & CO.
1045 Ridge Ave. PHILADELPHIA, PA.

WHEN WRITING TO ADVERTISERS PLEASE MENTION THE AUTOMOBILE.

NEVER CONTRADICTED
THE CLAIM THAT "GLOBE" METAL POLISH IS THE BEST POLISH OBTAINABLE TO-DAY. WHY BOTHER EXPERIMENTING WITH OTHER BRANDS?
RAIMES & CO., 50 FERRY ST., NEW YORK

Famous NEWPORT SPARK PLUG That Suits Don't Soot
Satisfaction guaranteed. Made in all standard sizes 1/2" pipe. Metric 1x18. Stands up and does the work.
THE EDGAR MANUFACTURING CO.
104 Hanover Street Boston, Mass.
Electros ready, jobbers' catal. gl




THE SPENCER Power Air Pump
1908 Model It is carried in the tool box

THE AUTO PUMP COMPANY
Write for circular 14 Main St., SPRINGVILLE, N.Y.

IMMEDIATE DELIVERIES
Sliding Gear Transmissions
SUITABLE FOR 20-24 H. P. CAR
WE CAN FILL ORDERS FOR ONE OR ONE HUNDRED PROMPTLY
ECLIPSE MACHINE CO., ELMIRA, N.Y.

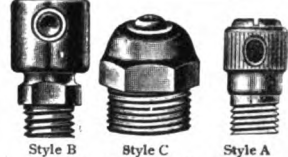
RED BATTERY SEAL Best for Ignition.
WE ALSO MAKE AND SELL
"Something Electrical for Everybody."
Send for Catalog J-22.
MANHATTAN ELECTRICAL SUPPLY CO.,
New York: 17 Park Place. Chicago: 188 Fifth Ave.

BALDWIN CHAIN & MFG. CO.
—MAKERS OF—
AUTOMOBILE CHAINS and SPROCKETS
WORCESTER, MASS.

NO PUNCTURES NO BLOWOUTS
USE THE SHAW
Self-Sealing Inner Tube
Write for Circular
AUTOMOBILE UTILITIES CO.
Motor Mart, Boston, Mass.

CULLMAN SPROCKETS
 and Differentials in stock and to order also. Baldwin, Diamond and Whitney Chain. Send for new Catalog.
Cullman Wheel Co.
1027 Dunning St., Chicago

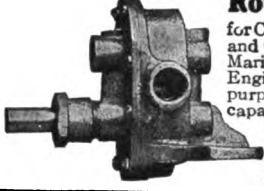
BOILERS
FOR STANLEY STEAM CARS
Also Grout, Prescott, Locomobile and Mobile Boilers, all guaranteed to fit plated steel tubes. Special boilers 1 to 60 H.P.; repair work. Write
Steam Carriage Boiler Co., Oswego, N. Y.

HOARDING MONEY by saving oil and repair bills is possible when cars are fitted with **TUCKER DUST PROOF OIL CUPS.**

Style B Style C Style A
C. F. TUCKER, Hartford, Conn.


HARD TIMES WON'T STRIKE YOUR CAR
IF YOU USE AUTO-SHINE

Gives an air of prosperity to the car and its owner. Restores the lustre to the varnish and insures long life to the cushions and top. **WON'T COLLECT DUST.**
4-oz. trial bottle, postpaid, 35c.
The Auto-Shine Co., P.O. Box 94, Buffalo, N. Y.

Rotary Pumps
for Circulation of Water and Oil on Automobile, Marine or Stationary Engines, and for bilge purposes. All sizes and capacities.
Send for Catalogue.
The LIPMAN MFG. CO.
210 Pleasant Street, Beloit, Wis.




AUTO SUPPLIES
Catalogue Free
Just say "Send me No. 37" and you will receive free a big book of illustrations with description and low prices on all kinds of sundries for all kinds of cars.
New York Sporting Goods Co.,
17 Warren Street, New York.



The P. T. C. Power Tire Pump

No labor—no trouble—start the pump, watch the gauge and stop when proper pressure is attained. Write for full particulars.
THE PACIFIC TUCKING & MFG. CO.
471-475 18th Street, Brooklyn, N. Y.

METAL POLISH
Highest Award Chicago World's Fair, 1893. Louisiana Purchase Exposition St. Louis, Mo., 1904.
3-oz. Box for 10 cents. Sold by Agents and Dealers all over the world. Ask or write for FREE samples.
5-lb. Pails, \$1.00.
GEO. W. HOFFMAN
Expert Polish Maker.
Indianapolis, Indiana.
Sold by Dealers.
New York City Office, 1-3 Park Row



LOOK BATTERIES AND BELL PUMPS
Franco-American Auto & Supply Co.
SOLE AGENTS
Desk K, 1404 Michigan Avenue
CHICAGO

BEACH AUTO VEST
WARMER THAN A SWEATER. COSTS HALF AS MUCH.
PREPAID ANYWHERE IN U. S. ON RECEIPT OF \$2.00. MADE WITH SLEEVES, \$3.00. RETURN IF NOT SATISFACTORY. SEND MEASUREMENT OF CHEST OVER VEST
WM. W. BROWN, Worcester, Mass.

"E.&J." Lamps
Gas and Oil Side-lights.
Our 1908 Catalogue mailed on request.
The Edmunds & Jones Mfg. Co.
DETROIT, MICH

"THE REEVES" Auto Engines Air and Water Cooled
THREE MODELS FOR EARLY DELIVERY
 Model E, 4x4, 4 cylinder, 20 H.P., air cooled.
 Model L, 4x4, 4 cylinder, 22-24 H.P., water cooled.
 Model N, 4x4, 4 cylinder opposed, 10 H.P., air cooled.
 Write for particulars to
REEVES PULLEY COMPANY
 Columbus, Indiana


ANNOUNCEMENT
 "Standard Alloy Steel Balls" made of alloy steel will be ready for delivery by or before June 1st.
 Double Crushing Strength Ordinary Balls. 3-4 inch crucible steel balls, crushing strength, 50,000 to 56,000 lbs. 3-4 inch "Standard Alloy" Steel balls, 95,000 to 100,000 lbs. Guaranteed true to .0001 inch in diameter and sphericity.
 PRICES QUOTED ON REQUEST
STANDARD ROLLER BEARING COMPANY
 Cor. 50th St. and Lancaster Ave., Philadelphia

THE LUCKY MAN
 Guides himself with the Sensitive Hand of the
Index Speed Indicator
Why don't you enjoy the charm of its influence?
Index Speed Indicator Co., Minneapolis, Minn
 FORMERLY OLIVER INSTRUMENT CO.

CANDY CARBIDE
 For French Auto Lamps (Impregnation dans le vide)
 Packed only in 10 lb. cans. Price, \$2 each
 Discount to Dealers in case lot of 12 cans
 —SOLE MANUFACTURERS—
ACETYLENE GAS ILLUMINATING CO.
 105 Walker Street, New York

SALISBURY WHEEL & MFG. CO.
 EXCLUSIVE MANUFACTURERS OF
Automobile Wheels and Axles
JAMESTOWN, N. Y.


PARISH & BINGHAM
 PRESSED STEEL
FRAMES ARE STANDARD
 WRITE FOR ESTIMATES
CLEVELAND, Ohio



Test your batteries with a meter that is accurate, durable and guaranteed.
ROBERT VOLT-AMMETERS, \$6.00
 " VOLT-METERS, \$4.00
 " AMMETERS, \$4.00
 including leather case
 SEND FOR CATALOG
ROBERT INSTRUMENT CO.
 66 Shelby St. Detroit, Mich.

COMPLETE COURSE
Automobile Instruction
 Invaluable to the owner or prospective owner of a motor car
Practical and to the Point
 Send for Prospectus to the
Correspondence School of Motor Car Practice, Tarrytown, N. Y.

SUPPLIES
 OF EVERY DESCRIPTION FOR
AUTOMOBILE AND MOTORIST
 Send for Illustrated Catalog and Price List
JAS. L. GIBNEY & BRO.
 211-213 N. Broad St., PHILADELPHIA, PA.



Porox Ignitor Storage Batteries
 Put up in celluloid jars
 Guaranteed to give satisfaction. Write for price list.
 Manufactured by
ALBERT MÜLLER
 205 West 41st Street
 New York City

WRITE FOR NEW CATALOGUE
THE AUTOMOBILE SUPPLY CO.,
 1339 MICHIGAN AVENUE,
CHICAGO.
SPECIAL ATTENTION TO MAIL ORDERS




THE IMPROVED VIM SPARK PLUG
 10 per cent. more power or your money back. Not simply a spark, but a blast of flame; quicker than the ordinary plug. Has two porcelains and a mica tube; the best insulated plug out. The spring at the end prevents cracked porcelains. Price \$2.00.
THE K-W IGNITION CO., 34 Power Ave., Cleveland, O.

Not a mere spark plug—but the greatest achievement ever made in spark plug construction. A spark plug fully in keeping with the highest grade motors in appearance, durability and service.
PRICE, \$2.00
 Metric or Half Inch
 Ask your dealer or write for information.
T. C. & W. L. FRY CO.
 800 Chestnut St., Rochester, Penn.

1908 Catalogue OF **Automobile Supplies**
 3961 Olive St., St. Louis, Mo., U.S.A.
Behen-Faught Motor Car Equipment Co.



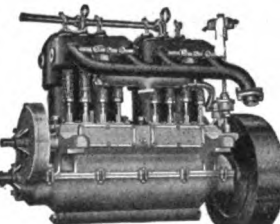
Automatic
The "NATIONAL"
 GIVES A PERFECT COMBUSTIBLE MIXTURE OF GASOLINE AND AIR AT ALL TIMES regardless of Engine speed, condition of atmosphere or whether run on low throttle or wide open.
 The National Auto Accessory Co.
 Office 84 State St., Boston
 Factory at Merrimac, Mass.
 For 1908



TWO-CYCLE AUTOMOBILE MOTORS
 The kind that Roberts builds.
 5 to 60 h.p.
Roberts Motor Co.
 Box 111, Clyde, O.



Avoid Accidents
 BY USING
The RAYMOND BRAKE
ROYAL EQUIPMENT CO.
 155 Beaumont Ave. Bridgeport, Conn.



BEAVER MOTORS
 Vertical 4-Cylinder—4 1/2 x 4 1/2
 Horizontal Opposed—4 1/2 x 4 and 5 1/2 x 4 1/2
Beaver Mfg. Co.
 237 Oregon Street Milwaukee, Wis.

The Complete Motorist
 No theory, but all about an automobile—its history; its mechanism and how to select and run it. By A. B. FILSON YOUNG. 328 pages, profusely illustrated. Bound in cloth. Price, \$3.50. Address, The Automobile, Flatiron Building, New York.

Put a Splittedort Coil on your car and see what a difference it will make in your faulty ignition.



Auto Cle Wrench
 An automobile socket wrench. Every one who owns or works around a car should have one.
 Send for circular
Stanwood Steel Step
 never wears out or requires repairing
 Send for circulars
Quincy Manchester Sargent Co., 1180 Old Colony Bldg., Chicago

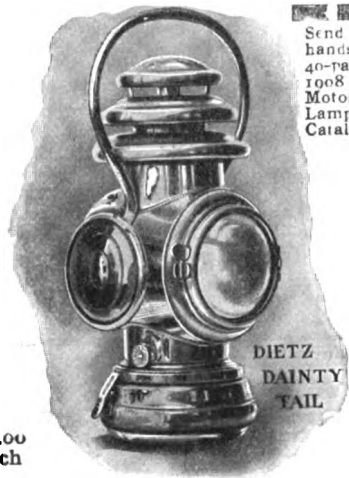
The Caterpillar Flame
 is not a thin blue spark. The PFANSTIEHL COILS need no "adjusting." A long life to your battery and contact points. Proof against break down on any voltage. Guaranteed to increase the power of your car. Every unit an X-Ray Coil.
PFANSTIEHL ELECTRICAL LABORATORY, North Chicago, Ill.

METEOR WIRE FOR SPARKING POINTS
 Gives a continuous uninterrupted spark. Will not corrode and will not wear off. See that it is in your SPARK PLUG.
HERMANN BOKER & CO. 101-103 Duane Street NEW YORK CITY, N.Y.

Positive Lubrication Assured
 We make anything you want in a Mechanical Oil. Our Oilers excel all others both in price and service. Let us prove it. Sent on approval to Auto and Motor Boat manufacturers. Write us before ordering elsewhere.
STANDARD AUTOMATIC LUBRICATOR CO.
 371-373 Ellicott St., Buffalo, N. Y.

"YOU SEE THEM EVERYWHERE"

Dietz "DAINTY" Tail Lamp



Send for handsome 40-page 1008 Motor Lamp Catalog

DIETZ
DAINTY
TAIL

\$4.00 Each

The most popular, reliable Tail Lamp made
R. E. DIETZ COMPANY
Largest Makers of Lanterns in the World
Established 1840 60 Laight St., NEW YORK
SOLD BY ALL DEALERS

Gasoline Engines

For Automobile and Marine Use

The A. Streit Machine Co.
STATION A, CINCINNATI, OHIO

Jones Speedometer

The pioneer and accepted standard
Automobile Speed Indicator

Write for catalog

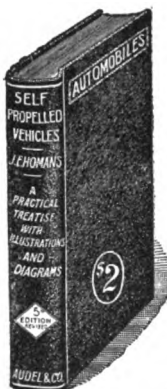
JONES SPEEDOMETER

76th Street and Broadway, NEW YORK

Chicago, 121 Michigan Ave. Detroit, 221 Jefferson Ave.
Philadelphia, 259 N. Broad St. Cleveland, 1841 Euclid Ave.

HOW TO RUN AN AUTO

Are you Interested in
Automobiles?



If you are, an early purchase of "HOMANS' SELF PROPELLED VEHICLES" will prove a good investment.

This work is now the accepted standard on the practical care and management of motor cars—explaining the principles of construction and operation in a clear and helpful way, and fully illustrated with many diagrams and drawings.

The presentation of subjects has been determined by consideration of the needs of the man behind the wheel. It is clear and concise in its treatment, and comprehensible to the most inexperienced automobilist, at the same time it is so thorough that the

expert will learn much from its pages. This good book will be sent to any address in the world, postpaid, upon receipt of two dollars, or if desired, will be sent on approval to be paid for after examination. Contains 608 pages, over 400 diagrams and illustrations, printed on fine paper, size 5 1/2 x 8 1/2 inches, with generously good binding. Highly endorsed.

No money in advance required, return and return
Theo. Audel & Co., 63 Fifth Ave., N. Y.
Kindly mail me copy of "HOMANS' AUTO"
and if found satisfactory I will immediately remit \$2.00 for return book.
Name.....
Address.....
Date.....

The Ideal Ignition Equipment

If a coil is used, consists of a Dow Coil, Dow Double Insulated Mica Spark Plugs and a Dow Ball-Bearing Timer. If a magneto is preferred, the Dow "KOMET," in which the distributor and timer are incorporated, will give you more efficient service and less trouble than any other. The "KOMET" is an IGNITION INNOVATION. Write for particulars.

Dow Double Electric Co., Franklin, Mass.

Every Day Use of a 1908 Solar

will be a constant and increasing source of gratifying assurance to its owner that he has exercised most excellent judgment in the purchase of this lamp for durability and quality of service.

Retaining the features that have won for them the approval of highly competent and critical judges, the 1908 Solars offer four (4) Exclusive features for the season. Write for our Exclusive Feature Book.
BADGER BRASS MANUFACTURING CO.
Kenosha, Wis. New York City

SHOOTING OILER

It "SHOWED" at the Shows.

Catalogue and Prices?

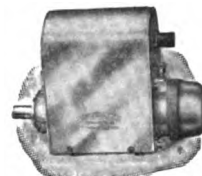
HILL PRECISION OILERS

PRECISION APPLIANCE CO.

835 Austin Avenue, CHICAGO, U. S. A.

Induction Coils

Gives easily understood explanations of the operation of coils. Of great value to the autoist. By H. S. NORRIE. 265 pages. Numerous illustrations. Cloth bound. Price, \$1.00. Address The Automobile, Flatiron Building, New York.



"Remy Magneto"

Means absolute reliability of the ignition system.

Investigate for your 1908 car.

REMY ELECTRIC CO., Anderson, Ind.

SAXON MOTOR LAMPS

Quality, Style and Right Prices

Send for catalogue. Special Prices to Jobbers and Dealers.

Saxon Lamp Company

530 West 28th St., NEW YORK

TRY HELMET OIL AT OUR RISK



Just send us your dealer's name and we will send you a generous free sample of Helmet Oil to test on your car. Helmet Oil positively gives 50 per cent more satisfaction than any other oil on the market. Write today for free sample, and interesting booklet, "Auto Lubrication."

C. H. BESLY & CO., 17 S. Clinton St., Chicago, Ill.

COLUMBIA LINE Lamps and Generators

27 Varieties. :: :: :: Automobile Supplies. Write for catalog and prices. Mention this paper.

HINE-WATT MFG. CO.,
58 Wabash Ave., CHICAGO

HARRIS OILS

Light, Medium and Heavy Grades
Sold at all Garages or

A. W. HARRIS OIL CO., Providence, R. I.

PACKARD ENAMELED IGNITION CABLE



Is now regarded an important feature in all high-grade automobiles and motor boats. Send for descriptive circular of our new MULTIPLE LOW TENSION CABLES.
THE PACKARD ELEC. CO., WARREN, O.

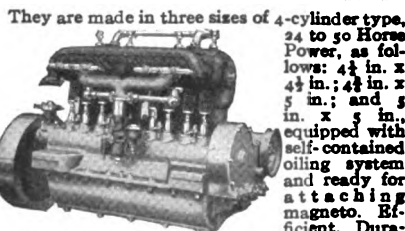


CORCORAN

CINCINNATI, OHIO

No. 22.
Auto Lamps of All Descriptions

"Continental Motors are Standard"



They are made in three sizes of 4-cylinder type, 24 to 50 Horse Power, as follows: 4 1/2 in. x 4 1/2 in.; 4 1/2 in. x 5 in.; and 5 in. x 5 in., equipped with self-contained oiling system and ready for attaching magneto. Efficient, Durable, Simple. Send for catalogue. Also Transmissions and Clutches.

CONTINENTAL MOTOR MFG. CO., MUSKOGON, MICH.
K. Franklin Peterson, Western Representative, 166 East Lake St., Chicago, Ill.
T. J. Wetzel, Eastern Representative, 29 West Forty-second St., New York, N. Y.

The "Brown" SEPARABLE LOCK Spark Plug

Most Perfect Lock Device Ever Invented



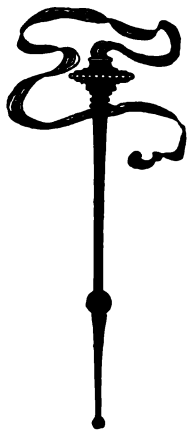
For Sale by all Jobbers

Manufactured by
THE PROGRESSIVE MFG. CO.

Torrington, Conn.

There's a Good Reason
for the Popularity of

Hartford Tires



- Owners have learned by expensive experience that, of all things, **quality** in automobile tires is the first, last and **only** thing to consider.
- It has taken a long time and a hard, persistent and expensive campaign to bring this result about.
- But this factory has never faltered in its policy for a minute, not even for a second. We knew that "quality" would win, and it has most handsomely.
- Hartford Tires and Midgley Universal Rims predominate at the National Automobile Shows, not only on the big, expensive, luxurious, "classy" cars, but on the best medium priced cars, and on the leading low priced cars as well.
- The way Hartford Midgley Tread Tires have forged to the front marks an epoch in tire making. No non-skid device compares to it in efficiency, utility, in appearance or sales. It is the only safe, sane, sightly and practical non-skid tire.
- Your old enemy, the "Tire Bugaboo," will not mar your pleasure or "dent" your pocketbook if you will decide right now to have the best tires money can buy—Hartford Tires. We make Hartford Clinchers and Dunlops, Hartford Midgley Tread Tires in both Clincher and Dunlop, and the new Hartford Quick Detachable Clincher.
- Better let us send you our new tire catalogue, a Midgley tread booklet, and a little folder just out, "How to Put on a Clincher Tire."

The Hartford Rubber Works Company, Hartford, Conn.

BRANCHES:

NEW YORK, Broadway and 47th St. CHICAGO, 83 Michigan Ave.; BOSTON, 817 Boylston St.; CLEVELAND, 1831 Euclid Ave.; DETROIT, 256 Jefferson Ave.; DENVER, 1564 Broadway; PHILADELPHIA, 1425 Vine St.; BUFFALO, 725 Main St.; ATLANTA, GA., 55 Auburn Ave.; LOS ANGELES, 1505 So. Main St.; SAN FRANCISCO, 423-433 Golden Gate Ave.

AGENCIES:

PITTSBURG RUBBER CO., 913-915 Liberty Ave., Pittsburg; GUGLER ELECTRIC MFG. CO., Minneapolis; GEO. W. PERRY & CO., St. Louis; MERCANTILE LUMBER & SUPPLY CO., Kansas City; F. P. KEENAN CO., Portland (Ore.); SALT LAKE HARDWARE CO., Salt Lake City; COMPANIA MEXICANA DE VEHICULOS ELECTRICOS, City of Mexico.

QUICK CASH BUYERS FOUND

- ¶ No matter what the article—how small, how large or how old, —somebody, somewhere, wants it and will pay you CASH for it.
- ¶ By far the BEST, CHEAPEST, QUICKEST and MOST SATISFACTORY way to reach individual owners personally, who are constant buyers of everything in the Automobile line, is through

SPECIAL NOTICES

Advertisements inserted under this heading at 20 cents per line; about 7 words make a line. Remittance should accompany copy. Replies forwarded, if postage is furnished.

Cars for Sale

AN OFFER WANTED for the following cars: need quick cash: 1904, 24-h.p., 4-cylinder Pope-Toledo, thoroughly overhauled and painted like new, powerful and speedy; also two 1904, 2-cylinder, 20 h.p. Wintons, side entrance tonneau, A-1 condition throughout; this is a chance to get a good car at your own price. A. P. Heyer, 34 Valley Road, Montclair, N. J.

BRENNAN TOURING CAR—Seven-passenger, 2-cylinder opposed, side entrance, 20 to 24-h.p., 102-inch wheelbase; in perfect condition; big bargain. Address J. A. Strad, 316 East 31st St., Tel., Douglas 4380, Chicago, Ill.

BUICK TOURING CAR—Must be sold; completely equipped; \$500. Call 640 Hancock St., Brooklyn, N. Y.

ELMORE—Three-cylinder, 1907 Model 16, like new in entire, extremely powerful, \$1,300. Address "Three-cylinder," care The Automobile.

ROYAL TOURIST—\$1,500; side entrance; best condition; top, trunk rack, new extra tire in carrier, two 4-cell storage batteries, complete lamp equipment, close speedster.

ALL NEW 1907 models at cut prices; also few second cars. Rochester Auto Co., 156 South Ave., Rochester, N. Y.

Cars Wanted

SPOT CASH—For two 1907, 4-cylinder touring cars; send description and list of equipment; must be in perfect condition. E. Kren, Winnebago, Minn.

WANTED—If cheap enough, a second-hand motor truck of one or two-ton size, and a couple of automobiles upwards of 12-horsepower, with 60-inch tread. C. W. Brown, Frost Proof, Fla.

WRECKS WANTED—Will buy them, regardless of condition. Portland Garage Co., Portland, Me.

FORD RUNABOUT—Four-cylinder, 1906-1907, second-hand, or a Maxwell runabout, 1906-1907, wanted; please name price for cash, and what condition it is in. Peterson, Chafee, N. D.

WANTED—An automobile in exchange for two free and clear lots in Flushing value, \$2,000. B. F. Curtis, 187 Lafayette St. New York City.

WANT TO TRADE large store and lot 1907 4-cylinder automobile. Motor ferred. Address "Trade," care The Automobile.

WANTED—aut...

RUNABOUT WANTED—Light weight; in good condition; name lowest cash price, and give full description. Address "Light Runabout," care The Automobile.

WHITE STEAMERS—Two 1907 Model G; must be in perfect condition; state price and colors. Address C. F. Gydeson, care Houston Motor Car Co., Houston, Tex.

PACKARD RUNABOUT—Second-hand 1907 condition of tires no object. R. North corner Marquette St. and Lakeside Cleveland, O.

WANTED—automobile...

For this exclusive purpose very prominent space is reserved for the "SPECIAL NOTICE ADVERTISEMENTS" in

THE AUTOMOBILE

The Cost per line, per issue, is only 20 Cents (seven words to the line). 18,000 Copies Weekly, Guaranteed Circulation. By this direct method you cover the automobile field completely.

Write the Advertisement and send it to us NOW.

Order blank below.

DETACH HERE AND ENCLOSE IN ENVELOPE WITH REMITTANCE, OR WE WILL PUBLISH AND SEND BILL IF YOU WISH.

THE AUTOMOBILE
FLATIRON BUILDING
NEW YORK

Gentlemen: Enclosed find copy for our Advertisement for insertion in the SPECIAL NOTICE Columns of THE AUTOMOBILE.

Please run this advertisement for _____ insertions. (20 cents per line for ONE insertion, 7 words to the line).

WRITE ADVERTISEMENTS HERE)

Date _____ 190 _____ Name _____

Address may be given care of The Automobile and replies will be forwarded.

Give address in full...

FORTY BUCKS

That's the price of a
Stewart Speedometer

Conceded to be the best speed indicator in the world, at any price

It is driven by a strong and durable flexible shaft, and provided with a swivel joint that everyone in the trade KNOWS has other devices used for the same purpose skinned.

The manufacture of flexible shafts has been our business for nearly a score of years, and we are today the largest makers in the world

You Need a Good Reliable Speedometer

and mileage recorder on your car. They not only tell you how fast and far you travel, but pay for themselves many times over, as a check on your tires and fuel.

Get a Stewart

It meets every requirement. Send for Catalog



\$40

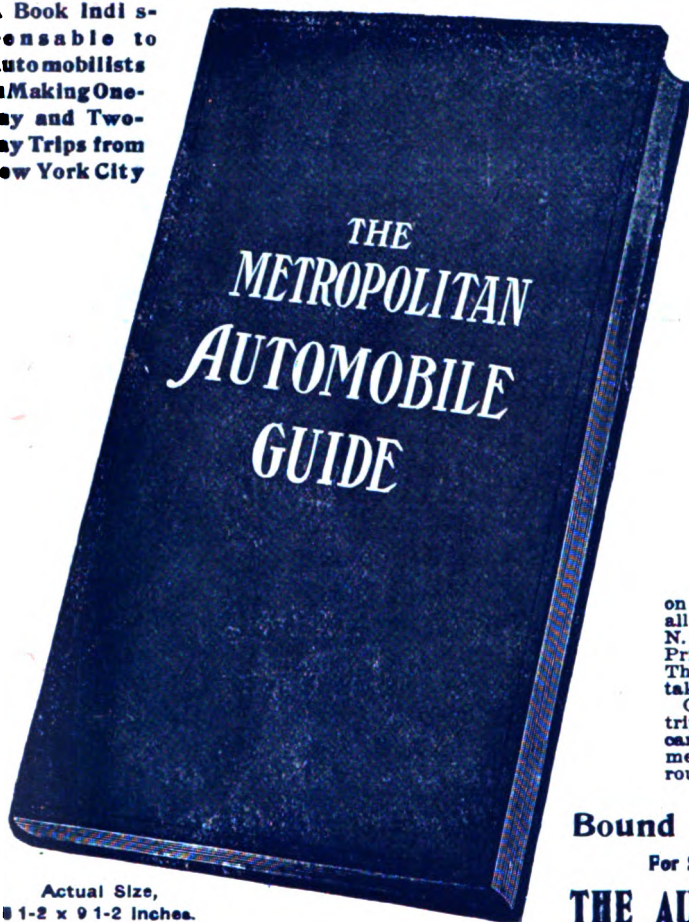
Stewart & Clark Mfg. Co.

506 Diversey Blvd., Chicago, Ill., U. S. A.

Our New List of Prices

- No. 4, Stewart Combination Speedometer-Odometer, full size dial (4 in.), 60 mile **\$40**
- No. 5, Stewart Combination Speedometer-Odometer, full size dial (4 in.), 90 mile **\$75**
- No. 7, The American Combination Speedometer-Odometer, full size dial (4 in.), 50 mile **\$25**

A Book Indispensable to Automobilists in Making One-day and Two-day Trips from New York City



Actual Size,
8 1-2 x 9 1-2 inches.

The Metropolitan Automobile Guide

Covering the territory within a radius of 75 to 100 miles of *New York City and vicinity* with completeness and accuracy never before approximated.

74 COMPLETE ROUTES—EVERY ROUTE A ROUND TRIP

6737 1-2 Miles. 382 Pages.

Accompanied by City Diagrams and Route Maps, together with best accommodations in Hotels and Garages. Exact mileage given for every town and every turn and landmark on the routes.

FULLY ILLUSTRATED AND DESCRIBED BY TEXT.

THE PLAN AND PURPOSE

THE METROPOLITAN GUIDE is a SPECIAL volume devoted to the territory practically within a hundred miles of New York City, though a few of the routes extend in a longer radius. It is meant for the Autoist who wishes COMPLETE touring schedules FROM and BACK TO NEW YORK CITY in sufficient variety to cover any section of the country in any way, with State lines practically ignored.

The territory covered, in brief, is New York City and immediate vicinity, with routes extending to Newburgh, Poughkeepsie and Pawling on the North; Danbury, Waterbury and Bridgeport on the East, including all Long Island routes to Greenwood Lake, N. Y., the Ramapo Valley, N. J., Morristown and Bernardsville on the West, and with extensions to Princeton, Lakewood and the North Jersey Coast to the South and West. The routes are uniformly in pairs, enabling any one of the same to be taken in either direction.

One great advantage of THE METROPOLITAN GUIDE is that each trip is planned throughout for the Autoist so clearly and precisely that he can easily travel without asking a single question; at the same time, by merely setting his odometer to correspond, it is possible to pick up the route at any intermediate point.

Bound in Genuine Leather, Price \$2.50 Prepaid

For Sale at all Leading Book Stores, Garages and by the Sole Publishers

THE AUTOMOBILE, (BOOK DEPT.) Flatiron Building, New York

Automobile Official Blue Book

Published in Three Volumes

SECTION NO. 1

New York Canada and West

622 PAGES

Size 5 1-2 x 9 1-2 inches

Covering New York State, Lower Canada, and Trunk Lines through to the Middle West.

Containing 328 Routes, covering 21,820 miles of Roads.

Fully Illustrated and described by Text, and

254 MAPS

96 Route Maps, 132 City Maps, 26 Full Page Maps, 5 Double Page Maps.

SECTION NO. 2

New England

534 PAGES

Size 5 1-2 x 9 1-2 inches

Covering New England, with Extension Routes into the Provinces.

Containing 285 Routes, covering 17,469 miles of Roads

Fully Illustrated and Described by Text, and

229 MAPS

137 Route Maps, 71 City Maps, 19 Full Page Maps, 2 Double Page Maps

SECTION NO. 3

New Jersey Pennsylvania South and West

478 PAGES

Size 5 1-2 x 9 1-2 inches

Covering New Jersey, Pennsylvania, Delaware, Maryland, and Trunk lines through the Middle West.

Containing 248 Routes, covering 16,983 miles of Roads

Fully Illustrated and Described by Text and

159 MAPS

65 Route Maps, 82 City Maps, 7 Full Page Maps, 5 Double Page Maps.

The most Complete Volumes of Touring Information ever published. All the Best and Most Popular Routes, and Best Accommodations in Hotels and Garages. Indispensable to Tourists. Bound in Genuine Leather, \$2.50 per Section, Prepaid

FOR SALE IN ALL LEADING BOOK STORES, GARAGES AND BY THE SOLE PUBLISHERS.

The AUTOMOBILE Blue Book Dept. **Flatiron Building, NEW YORK**

ROSS GEAR & TOOL CO.
 LAFAYETTE, IND.
 Manufacturers of
**New Tubular Steering Gear and
 Bevel Gears for Cambered
 Rear Axles**

We will not accept your contract unless we can give you the delivery you require. We will not accept more contracts than we can fill with proper attention to each. We make pressed steel frames and automobile stampings.
The Hydraulic Pressed Steel Co.
 Cleveland, Ohio

DIAMOND CHAINS
 drive their cars more miles per dollar cost than any others
 TRADE MARK
DIAMOND CHAIN & MFG CO.
 230 W. Georgia St. INDIANAPOLIS, IND.

PEUGEOT CHAINS
 Peugeot Chains—"Strongest in the World."
 296 Broadway, New York

Horchkin ANTI-JOLT
 Makes Rough Roads Smooth
 Horchkin Mfg. Co., 1767 Michigan Ave., Chicago

AUTOMOBILE SUPPLIES
 AT LOWEST PRICES
 Get our Illustrated Catalogue and save time, trouble and money
MANHATTAN STORAGE CO.
 1611 Broadway, New York

THE MOSLER Spit Fire Spark Plugs
 Are the Best
 A. R. MOSLER & CO.
 63 West 29th Street - New York City

HESS-BRIGHT BALL BEARINGS
 AMERICAN 19th AND HAMILTON STS. EUROPEAN
 PHILADELPHIA, PA

Automobile Gears

 If in a hurry, wire us
R. D. Nuttall Company
 Pittsburg, Pa.

KRUPP SPECIAL CHROME NICKEL STEEL
 Grade B. F. 60.0
 NOW IN STOCK AT NEW YORK
 THE BEST FOR MOTOR CARS, BOATS, ETC
THOMAS PROSSER & SON, 15 Gold St., N. Y.

DROP FORGINGS
 FOR AUTOMOBILE AND MACHINERY MANUFACTURERS
 TRADE MARK
 WE ALSO MANUFACTURE STEAM HAMMER FORGED HIGH GRADE CRANK SHAFTS EITHER ROUGH FORGINGS, OR COMPLETELY MACHINED.
ANDERSON FORGE & MACHINE CO.
 No. 18 STAUBIN AVE. DETROIT, MICH.

THE TURNER BRASS WORKS
 MANUFACTURERS OF
 ALUMINUM CASTINGS :: HARROUN AUTO BUMPER :: MARTIN FUEL STRAINER and special work to order.
 59 Park Ave., SYCAMORE, ILL.

GASKETS
 Intake and Exhaust Combination. Asbestos and Copper, or any material desired. Any size and shape.
 WRITE
Cito Konigslow Mfg. Co.
 Cleveland, Ohio

ALUMINUM BRASS AND BRONZE
 AUTOMOBILE CASTINGS
 Satisfaction Guaranteed
American Brass and Aluminum Works
 Indianapolis, Ind.

ALUMINUM PHOSPHOR BRONZE and BRASS CASTINGS
 FOR AUTOMOBILE WORK
PIONEER BRASS WKS., INDIANAPOLIS, IND.

MIDGLEY Steel Automobile Wheels and Pressed Steel Products
 Write for full information
Midgley Mfg. Co., Columbus, O.

QURIDE (REGISTERED) FILLED GEARS
 ARE SILENT RUNNING
 Let us tell you more about "QURIDE"
Picrome Hide Co., Syracuse, N. Y.

No Shock is Great Enough to Break or Buckle
Indestructible Steel Wheels
 You need them on your car
 Write and ask about them to the
Indestructible Steel Wheel Co.
 1304 Michigan Ave., Chicago

THE MAYO RADIATOR CO. HIGH GRADE
 NEW HAVEN, CONN.

COOLERS FENDERS HOODS TANKS

BRISCOE MFG. CO.
 DETROIT, MICH. U.S.A.
 EASTERN FACTORY, NEWARK, N. J.

EISEMANN-LAVALLETTE HIGH-TENSION MAGNETOS
LAVALLETTE & CO.,
 112 West 42d St., New York

THE BEST SPARK PLUG



BOUGIE MERCEDES
LEADS THE WORLD BECAUSE

It is absolutely proof against oil or soot—absolutely self-cleaning. It has an insulation of double stone—Guaranteed never to crack. It is the fastest plug made. It has no packing in the heat. The only plug suitable for high-tension ignition. We guarantee it for one year. Price \$2.00.

LARGEST STOCK OF

Asbestos-Copper Gaskets

In America. Over 600 sizes in stock.

HERZ & CO.

CIVIL ENGINEERS

203 Lafayette St. NEW YORK

Write for our "Vale Mecum of Ignition"—free—a catalog and reference book combined.

F. A. BROWNELL MOTOR COMPANY

GASOLINE MOTORS
of acknowledged superiority.
SUCCESSORS TO BROWNELL-TREBERT CO.
634-666 Lexington Ave., Rochester, N. Y.

"Rich" Spark Plugs



ARE BEST

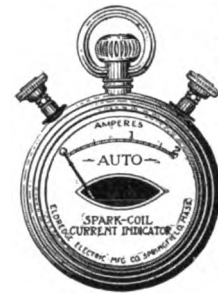
ASK FOR CIRCULAR

\$1 Prepaid. Discount to Dealers.

Richardson Engineering Co.

Hartford, 50 Ford Street Conn.

POCKET Battery Ammeters



Voltmeters and Volt - Ammeters, Current Indicators for Spark Coil Testing. Small Switch-board Instruments, Etc. Accurate, Durable. Largest Makers in U. S. A. Sold by Jobbers and Dealers.

ELDRIDGE ELECTRIC MFG. CO.
33 Post Office Sq., Springfield, Mass., U.S.A.

Here's the Stuff



Dixon's Motor Graphite helps compression in cylinders, quiets noise in gears, makes smooth running throughout. Booklet 9 G tells how to use it. Write for free copy.

JOSEPH DIXON CRUCIBLE CO.
JERSEY CITY, N. J.

McCord FORCE FEED LUBRICATOR

"The Mark of a Good Motor Car"

RADIATORS • CARBURETERS
MCKIM
COPPER-ASBESTOS GASKETS

McCord & Company

1404-1408 Old Colony Bldg., Chicago
New York Office: 44 Broad St.



Reliance

SPARK PLUGS
SPARKS IN WATER

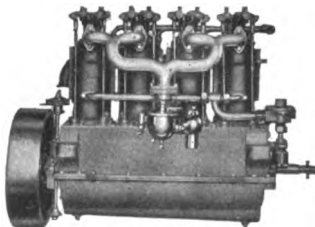
Conclusively proving
INFALLIBILITY

Our price is \$2.50 each, BUT you wouldn't part with them for their weight in gold if you couldn't get another

Perfect Satisfaction
Unlimited Durability

JEFFERY-DEWITT CO.
217-219 High St., Newark, N.J.
Department B

"The NORTHWAY is the BEST way" Northway Motors deliver the Power



Northway Model "H" for 1908 5"x3"—40 to 45 H.P.
Send for descriptive bulletin of our Motors, Transmission Gears and Clutches
Let us estimate on work from your designs.
NORTHWAY MOTOR & MFG. CO.,
G. T. R. R. and Maybury Ave., DETROIT, Mich.

The Best of EVERYTHING for EVERYBODY

That Ever Drives a Motor Machine

WRITE FOR CATALOGUE 70

EXCELSIOR SUPPLY COMPANY

Established 1876

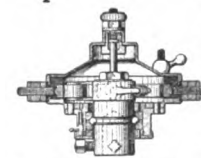
233-235-237 Randolph Street
CHICAGO

IF YOU WANT THE RIGHT-OF-WAY USE THE LONG DISTANCE SIREN



WRITE FOR OUR BOOKLET TELLING YOU Why Its Always Heard. How Prevents Accidents. How It Clears the Road. Why Never Out of Order. You may have the roar of a lion or the purr of a kitten. You get the road to yourself. Everyone turns out and gives you the right-of-way. Beautifully finished in polished brass and aluminum. An ornament to any car. Stewart & Clark Manufacturing Company 506 Diversey Boulevard, Chicago, Illinois.

THE LEAVITT Improved Wipe Contact Timer



To meet a demand for a wipe contact timer we have improved upon the well-known Lacoste Timer by adding a supplementary ground terminal and an adjustable ball-bearing in place of the plain bearing. This eliminates the two principal faults of this timer, i.e., poor ground and wobbling after running a short time, both of which will cause skipping when running at high speed. The above faults are usually ascribed to the plugs, coils or carburetor.

Send for Catalogue and prices.
THE UNCAS SPECIALTY COMPANY
Norwich, Conn.
New York Office, 1691 B'way. Tel., 5846 Col.

ALUMINUM BODIES
J. M. QUINBY & CO.
 Est. 1834.
 NEWARK, N. J.
 Carriage Builders

Now booking 1908 orders.
 Write us for prices.

BODIES

We build in the White or finished complete; all styles, all sizes.

MILLER BROS., Amesbury, Mass.

Auto-Top Fabrics
 OF EVERY DESCRIPTION
 Samples and Price List on request
L. J. MUTTY CO., Boston

High Grade Auto Tops Our Specialty
 Also Slip Covers, Lamp Covers, Tire Covers, Tool Cases, Dust Hoods and Foot-rests.
 Write for Catalogue and Prices
WARNER Pole & Top Co.
 1652 Central Ave., CINCINNATI, OHIO

AUTO BODIES
 Limousine, Landaulet
 Touring Car
 Tops, Painting, Trimming, Changing, Repairing; Correspondence Invited
S. C. Pease & Sons, Merrimac, Mass.

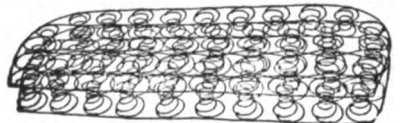
Myers Perfect Fitting Tops
 Tops of Known Quality—Tops with a Reputation Behind Them
 Send for Samples of Materials and New Catalogue
MYERS AUTO TOP CO., Dayton, O.
 Automobile Tops of Every Description
 Get our prices on Tire Covers

The Automobile Handbook
 A practical book for owners, operators, and mechanics. Includes road troubles, motor difficulties and other contingencies and how to handle them. By L. ELLIOTT BROOKS. 320 pages. Numerous illustrations. Full leather, limp. Price, \$1.50. Address The Automobile, Flat-iron Building, New York.

AUTOMOBILE TOPS AND TRIMMINGS

N. H. SNOW
 Binghamton, N. Y.
 Write for prices.

LASCO FOLDING GLASS FRONT
 Simple, effective, correctly designed mahogany finish wood frame—trimmed in brass—3/16 crystal plates—steel stay rods—bottom of frame shaped to dash of any standard automobile—can be attached easily and quickly. We make the London Tops. Write for details and prices.
London Auto Supply Co., 1221 Michigan Ave. CHICAGO


Cushion Spring (Wing Pattern) for Auto Seats
ALL AUTOMOBILE TRIMMINGS
CHAS. WING CO. Amesbury, Mass.

STANDARD TRUNK RACK
 Double folding, made of Best Steel, and finished in Black Enamel. PRICES RIGHT.
CONNECTICUT STEEL & WIRE CO.
 HARTFORD CONN.


AUTOMOBILE TOPS
 \$14.00 AND UPWARDS
 Write for Catalogue and Prices
BUOB & SCHEU
 Court and Spring Streets Cincinnati, Ohio

Let us send you a **DUPLEX COIL** to use on your car 30 days free in place of your present coil. If the Duplex Coil doesn't cure 90% of your engine troubles, send it back collect, and replace your old coil. Write on your business stationery, giving name of car, number of cylinders, and any good reference and we'll send you a Duplex Coil by first express. Address Station N. 1 Duplex Coil Co., Fond du Lac, Wis.

TRUNK RACK \$12.50
 In ordering give Model and Name of Car
TRUNKS TOOL BOXES ROBE RACKS
 Standard Trunk enameled duck, leather-bound, hand sewed
 Price \$20
John A. Mason, Newton, Mass.

The Oldest Manufacturer-ers of Bow Sockets in the World

Bow Socket Company
 Ashtabula Ohio


Radium Decarbonizer
 chemically removes carbon from cylinders, piston valves and rings
 Increases Power 20 Per Cent. Volatilizes carbon, in which form it passes out exhaust. Injury to metal work impossible. Agents wanted in certain localities. Write to-day for particulars.
GENERAL ACCUMULATOR & BATTERY CO., 150 2d St., Milwaukee, Wis.

ALUMINUM and STEEL BODIES
Springfield Metal Body Co., Springfield, Mass.


THE 3 BEST
 Divided
Windshields
VOLTZ BEECHER SCHILDBACK
 A shield for everyone Write for prices
 Limousine Carriage Mfg. Co.
 3511 Michigan Av., Chicago

GOLO FACTS served without HOT AIR
The BULLARD Speedometer
 has ALL the good points advertised by others and some peculiar to itself. We are proving it every day, let us prove it to you.
 If you can find a better Speedometer, buy it.
J. H. BULLARD
 Speedometers and Speed-recorders
HIGHLAND STATION, SPRINGFIELD, MASS.

AUTOMOBILE BODIES
 Most approved designs.
 Best workmanship.
 Moderate prices.
CENTRAL BODY CO., Connersville, Ind.

Blasier Tops and Fronts

 For the best and most practical. Exclusive Blasier features and quality.
 Write for Catalog and price list.
M. E. Blasier Mfg. Co., 69 Columbia St., Utica, N. Y.


Empire Wheel Works
 JOHN E. JONES, Proprietor
 Manufacturer and repairer of Artillery Wood Wheels for Automobiles
 My specialty is making wheels without the hubs,
 174 South St., Utica, N. Y.

THE HOFFECKER
 Stands for the BEST in Speedometers. Positively the HIGHEST GRADE and, quality considered, the CHEAPEST. Unrestricted guarantee with every one. Inspection invited. Looks the best—Made the best—Operates the best.
THE HOFFECKER COMPANY
 Motor Mart, Park Sq., Boston, Mass.

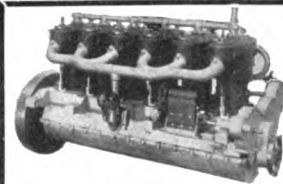
MODEL D--UNIVERSAL CARBURETER
 Operates both two-cycle and four-cycle engines with equal facility at all speeds. Full particulars on request.
Speed Changing Pulley Co., Indianapolis
 75 Washington Street

"THE CAR THAT CONTINUES TO MAKE GOOD"

Acme

ACME MOTOR CAR COMPANY, Reading, Pa.

THE CAR De Luxe



Assemble your 6 cylinder car. Write for circular

HOWARD MOTOR WORKS, Yonkers, N. Y.

ADAMS-FARWELL

\$3,250

with top and two extra seats \$3,500

The Car With Revolving Air-Cooled Motor

THE ADAMS CO.,

Foot of Third Street, DUBUQUE, IOWA

1908 **DORRIS CARS**

Dorris Motor Car Co. ST. LOUIS, MO.

A SUPERB LINE OF CARS—**The JACKSON**

"No Sand too Deep—No Hill too Steep"

2 Cyl. and 4 Cyl.

Runabouts, Roadsters, Touring Cars

15 H. P., 24 H. P., 35 H. P.

Prices \$850, \$1,250, \$1,500, \$2,000

Jackson Automobile Co., Jackson, Mich.

AUBURN

1908 5-PASSENGER TOURING CAR \$1,350

"The Most for the Money" in Size, Style,

Power and Service. 100-in. Wheel Base.

Pressed Steel Frame. 32-in. Wheels. 5 1/2 x 5

double opposed Motor. 24 H. P.

AUBURN AUTOMOBILE COMPANY

Auburn, Ind.

SOME IN THE RANKS protested Napoleon was not great—they spoke to the rhythm of the march as they followed him.

FORD.

LOGAN 1908

MODEL T ONE TON TRUCK

A truck equipped with a four-cylinder, fair-cooled, 20 H. P. Motor, built for service and fitted to carry its load day in and day out under all conditions.

For detailed description address

THE LOGAN CONSTRUCTION COMPANY Chillicothe, Ohio

Just as Good as a **CADILLAC**

That's the comparison made by salesmen for other cars.

WHY?

FRAYER MILLER

The Car of Endurance

Cooled Through Air Jackets. AN AMERICAN PRODUCT. Imitating No Foreign Car.

Oscar Lear Automobile Co. COLUMBUS, OHIO

THE MARMON

"A Mechanical Masterpiece"

For catalog, address Dept. 12

Nordyke & Marmon Co., Indianapolis, Ind. (Estab. 1851)

'08 **Cameron** 2-Passenger Light Touring Car. Three Forward Speeds and Reverse. '08 Catalogue ready

CAMERON CAR CO., Brockton, Mass.

ADDRESS Eastern Inquiries Garford Motor Car Co. of New York 1540 B'way, N. Y. C. Western Inquiries Garford Motor Car Co. of Cleveland 1370 E. 12th St., C'land

"The Best in Motor Cars"

Palmer & Singer Mfg. Co. 1619 Broadway, N. Y.

The Chadwick CARS AND MOTORS

Made by

Fairmount Engineering Works

3207 Spring Garden St., Philadelphia

SEARCHMONT REPAIR PARTS FOR SALE

Grout Gasoline Cars CATALOG READY GROUT BROS. AUTOMOBILE CO. Orange, Mass.

BEFORE YOU BUY A CAR

Telephone a Mitchell agent and tell him you want to be shown the "silent argument" the Mitchell offers in demonstration. He'll be glad to show you—call him up—it's worth money to you if you are thinking of buying an automobile. (No obligation.)

MITCHELL MOTOR CAR CO., 302 Mitchell St., Racine, Wis.

COLT RUNABOUT CO. 1876 BROADWAY, N. Y.

Hatfield "Buggyabout"

The buggy type Automobile of the future

HATFIELD MOTOR VEHICLE CO. MIAMISBURG, OHIO

The Automobile of **MONARCHS**

The **MONARCH** of Automobiles

MONARCH MOTOR CAR CO.

Chicago Heights - - Illinois

The Greatest Value Ever Offered **\$1750** 4 Cylinder 30 H. P. Motor **CORNISH-FRIEDBERG MOTOR CAR CO.** 1233 Michigan Avenue CHICAGO

HAYNES ALWAYS HAS A PERFECT SCORE **HAYNES AUTOMOBILE COMPANY KOKOMO, IND.** Oldest Automobile Manufacturers in America Members A. L. A. M. New York, 1715 B'way Chicago, 1702 Mich. Ave.

Moon Cars IF YOU HAVE NOT SENT FOR OUR CATALOGUE DESCRIBING OUR WONDERFUL LINE, WRITE ME AT ONCE **JOS. W. MOON, Pres., ST. LOUIS**

OLDSMOBILE
 You see them wherever you go
 They go wherever you see them
OLDS MOTOR WORKS
 Lansing, Mich.
 MEMBER A.L.A.M.

PIERCE-RACINE
 1906 MODELS
 40 H. P., 4 Cyl. Model D, \$3,000
 30 H. P., 4 Cyl. Model E, \$2,000
PIERCE ENGINE CO., Racine Wis.

The **Stearns** SEND FOR CATALOG
F. B. Stearns Co.
 2970 Euclid Avenue,
CLEVELAND, OHIO. 30-60 horse-power



Studebaker
 Good Cars for Good and Bad Roads
Studebaker Automobile Co., South Bend, Ind.

 **\$250 Original Motor Buggy**
\$400 for 12 H.P. Top \$25 extra
 Over 400 in use. Invented by an engineer after 10 yrs. labor in auto work. Speed 4 to 40 miles per hour. 50 to 100 miles on one gallon of gasoline. Will climb steep hills and run in mud and sand. Guaranteed for one year. Write for catalogue, testimonial letters, etc.
Success Auto Buggy Mfg. Co. (Incorporated)
 528 De Baliviere Ave., St. Louis, Mo.

Manufacturer to Consumer
1907 CAR
30 H. P., Price, \$1,850
 SEND FOR CATALOGUE
TREBERT GAS ENGINE CO.
 35 FORD STREET ROCHESTER, N. Y.

COMPLETE WITH TOP
Wayne **\$2500**
NOTHING TO BUY BUT A LICENSE

Don't Start a Touring Without
 A Bottle of
THOMPSON'S EYE WATER
All Druggists

Add-Wear
 Attached and Detached Treads
 Add-Wear Tire Sleeves
ADD-WEAR AUTO TIRE SLEEVE CO.
 N. ATTLEBORO, MASS.

AJAX WRAPPED TIRES
 TREAD
GUARANTEED FOR 5,000 MILES RIDING
 Write for copy of Guarantee. Dept. C
AJAX-GRIEB RUBBER CO.
 General Office, 57th St. and Broadway, New York
 Agents in all large cities.

"They're Specifying"
Continental
TIRES
 on 1908 Cars."
CONTINENTAL CAOUTCHOUC COMPANY
 43 Warren Street, New York
 Representation Everywhere.
 "Keep your Eye on Continentals"

Diamond
Tires are the best
THE DIAMOND RUBBER CO.
 AKRON, OHIO

"Firestone"
SIDE-WIRE SOLID MOTOR TIRES
 THE WORLD'S STANDARD
FIRESTONE TIRE & RUBBER CO.
 Akron, Ohio

Expert Tire Repairing
 IN LARGEST TIRE FACTORY
 IN NEW YORK CITY
TIRES CALLED FOR AND DELIVERED
Healy Leather Tire Co.
 1906 BROADWAY, 90 GOLD ST., NEW YORK

The New Motz Non-Skid Cushion Tire
 Fits Universal and Standard Clincher rims. We furnish a tool for applying. Send for circular J
The Motz Clincher Tire & Rubber Co.
 Akron, Ohio



PIRELLI 
 That Wonderful Italian Tire
 276 BROADWAY, NEW YORK

DEALERS !!!
 This is especially for YOU!

EASY SALES HANDSOME PROFITS
 Nothing will yield better or more profitable results than the "CONTINENTAL" ROADSTER Agency. No car in the market equals the "CONTINENTAL" in any one of the points that compete business—QUALITY, DESIGN, MODERATION of PRICE, and LASTING GUARANTEE. Everything of the latest and best contributing to the motorist's comfort and desires is represented in the "CONTINENTAL" car. Moreover, profits are substantial and "CONTINENTAL" cars superiority is so pronounced that sales are easy—which means a healthy growth of your business—otherwise SUCCESS.



"CONTINENTAL" ROADSTER
 Price, \$900
 The greatest value in the automobile world for the money. Write for full particulars to-day.
CONTINENTAL MOTOR CAR CO.
 209-217 Robey St. Chicago, Ill.

The Practical Gas Engineer
 WHAT TO DO AND HOW TO DO IT.
 A book of 150 pages, neatly bound in cloth. Sent postpaid for \$1.00. Address The Automobile, Flatiron Building, New York.

Rainier
 "The Pullman of Motor Cars"
 1908 Models
 Ready for delivery
RAINIER MOTOR CAR CO.
 Broadway, corner 50th Street, New York

SAMSON TYPE COURSE
NON-SKIDDING
NON-PUNCTURABLE
STRONGEST ON EARTH
SAMSON LEATHER TIRE CO.
 G. de Pontac, Gen'l Mngr.
 1634-42 BROADWAY, Cor. 50th ST.
 NEW YORK

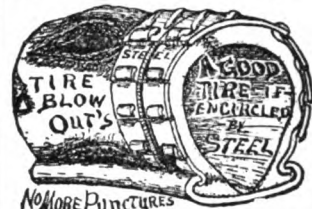
Empire Tires

WEAR LONGEST

EMPIRE AUTOMOBILE TIRE CO., Trenton, N. J.

NEW YORK—148 Chambers St. and Broadway and 73d St. CHICAGO—40 LaSalle St. and 1615 Wabash Ave. BOSTON—99 Devonshire St. BUFFALO—9 West Huron St. PENN AUTO SUPPLY CO., Philadelphia, Pa. FOBES AUTO SUPPLY CO., Portland, Ore. FOBES AUTO SUPPLY CO., Seattle, Washington. WAITE AUTO SUPPLY CO., Providence, R. I. DENVER AUTO GOODS CO., Denver, Col.

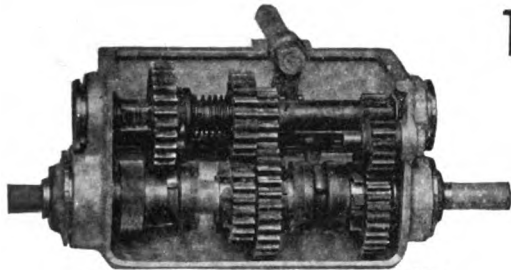
Protect Your New Tires. Repair the Old One



Tires Will Last Forever
Steel Link Bands
Hooks to Rim

NO MORE PUNCTURES
You can fix Blowout quick. If tire is completely covered by these clasps you cannot have Blowouts, Punctures, Rim Cuts or wearing off of tire. As flexible as ever. ANTI-SKID.

KIMBALL TIRE CASE CO.
171 BROADWAY, COUNCIL BLUFFS, IOWA
State Agent for Indiana:
O. H. ROGERS, 415 Mass. Ave., Indianapolis



Shaft Rotating on High Speed-- Gears Idle

The Cotta Transmission

Strength, Durability and ease in handling the lever are its greatest advantages. The jaw clutches do away with gear stripping and make control perfect.

For information write
CHAS. COTTA, Rockford, Ill.

THE STANDARD GARAGE EQUIPMENT FOR GASOLINE STORAGE

THAT'S THE **BOWSER**
Send for Catalog J

S. F. BOWSER & CO., Inc., Fort Wayne, Ind.
NEW YORK BOSTON CHICAGO TORONTO

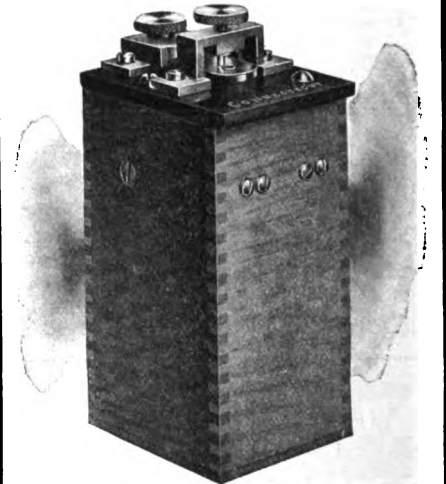
WICO Adjustable Spark Plug



Guaranteed one year. Witherbee Igniter Co., 541 W. 43d St., New York

\$1.00 Each

The UNIT SYSTEM



What it Means to the User of the

CONNECTICUT

COIL

Each coil individual
One unit to each cylinder
All units interchangeable
Each unit self-contained
No tools to remove a unit
No disconnecting of wires
Simply throw retainer spring forward
Then lift unit from case
Replace unit in 20 seconds.

A Distinctive Feature of the
CONNECTICUT COIL

Send for Catalog No. 13 B
The Connecticut Telephone & Electric Company, Inc.
50 Britannia St., Meriden, Conn.



WEED'S CHAIN TIRE GRIPS

NECESSARY AS GASOLINE

Positive Traction Prevents Skidding

Ask Any Experienced Driver and You Will Buy a Pair.

SOLD EVERYWHERE

WEED CHAIN TIRE GRIP CO.

28 Moore Street NEW YORK



The "Vulcan" Sta-Rite Spark Plug

KEEP THE LID ON

or Maxwells, Mitchell's, Autocars, Americans, Glides, etc., in their contests. They'll do as well for you.

Send for sample set

The R. E. HARDY CO., 86 Water St., N. Y. City

Separable 1/2 inch \$1.25

"CLEANOLA"

SAMPLE FREE

We want to convince every car owner, chauffeur, manufacturer and dealer in the United States that

"CLEANOLA" OIL POLISH

is superior to anything in the world for cleaning, brightening and renewing the fine finish, and restoring the surface and "shine" of the varnished wood and metal work, leather trimmings, cushions and tops of your car after each run, and giving them the surface and finish they wore when new, thereby prolonging their life and greatly improving their appearance. If you are not already a user of "CLEANOLA" we will send you a sample free of any expense to you, that you may test its value and prove our claims.

Write to-day. A request carries no obligation. All inquiries answered promptly.

The Cleanola Company Dept. 53 W. Van Buren St., Chicago "D" 1101 Fulton Bldg., Pittsburgh



Construction of a Gasoline Motor Vehicle

By C. C. BRAMWELL. Contains 150 pages, 6 x 9; one hundred illustrations and diagrams. Publisher's price, \$2.00; our price, 50 cents. Address The Automobile, Flatiron Building, New York.

CORK INSERTS

(PATENTED)

are used in Clutches and Brakes by 44 leading motor car builders for the increased efficiency they give

Write for particulars

NATIONAL BRAKE AND CLUTCH CO., 16 State Street, BOSTON

HOPEWELL TIRE GAGE

ALL COLORS ALL SIZES



HOPEWELL BROS
MANUFACTURERS OF TIRE GAGES
137 GARDNER ST. BOSTON, MASS.

TRIUMPH GAGE

for GASOLINE TANKS



THE ONLY RELIABLE WARRANTED TANK GAGE. USED ON ALL PIERCE ARROW, WHITE, MATHESON, AUSTIN, ROSS AND OTHER CARS. Send for circular

Boston Auto Gage Co.
10 Waltham Street BOSTON, MASS.

MOTORS AND MOTORING

By HENRY J. SPOONER, C.E.

THIS is undoubtedly the best book for the owner or intending purchaser who desires to get a good practical idea of the how and why of automobile construction and operation without having to read a great mass of highly technical literature. It is written in a simple condensed style and the text is well illustrated by diagrams. A work vastly superior to the numerous cheap and inaccurate compilations on the market. In cloth covers, 113 pages, 5x7 ins.

Price, One Dollar, Postpaid

The CLASS JOURNAL COMPANY
Flatiron Building New York City

Pittsburg Six

FOUR MODELS

6 Cyl. 50 H.P.		6 Cyl. 50 H.P.
Model D,		Model A,
\$2,500		\$1,850
Model B,		Model C,
\$1,950		\$2,050



If you can find just as good a car buy it, but don't fail to investigate the merits of this car before purchasing.

We guarantee our product 365 days; our profits are small, but the proposition is a big one to the purchaser. It is a foreign car made in the United States.

EQUIPMENT. Sims Bosch high tension magneto, radiator contour, 324 square inches of braking surface, Michelin tires, selective type transmission, La Coste jump spark, annular bearings throughout; chrome nickel steel is used only.

RUNABOUT, ROADSTER, TOURING ROADSTER, TOURING CAR.

FORT PITT MOTOR MFG. CO., New Kensington, Pa.

MICHELIN

FRANCE. ENGLAND. ITALY. AMERICA.

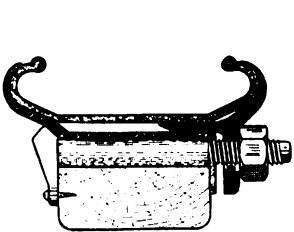
THE use of tire chains has been prohibited by law in New Jersey, in many of the best motoring sections of New York, and pending legislation promises to make general the restrictions on their use. At the best, tire chains were but a makeshift, liable to be harmful in the end to the tires they were meant to save. The most effective and most practical preventive of skidding is the

Michelin Clincher Tire, Anti-Skid Type



Michelins can be used on any of the universal rims and on all of the world-known Detachable Rims

This Anti-Skid type, with steel rivets and LEATHER tread, sacrifices less of its resiliency than any other made, as the leather does not cover the side walls, but protects the wearing tread only, the side walls being the same and retaining the celebrated flexibility of the other Michelin types. In its qualities of durability and reliability it has a record placing it far beyond competition, as this is the type which was used on the winning car in the Vanderbilt Cup Race in 1906 and on the winning cars in all the world's important events from that time to date, except the 1907 Grand Prix in which the New Michelin Compressed tread on Michelin Demountable Rims was victorious.



Cross Section, Michelin Demountable Rim



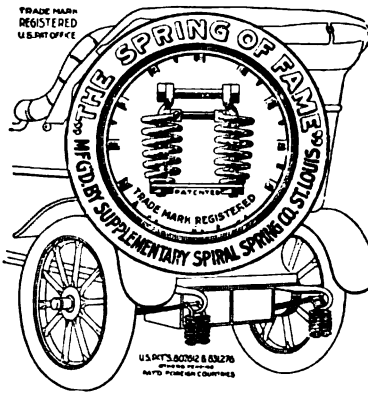
Cross Section, Michelin Quick Detachable Rim, with rings used with quick detachable type tire



Cross Section, Michelin Quick Detachable Rim, with rings adaptable to clincher type tire

See them at Importers Salons

MICHELIN TIRE CO., Milltown, N. J.



WORTH THEIR WEIGHT! IN GOLD TO ANY CAR

Over 10,000 Cars Equipped

The only practical cure for hard riding cars, relieving the body of all shocks and jars. No more broken side springs. Fully patented and fully guaranteed. See our exhibit at the shows—or send for 1908 booklet and read what other people say. It's interesting.

Beware of worthless makeshift imitations that infringe our patents

Supplementary Spiral Spring Co., Inc.
4529 Delmar Avenue, St. Louis, Mo.

BRANCHES:

NEW YORK, 52 W. 67th St.
BOSTON, 998 Boylston St.

CHICAGO, 1712 Michigan Ave.
(Page & Palmer)
Pacific Coast, LOS ANGELES

Interesting Propositions for Unoccupied Territory



YOU SHOULD HAVE A
"HANS"
GASOLINE INDICATOR

ON YOUR DASH

REASON 1. Because it indicates the exact amount of gasoline in the tank at all times.

REASON 2. Because you will never be deceived as to measurement when buying gasoline, and you know at all times on tour how much you have in your tank and how far it will go.

REASON 3. Because the "HANS" Indicator is absolutely perfect in mechanism and operation, and so simple it cannot get out of order.

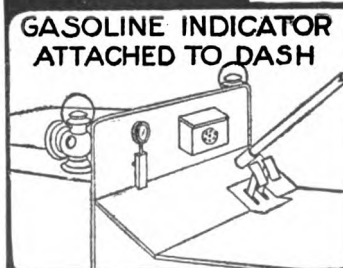
REASON 4. Because it is easy to attach and is an ornament to any car. The Gauge is just as necessary on motor boats as on automobiles, and is just as easily applied.

REASON 5. Because the material and workmanship are of the best.

REASON 6. Because it is not a luxury, but an absolute necessity.

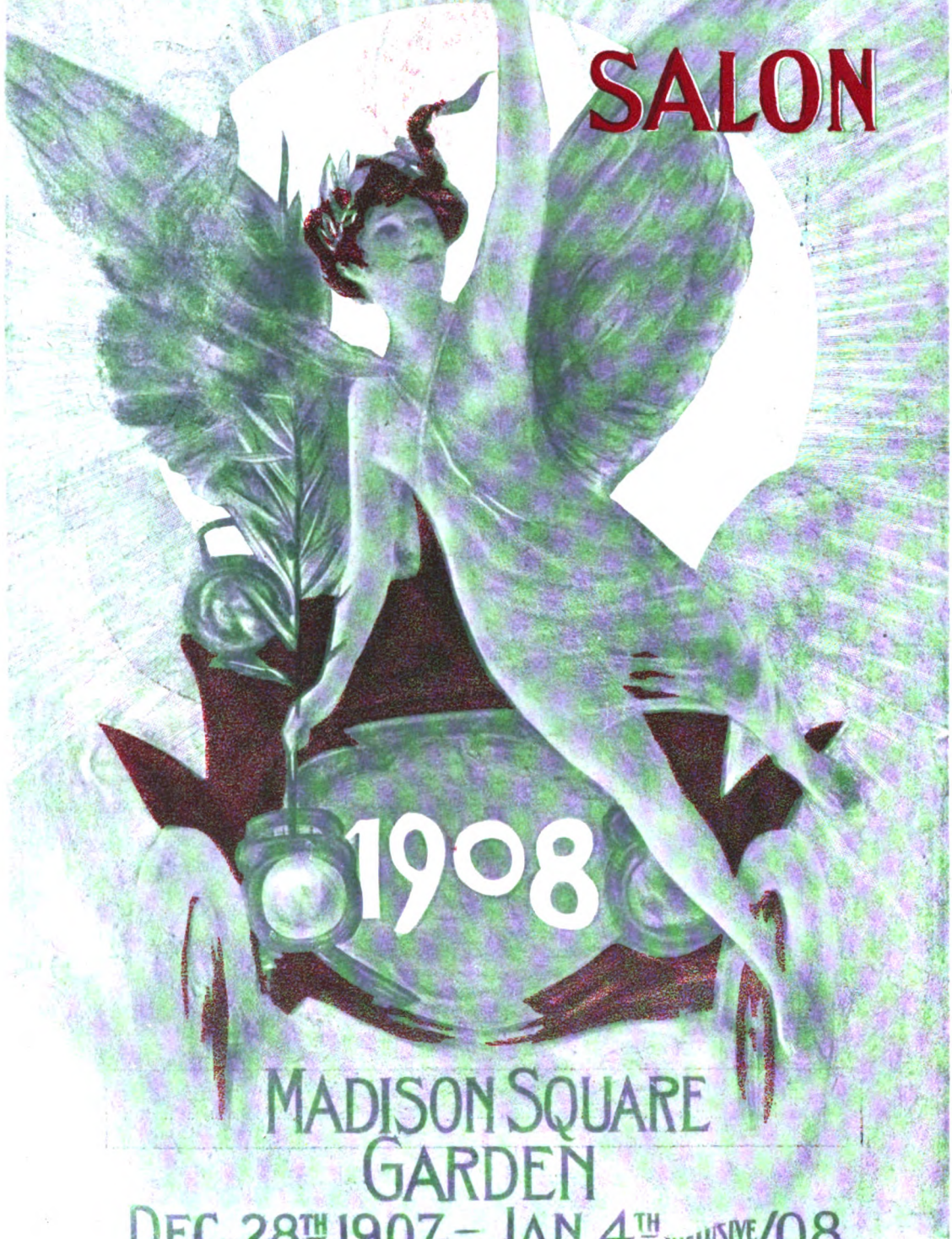
The "HANS" Indicator is the Best Made

Write to-day for full particulars and prices.
Sold by dealers and supply houses everywhere.



EDMUND E. HANS CO.
Minneapolis, Minn.

IMPORTERS' AUTOMOBILE SALON



1908

MADISON SQUARE GARDEN

DEC. 28TH 1907 - JAN 4TH INCLUSIVE /08

Renault — Maja — Delaunay-Belleville — Panhard
 Motor Car Equipment Company
 Robert Bosch — Auto Supply Company



MAJA

Pronounced

"My-yah"

The sister of Mercedes

is the latest improved product of the Daimler Motoren Gesellschaft, makers of the Mercedes cars, named by Herr Jellinek for his daughter, Miss Maja Jellinek, just as he named his earlier model for Miss Mercedes Jellinek.

The Maja Motor is the simplest, most powerful for size and the quietest in the world—exhibiting features that will as surely advance the art of motor-car making as did the previous revolutionary productions of these famous works.

For 1908 these advantages are to be had only by using a Maja car.

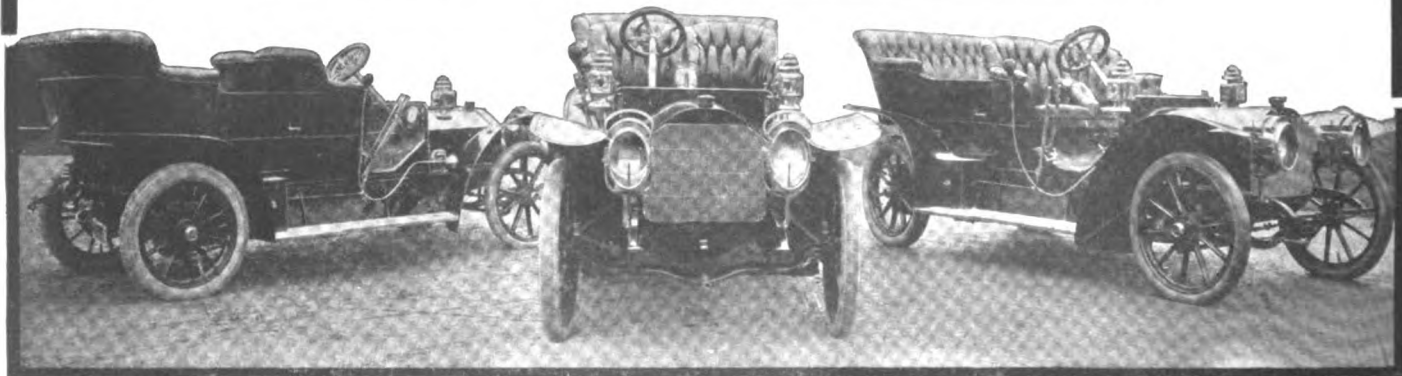
The Maja car is placed within reach of all lovers of good automobiles by marketing through direct branches of the parent Company, avoiding all middlemen and agents, charging one normal profit over the expenses of manufacturing, whereby the most costly models the Daimler works have ever made, become the lowest in price to the purchaser.

Full particulars from the American Branch of the Maja Company, Ltd., 230 West 58th St., New York. Tel.—1393 Columbus. Other Offices and Branches:

London, Paris, Stuttgart, Hamburg, St. Petersburg.

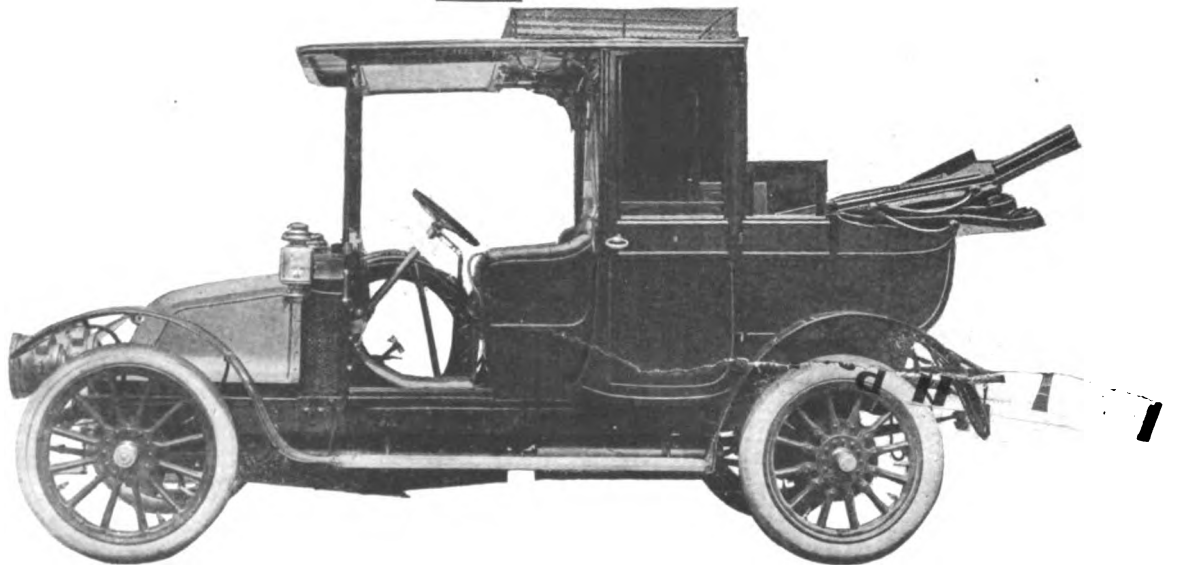
You are invited to attend "Maja's" debut at the Importers' Automobile Salon from December 28 to January 7, at Madison Square Garden, New York.

As is befitting, "Maja" has been assigned the leading position in the Show, immediately at the left of the main entrance. Space A1.



RENAULT

"The Car"



STYLE SILENCE SPEED SIMPLICITY

All Over the World the Renault is To-day the Acknowledged Standard of Automobile Perfection

In the famous 24-hour race at Morris Park the Renault, with a stock car and without a single adjustment, broke all world's 24-hour records for a single car in competition on a mile track, making 1,079 miles, defeating the nearest competitor by 107 miles

RENAULT PRICES:

50-60 H.P. 6-Cyl. Chassis.....	\$8,250	20-30 H.P. 4-Cyl. Touring.....	6,250
35-45 H.P. 4-Cyl. Runabout.....	7,250	20-30 H.P. 4-Cyl. Limousine or Landaulet...	6,750
35-45 H.P. 4-Cyl. Touring.....	7,750	14-20 H.P. 4-Cyl. Chassis.....	4,250
35-45 H.P. 4-Cyl. Limousine or Landaulet..	8,250	10-14 H.P. 4-Cyl. Taximeter Cab.....	3,950
20-30 H.P. 4-Cyl. Runabout.....	5,750	8-10 H.P. 2-Cyl. Taximeter Cab.....	2,750

DO YOU BELIEVE IN RELIABILITY?

These gentlemen do. They have ordered 35-45 H.P. Runabouts, duplicates of record-breaker:

- | | | | |
|-----------------------|------------------|---------------|---------------|
| W. K. Vanderbilt, Jr. | L. S. Thompson | R. J. Collier | H. P. Whitney |
| E. R. Thomas | E. F. Hutton | Roy Rainey | Payne Whitney |
| Robert Guggenheim | Willis McCormick | F. W. Savin | W. E. Dodge |
| J. L. Livermore | | G. A. Ellis | |

These men know about cars—why not follow them?

RENAULT FRÈRES SELLING BRANCH

PAUL LACROIX, General Manager Telephone, 3004 Columbus

57th Street and Broadway, New York

RENAULTS will be shown only at Importers' Salon, Madison Square Garden, December 28 to January 4

PANHARD & LEVASSOR AUTOMOBILE CO.



NEW MODELS NEW PRICES

8-11 H. P. } For
10-15 H. P. } City Use
15-20 H. P. }

18-24 H. P. } For
25-35 H. P. } Touring
40-50 H. P. }

Six Cylinder 35 H.P. Special Built for Speed.

Reporters' Salon
Madison Square Garden

Panhard & Levassor Automobile Company
1881 Broadway and 62d Street, N. W. Corner, New York City

Telephone 4977 Columbus

PRACTICAL ARTICLES FOR THE AUTOMOBILISTS

Smooth-On Iron Cement

The Smooth-On Iron Cements are chemical iron compounds, that withstand fire, water, gasoline, steam or oil. When hard they become a metallic iron that expands and contracts the same as iron. This makes them valuable for making many repairs. A few of interest to automobile owners are:

Cracked Water Jackets,
Leaky Radiators,
Leaky Screw Thread Joints,
Leaky Exhaust Pipes and Mufflers,
Loose Nuts, etc.

Every automobile owner should carry a Smooth-On Repair Package. It contains a one-pound can of Smooth-On Iron Cement No. 1, a one-pound can of Smooth-On Elastic Cement and the Smooth-On Instruction Book, which tells when, where and how to use the different Smooth-On Iron Cements. The cost is one dollar, and it may save you many dollars' worth of time and trouble. Send for a package to-day. \$1.00 f.o.b. N. Y. City.



Metric Wrenches



These wrenches are made of the best steel milled exact to given size, perfectly hardened and finely finished.

No.	Opening Small End	Opening Large End	Price
201	6 Millimeters	10 Millimeters	\$0.35
221	8 "	13 "	.40
231	11 "	16 "	.50
241	12 "	18 "	.60
251	14 "	22 "	.70
261	20 "	25 "	.80

Price, complete set, \$3.00

Combination Oil Can and Funnel



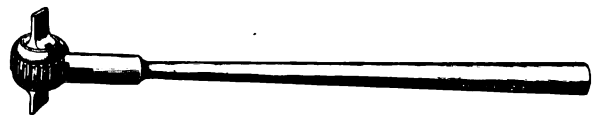
Allows the oil to be poured directly into any receptacle. Made in tin and copper.

Price
Tin Cop-
per
1/2 pt. 20 65
1 pt. 25 80
1 qt. 30 1.10
2 qt. 60 2.00
1 gal. \$1 33

Auto Ratchet Screwdriver

Makes it possible to operate on screws totally inaccessible with the ordinary tool. Has two blades. Quicker than regular screwdriver for ordinary use.

Price, \$1.50

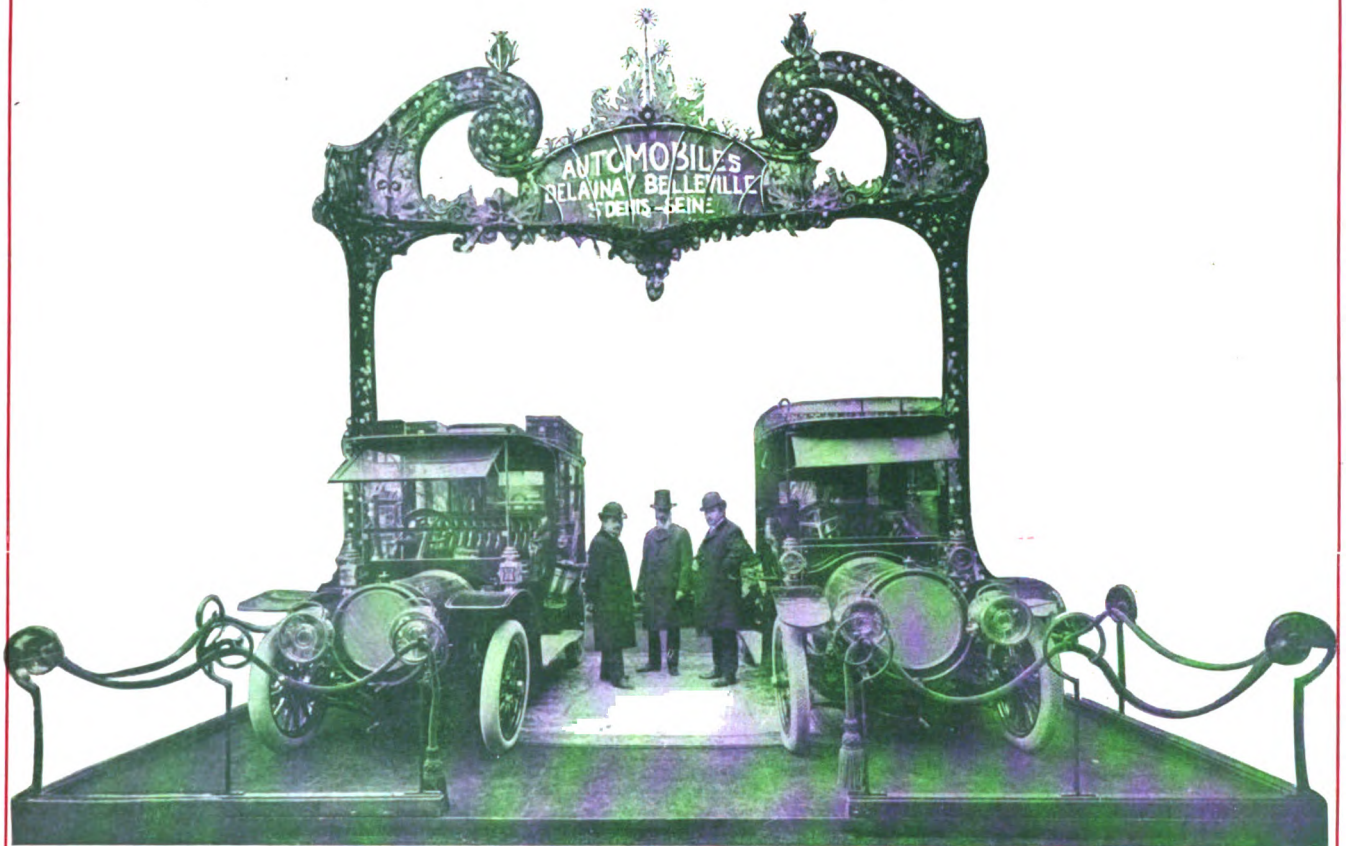


These are a few of the many articles illustrated and described in our 112 page catalogue. Send for it.

AUTO SUPPLY CO., 1733-1737 Broadway, New York City

Palais de l'Automobile

1778 BROADWAY



SEASON 1908

	PRICE
15 H. P., 4 cylinder, shaft driven	\$3,600
15 H. P., 6 cylinder, shaft driven	4,050
20 H. P., 4 cylinder, shaft driven	4,500
28 H. P., 4 cylinder, chain driven	5,100
40 H. P., 4 cylinder, chain driven	6,300
40 H. P., 6 cylinder, chain driven	7,200

At the tenth Paris Salon, just closed, the only Gold Medal, being the highest honor given in the competition between all the exhibitors for the most perfect finish of their cars, was awarded to the

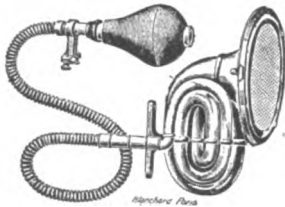
Delaunay-Belleville

EXHIBITED AT SPACE Q24 IMPORTERS' SALON

LARGEST AMERICAN IMPORTERS

Blanchard Horns

21 Styles
of the
Highest Grade
Horns



Have No
Equal
for Sound
or
Quality

They have the sound that made imported horns famous. Made by the famous musical instrument makers—Blanchard, of Paris—who are acknowledged to be the finest horn makers in the world.

Our stock of horns is very complete, and we are prepared to suit the most exacting taste.

The Le Janus Horn



The latest of the Blanchard family is the Le Janus, or two-faced horn.

It has an adjustable swivel bracket, enabling it to be attached anywhere on the car, and always presenting a handsome appearance.

Its peculiar construction gives it a deep sounding tone unequaled by any other horn.

Price\$21.00

Copper Gaskets



We carry the largest stock of Imported Copper Gaskets in the United States. All sizes, from one-half to three and one-half inches inside measurement. In stock.

Interesting prices quoted to the trade upon request.

Pirelli Cable



Imported high and low-tension cable, made by Pirelli & Cie., Milan, the largest and oldest cable factory in the world.

Used by all the leading Auto Manufacturers in America and Europe, and giving universal satisfaction. Made in five sizes.

Goggles



We carry the largest stock of Imported Goggles in the United States, and are prepared to offer the latest and newest designs.

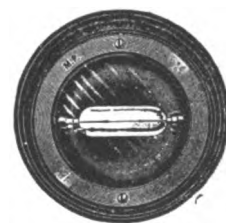
Special prices to the trade.

Annunciators



A cleverly designed instrument for communicating to chauffeur from limousine of car. Directions appear very distinctly day or night. Price, with round dial.....\$75.00
Price, with oblong dial..... 50.00

Ceiling Lights



A large assortment of imported ceiling lights of various designs carried in stock.

We have exercised great care in selecting them, and feel confident that our designs are the foremost on the market.

English Compound Pumps



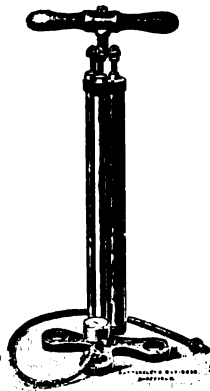
Double Pump

Reduce Your Tire Bills

Pumps your tire up in less time and with less exertion than any other pump made. Air is forced into the tire on both the up and downstroke. Pumps are equipped with gauges indicating amount of pressure being pumped into the tire.

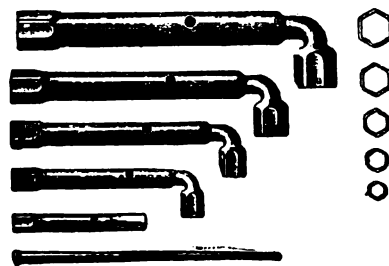
Price of Double Compound Pump, \$12.00.

Price of Triple Expansion Pump, \$18.00.



Triple Pump

Socket Wrenches

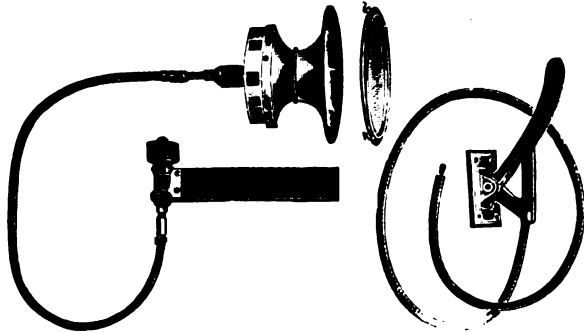


Imported telescoping socket wrenches. Their novel construction especially adapts them for automobile use. With them otherwise inaccessible parts can be easily reached. Set C consists of four pieces and lever handle.....\$5.00
Set D consists of five pieces and lever handle..... 6.00

The MOTOR CAR EQUIPMENT CO.

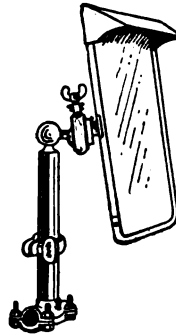
OF AUTOMOBILE SPECIALTIES

The Latest French Siren



This is the new type of the straight siren horn. Has a 10-inch bell and a large turbine, producing a powerful sound, that can be heard for very long distances. Operates by engine flywheel only.
Used all over Europe, and is very popular.
Price, complete\$50.00

The Argos Mirror



This mirror allows the chauffeur to see at a glance the movements of all moving vehicles behind him, allowing him to turn, back and reverse without jeopardizing the occupants of the machine.

It is a special plate glass mirror bound solidly in brass, with a brass hood on top to protect the face of the mirror from rain. Has a ball and socket joint, so that it may be moved in any position.

The mirror is slightly concave, and gives an extraordinarily wide range of vision behind. Nothing can occur behind the driver which he cannot readily observe.

Price\$20.00

Spark Plugs—Bougie A. V



An indestructible plug, which can be easily taken apart. Presents only metallic surfaces while in contact with explosion.
No. 159. Price, metric or half-inch thread\$2.00

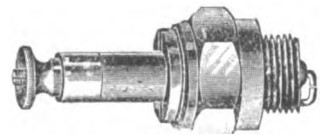
Speaking Tubes



For use in limousine cars. Constructed of polished hammered brass or gun-metal and fitted with silk covered tube and bulb. Mouthpiece being made of buck horn, which gives it a dainty appearance.

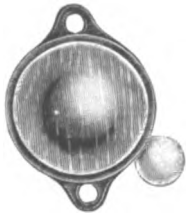
By pressing bulb a sound is produced that will attract the driver's attention.
Price\$20.00

Spark Plug—Genuine De Dion



The largest selling imported plug in the world. Made of selected material. High class in every respect. Made in metric thread only.
No. 149. Price.....\$1.50

Ceiling Light Switch



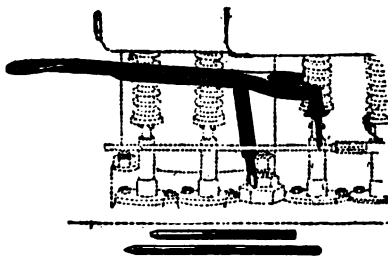
For use in connection with ceiling lights these imported switches are the best. Finished in mahogany or bone, with nickel-plated snap lever.
Height, 1"; diameter, 1 1/4".
Price:
Mahogany..\$1.00
Bone 1.50

Spark Plug—French Mica



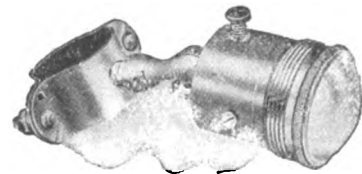
Amber Mica Plug. Composition platinum joints ensure positive spark. Suitable for Auto or Motor Cycle.
No. 160. Price, 1/2" or metric thread90c

Valve Spring Remover



Designed to facilitate the removal and replacement of Valve Springs, and is fitted with three fulcrum screws of various lengths, so as to fit all makes of engines.
Price, including three screws.....\$1.50

Steering Pillar Lamp



When fastened to the steering pillar of a motor car this lamp enables the driver to direct a powerful beam of light to any part of the dash board, and to keep under careful observation while driving at night his lubricators, water circulation gauge, speed indicator, watch, or any other device which may be on the dash.

Has a spring universal joint, which keeps the lamp perfectly tight in any position, yet allows it to be moved with the greatest of ease.

Lamp can be operated by storage battery.
Price\$6.00

IMPORTERS, MANUFACTURERS, JOBBERS
55 Warren St., New York



On Every Car The Bosch Magneto

PROOF??

90% London

68% Paris

Those manufacturers who equip their cars with Bosch Magnetos guarantee *perfect ignition*. They know the Bosch System of ignition is the recognized *standard of the World*.

In the Olympia automobile exhibition in London by actual count 90% of all exhibiting cars were equipped with Bosch Magnetos. In the Paris Automobile Show of all cars, chassis and motors, 68% were equipped with Bosch Magnetos.

More proof that the Bosch magneto leads all others.

Exhibit at Importers' Show, Madison Square Garden

Robert Bosch New York, Inc.

**160 West 56th Street
NEW YORK**

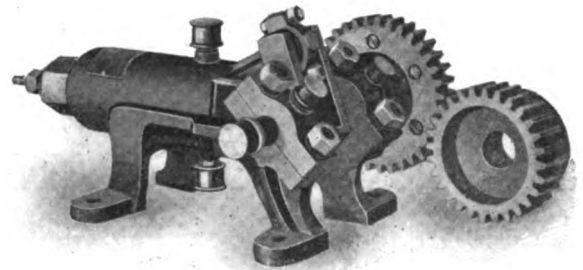
THE
“TIRE INFLATOR
Delpeuch”



OF METAL THROUGHOUT
NO LEATHER PACKING

No More of This

Can be attached to any make of car by means of a split gear around the driving shaft and is operated by a sliding pinion.



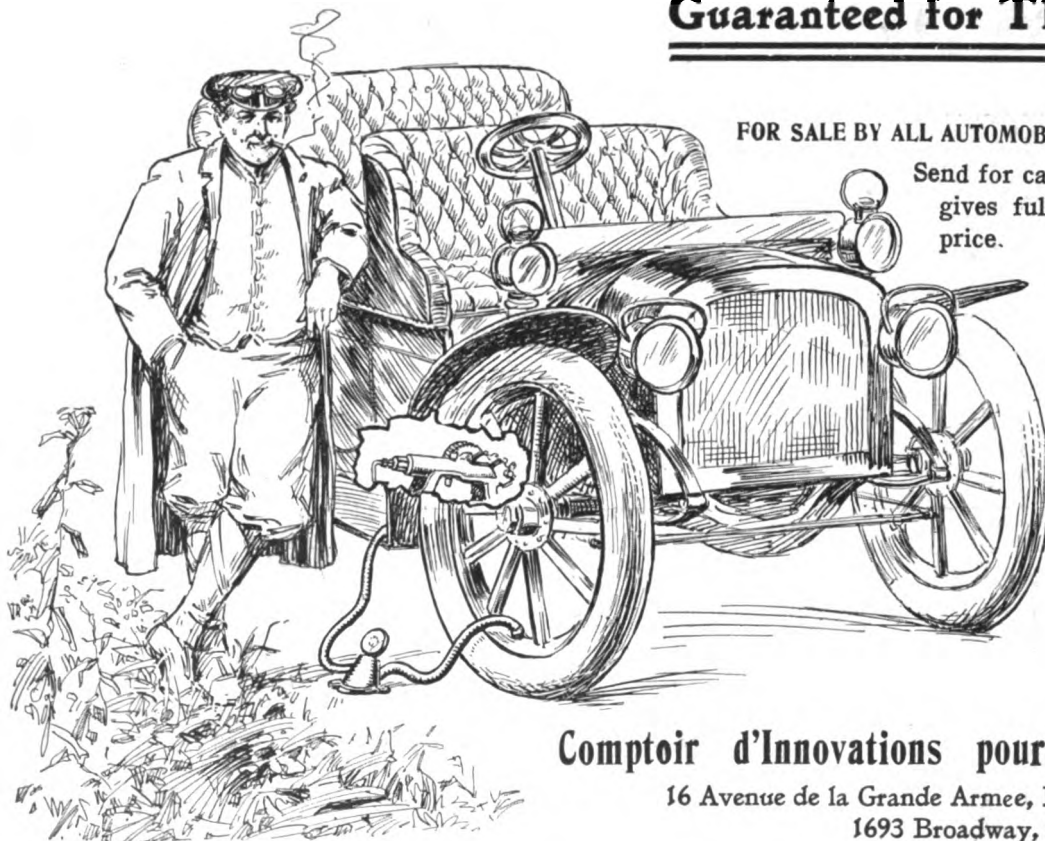
The “TIRE INFLATOR DELPEUCH” will inflate the largest tire in one minute. Gives pressure up to 90 lbs. within 45 seconds

11 x 15 Inches

Guaranteed for Three Years

FOR SALE BY ALL AUTOMOBILE SUPPLY DEALERS

Send for catalog No. 16, which gives full information and price.



See Our Exhibit at Space 42, Importers' Automobile Salon

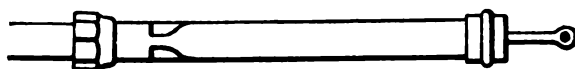
Comptoir d'Innovations pour Automobiles

16 Avenue de la Grande Armee, Paris
 1693 Broadway, New York

The "Nightingale" Whistle

ASSURES RIGHT OF WAY

On Automobiles



On Motor Boats

YOU CAN FIND NOTHING MORE

MELODIOUS—ATTRACTIVE—PENETRATING—SIMPLE

Can be readily heard at great distances.

Operated by the exhaust with lever, handle or pedal.

Automatically cleans itself after every operation.

WE HAVE NO COMPETITOR IF YOU WANT THE BEST

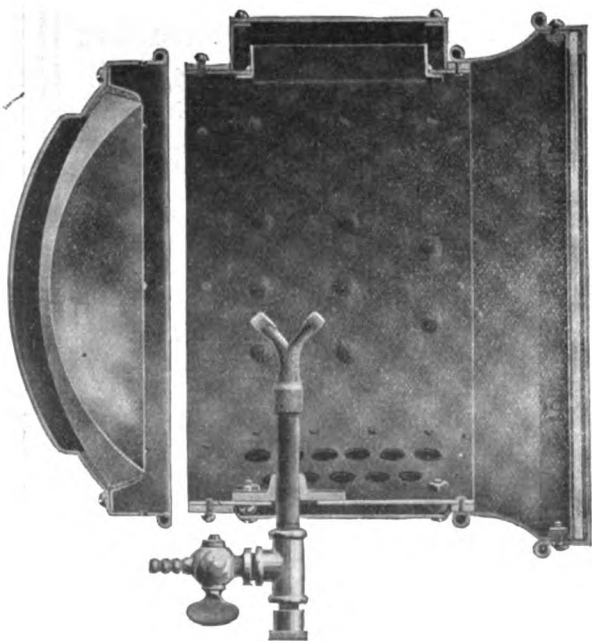
See our Exhibit at No. 42, Importers' Automobile Salon

For sale by all auto supply dealers. Send for catalog No. 16, which gives full information and price.

COMPTOIR D'INNOVATIONS POUR AUTOMOBILES

16 Avenue de la Grande Armée, Paris. NEW YORK OFFICE: 1693 Broadway

RUSHMORE CONVENIENCE



Section of Rushmore Headlight with
Back Cap Removed

is not as vital a consideration to the purchaser as Rushmore efficiency, but it is the best of its sort, nevertheless. If you have the ill luck to hit something, and the lamps need repairing, you will appreciate the fact that Rushmore Lights are put together throughout with bolts and rivets. No solder is used except to hold the nuts from unscrewing.

To replace the lens mirror, remove the back cap, as shown in the illustration, by unscrewing six bolts; then unscrew the six back bolts which hold the lens retaining ring.

To replace broken strips in the front glass, unscrew the bolts holding the front retaining ring.

The ventilator is bolted in place. The burner is bolted and is adjustable for accurate focusing. Other parts are fitted accurately together and riveted. The rivets are not a bluff to conceal the use of solder, as is sometimes done in lamps made up cheaply from stock too thin to hold rivets. No tinsmithing is needed for any sort of repair.

Rushmore Dynamo Works, Plainfield, N. J.

LONDON

PARIS

CHICAGO

Other Steam Car Owners] are using the

Lightning Kerosene Burner



with satisfaction and economy.

Why don't you investigate?

Ask for Catalogue B. Do it now.

E. C. WALKER MFG. CO.
811 Nelson St., Louisville, Ky.

AUTOMOBILE BODIES



of every kind and description for winter and summer use. Limousines, Landauettes, and touring cars. Our cars are designed to be the best, the most durable, the most beautiful, and the most luxurious in the world—bar none. Our work is high grade and our prices are moderate. We have built bodies for some of the most prominent people in the country as well as for manufacturers.

BRIDGEPORT VEHICLE CO., Harry D. Miller, Pres. Bridgeport, Conn.

A BRAND NEW AUTO OILER



This Oiler is made entirely of brass, also of copperized steel with brass trimmings. Has strainer and double valves. The spout is detachable for packing in small space. A pressure on the plunger forces the oil to the bearings—avoids the pleasure (?) of crawling under the car.

At all Supply Houses. Brass sample prepaid, \$1.75

MAPLE CITY MFG. CO.
Monmouth, Ill.

YES, WE MAKE



Pressed Steel or Angle Iron Running Gears, with any wheelbase up to 120 inches, for Touring Cars or Roadsters.



Also all styles of bodies.

Borbein Auto Co. 2109 N. 9th St. St. Louis, Mo.

Searls Folding Jacks

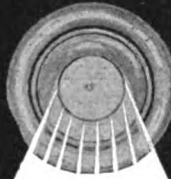


Have lightest weight, guaranteed strength, usable broad base or folded narrow base, latest construction, foot power. Why get down in the dirt? Ask your dealer or we deliver in U. S. or Canada.



Jersey Brake Co., 3 Greene St., Newark, N. J.

Prest-O-Lite



Danger, worry, trouble and care are alike unknown to the motorist who enjoys the comfort and convenience of Prest-O-Lite.

"CONDENSED SUNSHINE"

If your car isn't equipped with Prest-O-Lite, you may know that there are 35,000 people in this country to-day who are getting more pleasure out of autoing than you are.

But you can quickly and easily equip your car with dependable Prest-O-Lite and make night travel a pleasure instead of a course of harrowing anxiety. We now have

1600 PREST-O-LITE EXCHANGE STATIONS

In every part of the country there are Prest-O-Lite stations where you can have a Prest-O-Lite Tank put on your car, or can exchange an empty tank for a filled one in a moment's time. When the tank is on, all you have to do is turn a valve to operate it. There's no cleaning, tinkering or fussing with dirty carbide generators for the motorist who uses Prest-O-Lite.

CAUTION—Unscrupulous imitators are trying to sell inferior tanks somewhat like the original Prest-O-Lite tank of three years ago. These tanks are not to be depended upon. You are cautioned to look for the name **PREST-O-LITE** on the tank you buy. The name "Prest-O-Lite" is there for your protection, and is a guaranty of dependable goods.

On request we will mail you the Free Prest O-Lite Booklet and direct you to the nearest Prest-O-Lite station.

THE PREST-O-LITE COMPANY

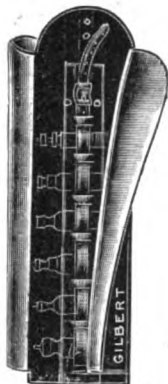
NEW YORK, 1904 Broadway INDIANAPOLIS, 24 S. East Street
SAN FRANCISCO, Point Richmond BOSTON, 607 Boylston Street
TORONTO, 6 King Street West

Gilbert Automobile Fabric Supplies

Quality

The Only Ones Worth Your Money

Superiority



Plug Case. Price \$1.00



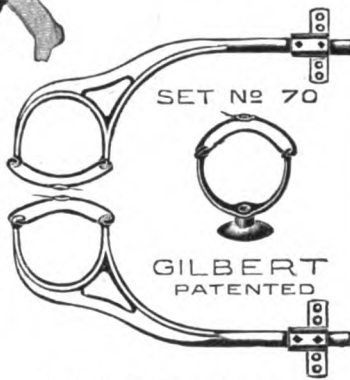
Tire Case, wire edge or snap button Price \$4.00



Gilbert Starting Handle Holder Price \$1.00



Tire Locks. Price \$3.50



Spare Tire Holders. Price per set: Black finish, \$5.00; brass, solid, \$8.00

Sold Every where Send for Catalog

Gilbert Manufacturing Company
New Haven, Conn.

1908 HEITGER

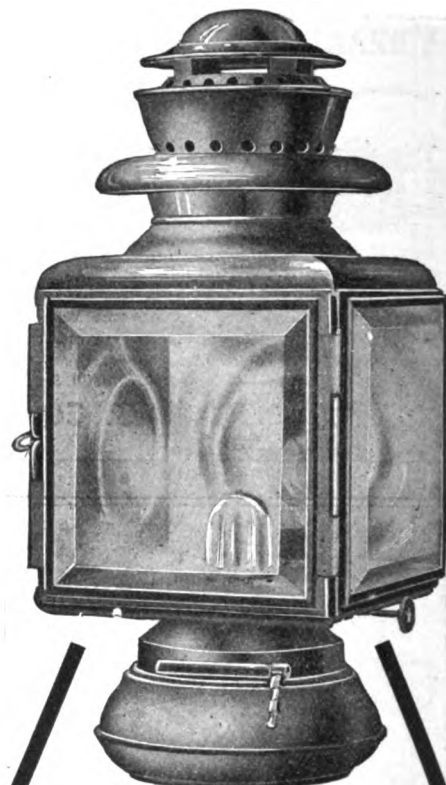


Successful in '07 Improved and better than ever in '08

If in trouble, it's the remedy. Guaranteed satisfaction or money refunded.

Address

HEITGER CARBURETOR CO.
205-207 West South St., Indianapolis, Ind.



HAM'S LAMPS
Proved the best
By a most Rigid test

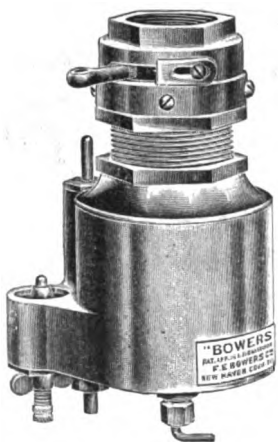
You won't have to consider the lamp question long if you give Ham's "Cold Blast" Lamps a trial. They embody all the good features you could possibly expect in oil lamps, and more Style, Finish, Quality of material, Strength of construction and excellent burning qualities. They give an immense light and will not blow or jar out.

Ask the man who has used them and also write for one of our new catalogues. Address "Dept. B."

C. T. Ham Mfg. Co.
Rochester, N. Y.

THE BOWERS CARBURETER

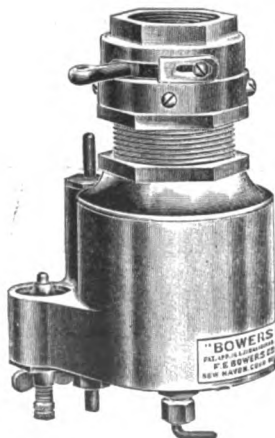
The Instrument of PERFECTION



PERFECT CARBURETION can only be attained by using our **PATENTED METHODS**. It is useless to try to secure equal results in any other manner.

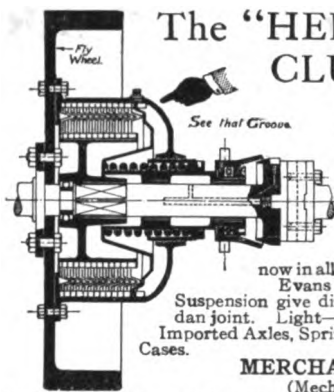
Take an ordinary carbureter, compare it with a dozen more, you will find some difference, but not in principle, and that principle is inherently **WRONG**. If all were made equally good they would all produce exactly same results. The **BOWERS CARBURETER** functions on correct practical principles, which have been secured by elaborate tests, giving more complete knowledge of this subject than ever possessed by others.

Send for our Catalog.
It will interest you, and a trial carbureter convince, beyond all doubt.



THE F. E. BOWERS CO.
NEW HAVEN, CONN.

The "HELE-SHAW" CLUTCH RECORD



See that Groove.

Thornycroft—Milnes-Daimler Buses (Mercedes Co.)—Belsize—Napier—New Arroll—Johnson—Humber—Eugene Brillé Buses—Delahaye, etc. BRITISH ADMIRALTY.—H. M. S. "Dreadnought" Launches and submarine equipped with Hele-Shaw Clutch Reversing Gear.

10,000 H. P. Hele-Shaw Clutches now in all kinds of industrial work.

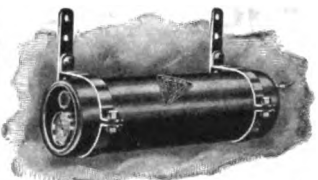
Evans Change Speed Gears and Spring Motor Suspension give direct drive on two speeds without Cardan joint. Light—durable—highest efficiency.

Imported Axles, Springs, Chassis, Special Steel. "Star" Tire Cases.

MERCHANT & EVANS CO.
(Mechanical Department)

PHILADELPHIA NEW YORK CHICAGO BALTIMORE KANSAS CITY

AUTOGAS



SUPPLIES LIGHT TO ANY AUTOMOBILE LAMP

LASTS FOR MONTHS

IT GIVES TWICE THE SERVICE OF ANY OTHER GAS TANK. WRITE US

Avery Portable Lighting Co.

NEW YORK OFFICE
51 W. 63d Street

MILWAUKEE
WIS.

THE Complete Motorist

BY A. B. FILSON YOUNG

All about the automobile; how to select and run it; its mechanism and history. The absence of theory without sacrificing practical value makes this volume of special interest to the autoist who, though not mechanically inclined, wishes to know all about the subject treated. Written in a style entirely different from the average treatise about automobiles, yet complete and entertaining, so that to read it is a pleasure rather than a task. The matter is interspersed with comments that liven it up wonderfully while in no way detracting from the technical value of the work.

Size, 6 inches by 9 inches, 328 pages. Nicely bound in cloth, delivered free, \$3.50.

Address: THE AUTOMOBILE, Flatiron Building, New York.

"TRIUMPH" GREASE



NO WASTE—NO WEAR

Works the same Winter and Summer, being unaffected by heat or cold.

Never runs out. Owing to its heavy body it stays where it is put and does not waste off like oil. Being heavy-bodied, it always leaves a layer of grease between the opposing surfaces, reducing friction to a minimum and saving wear. Its molecules are practically indestructible and it lasts in ACTUAL WORK from 50 to 100 per cent. longer than other lubricants, therefore is immensely cheaper. Send a trial order to-day 10 lb. Can \$2.00. For sale by all dealers, or send order direct to

The Perfection Grease Co., South Bend, Ind.

Agencies: Excelsior Supply Co., 233 Randolph Street, Chicago. R. E. P. Sporting Goods Co., 1384 Bedford Avenue, Brooklyn, N. Y.

It's a Long-Life-on-the-Shelf Dry Cell

THE CROWN DRY CELL



Every dealer knows the value of a dry cell that won't go dead after carrying it in stock a little while. Every owner knows the value of a dry cell that will still hold up after a few months' idleness. The Crown Dry Cell will hold itself together longer than any dry cell on the market.

CROWN BATTERY COMPANY
192 Southern Boulevard
NEW YORK

National Sales Corporation, Factory Sales Managers,
296 Broadway, New York.



GET OUR REDUCED PRICES

Write immediately

As long as price of raw rubber is down we will sell tires at interesting prices

Get our booklet "Story from Users," also our catalog "C"

The Swinehart Clincher Tire & Rubber Co.

Western Office
1231 Michigan Blvd., Chicago, Ill.

Main Office and Factory
AKRON, OHIO

The Rutenber Line

30 to 60 H. P.

4-cylinder, 4 1/2 x 5 } EQUIPPED WITH OR
4-cylinder, 4 1/2 x 5 } WITHOUT MAGNETO
4-cylinder, 5 x 5 } AND CARBURETOR
6-cylinder, 4 1/2 x 5 }

The Rutenber Motor holds world's record of 1,094 3-16 miles in 24 hours.

Rutenber Carburetors best of all.

For your own benefit get further particulars. Let us figure on your 1908 requirements. Let us prove by test our motors are far the best and that they are the motors you should have on your cars. Write to-day.

Rutenber Motors and Carburetors the Best for Your 1908 Cars

Motors and Carburetors of the highest quality embodying in their construction the most skilled workmanship and the best material obtainable, at a cost no greater than you are asked to pay for machines that are unreliable and that will last only a short time. Made in the largest factory in this country devoted exclusively to the manufacture of motors and carburetors.

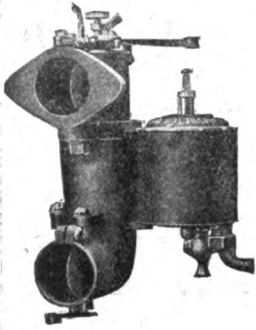
30 to 60 H. P. 4 and 6 Cylinder Motors. Write for Catalog.

THE WESTERN MOTOR COMPANY, Logansport, Ind.

THERE'S NO CHANCE

about the

BUFFALO CARBURETOR



It's mechanically operated and acts with mechanical precision

The Buffalo Carburetor Co.
887-889 Main St. Buffalo, N. Y.

NATIONAL SALES CORPORATION
Factory Sales Managers
296 Broadway, New York

The "BLOMSTROM THIRTY"

THE MOST FOR THE MONEY EVER OFFERED
1908 Models Now Ready Four-Cylinder, Vertical
30 H. P. Price \$2,250
Write for Catalog. Representatives wanted for unoccupied territory. Immediate deliveries.
The Blomstrom Manufacturing Company
DETROIT MICHIGAN, U. S. A.

'08 DROP AXLE CRANK SHAFT FORGINGS '08

And all Auto Forgings
Send specifications for 1908 requirements
BARNETT DROP FORGING CO., East Hampton, Mass.

Waukesha Motors

have demonstrated their smooth, quiet, speedy and powerful action satisfactorily to their 1907 users. We can take on a few more contracts for 1908 delivery and will guarantee to deliver whatever we contract for. The self-contained oiling system is a feature of our 4 1/2" x 5" and 4 3/4" x 5" which is well worth looking into.

WAUKESHA MOTOR CO., Waukesha, Wis., U. S. A.

MOTOR CAR DROP FORGINGS

AXLES IN ONE PIECE
BETHLEHEM STEEL COMPANY
South Bethlehem, Pennsylvania

Branch Offices: Boston, 165-7 High St.; New York, 100 Broadway; Philadelphia, Pa., 15th and Chestnut Streets; Pittsburg, Pa., Keystone Bank Building; Chicago, Ill., Fisher Building; San Francisco, James Flood Building.

WELDING BY ELECTRICITY
INSURES
STRENGTH, ACCURACY AND DEPENDENCE
THE STANDARD WELDING CO. CLEVELAND.

INSIST UPON A RADIATOR EASILY REPAIRED

LONG'S RADIATORS

LONG DISTANCE

are the only ones on the market that can be repaired when an accident is met with. Any broken tubes can be replaced with new ones at a small expense. Other makes of radiators when damaged must be entirely replaced at a heavy expense.

Send for Catalogue.
LONG MANUFACTURING CO., Chicago, Ill.

The Only Folding Wind Shield
that is automatically held open or shut, that won't rattle and can be operated by the driver with one hand without stopping the car.

Conover Wind Shield

CONOVER MOTOR CAR CO., Paterson, N. J.
National Sales Corporation
Factory Sales Managers
296 Broadway New York

HIGH **Alpha** GRADE

PURE SEAMLESS
INNER TUBES

THE STRONGEST TUBE MADE IMPORTED OR DOMESTIC

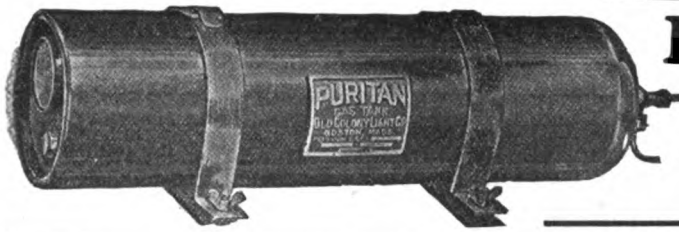
PARKER, STEARNS & COMPANY,
228 & 229 South Street, New York.

YOU WANT THE BEST GET A HICKS!

Speed Indicator
Elgin Watch
Veeder Odometer

ALL ON ONE DIAL
Size 4x4 inches
Price \$50 Complete
Fully Guaranteed
SEND FOR BOOKLET

HICKS SPEED INDICATOR CO. 1263 Atlantic Avenue BROOKLYN, N. Y.



Puritan Gas Tanks

AMPLE FACILITIES FOR RECHARGING ALL SORTS OF TANKS PROMPTLY
Retail Price, \$85.00
 More gas for less money
 Manufactured by **THE OLD COLONY LIGHT CO.**
 819 Boylston St., Boston, Mass.

LOCKE & COMPANY AUTOMOBILE BODIES

218-220 WEST 84th ST.,
 NEW YORK

WITHOUT PARALLEL IN THIS COUNTRY OR ABROAD
 COMBINE EXTREME ELEGANCE, MOST REFINED
 DESIGNS AND UNEXCALLED DURABILITY

N. B. C.
"National"
 STORAGE BATTERIES

MAXIMUM MILEAGE
 MINIMUM MAINTENANCE

WHEN USING "NATIONAL" STORAGE BATTERIES

National Battery Company
 NEW YORK General Offices and Works: BUFFALO, N. Y. CHICAGO

Here it is!



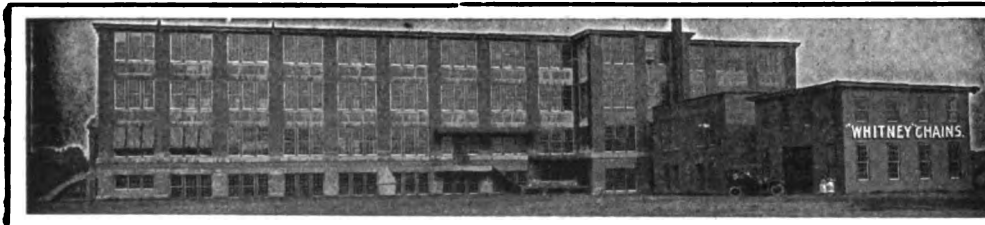
BULLARD AUTOMATIC WRENCH CO., PROVIDENCE, R. I.
 Try us for high grade drop forgings Quick deliveries.

BULLARD AUTOMATIC WRENCH

The wrench with the human grip. For use anywhere and everywhere, on anything and everything. Special proposition to manufacturers for your 1908 tool kit.

Motorists: Specify Bullard No. 2 or buy from nearest dealer to get maximum wrench efficiency

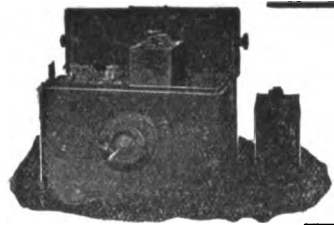
Sales Agent, **JOHN H. GRAHAM & CO.**
 113 Chambers Street, New York City



"WHITNEY" CHAINS

New Fireproof Factory. New Machinery and Improved Methods.

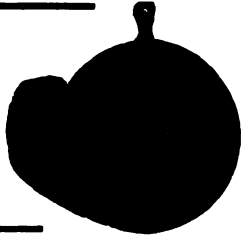
THE WHITNEY MFG. CO., Hartford, Conn.



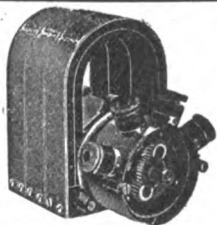
HEINZE COILS

SEND FOR 1908 CATALOG AND PRICES

HEINZE ELECTRIC COMPANY Lowell, Mass.



GIANOLI
 High Tension **MAGNETO**
 Universally used in Europe and America Imported Ignition Wire. Champion Unit Type Coils, etc.
Albert Champion Co.



Champion SPARK PLUG

The special shape of the high grade imported porcelain, hollow where the centre wire comes through and with an open space surrounding it, leaves a natural combustion chamber which prevents any accumulation of soot.

36 WHITTIER STREET
 Boston, Mass.



LACOSTE COILS, COMMUTATORS, MAGNETOS, WIRE, Etc. **FINEST IGNITION APPARATUS MADE**

LEON RUBAY, SOLE IMPORTER 1697 Broadway, N. Y. **BOSTON** 226 Columbus Avenue

M. A. B. BALL BEARINGS, BLERIOT LAMPS



THE TAMPA BAY HOTEL.
TAMPA, FLA.

The Land of Lovely Dreams

WHERE THE KNOTTED NORTHERN
NERVES MAY RELAX AND REST

WHY should one go to Tampa rather than the resorts on the other coast of Florida? Because the climate of the west coast is far more equable, less enervating, more beneficial to nerves and mind than any other. The climate of Tampa is dry and its tropical warmth is tempered agreeably by westerly breezes from the Gulf of Mexico. While

the glorious sunshine in the day time reminds one of the close proximity of the tropical Everglades, night brings with it refreshing coolness and fragrant dews, and with them comes, without fail, "Nature's sweet restorer, balmy sleep." Apply to agents of The Seaboard Air Line Railway, The Atlantic Coast Railway, Southern Railway, and their connecting lines.

Booklet and Tariff sent on application.

DAVID LAUBER, Manager, Tampa, Florida

Hotel Richmond

17th & H Sts., Washington, D.C.

100 Rooms, 50 Private Baths.
American Plan, \$3.00 Per Day, Upwards; With Bath \$1 Additional.
European Plan, \$1.50 Per Day, Upwards; With Bath, \$1 Additional.

A high-class hotel conducted for your comfort. Remodeled, refurnished throughout. Directly on car line. Union Station, 20 minutes. Capitol, 20 minutes. Shops and Theatres, 10 minutes. Two blocks to White House and Executive Buildings. Opposite Metropolitan Club.

Summer Season July to October
Wayside Inn and Cottages, Lake Luzerne, N. Y. in the Adirondacks. Switzerland of America. 45 minutes from Saratoga.
Send for Booklet

CLIFFORD M. LEWIS, Proprietor

"ROYAL CROWN" AUTOMOBILE SOAP

Has Wonderful Cleaning Power and Preserves the Finish and Lustre.

CONTAINS NO FREE ALKALI.
IS PURELY VEGETABLE. EASY TO USE.
The Only Genuine English Soft Oil Soap Sold in America

There are many so-called oil soaps on the market that look about the same as Crown Soap, but there is no other Oil Soap made in America that will clean so thoroughly and preserve the finish as long as "Crown Soap."

CROWN METAL POLISH

Positively has no equal as a liquid metal polish. It contains no acid and no grit. It is quicker than other liquid polishes, which makes it a time and money saver. Crown Metal Polish is the best automobile polish in the world. Money back if you don't agree with this statement after a fair trial. Upon receipt of 10c in stamps to pay postage, we will be pleased to send you a liberal sample for test.

MADE BY CROWN SOAP CO., SYRACUSE, N. Y.
D. C. Longwill, 6 East St., San Francisco, Cal., Distributor for Pacific Coast.

BUCKEYE

AUTOMOBILE JACKS

STRONG, SAFE, RELIABLE

Highest Grade Material and Workmanship. The result of 20 years experience in Jack building

Especially suitable for automobile use. Can be operated under any automobile.

Made only by the Buckeye Jack Mfg. Co. Louisville, Ohio

The only Jacks on the market having High Carbon Crucible Steel Drop-forged Racks and Pawls, insuring against breaking down under load.

Distributing Agents:
Post & Lester Co., Hartford, Conn.; distributors for New England States
M. G. West & Co., San Francisco, Cal.; distributing agents for the Western Coast.

K-B Ball Bearing Universal Joint

SIMPLE, STRONG AND DURABLE

PERFECT LUBRICATION

Patented in United States
Patents in the foreign countries pending

The KINSLER-BENNETT COMPANY
HARTFORD, CONN.

Sold by The American Distributing Co., 610 American Trust Bldg., Cleveland, O.

\$1.75 PREPAID TO ANY ADDRESS IN THE U. S.

GIVE A CARE to your gasoline pipe strainer, as nine times out of ten it is the secret of carburetor troubles. A little water or foreign substance in the gasoline will put your carburetor out of commission. Our strainer is a guarantee against such troubles. It is made from sheet brass, highly polished, and furnished with either 1/4 or 5/16 inch connections. The gasoline enters through the low connection, strains through a chamois placed at an angle across the globe, and passes to the carburetor through the upper connection, cleansing the gasoline thoroughly. The foreign substance remains beneath the chamois and may be drained through the petcock. Write to-day for catalog. Special prices to manufacturers and dealers in quantities.

The Hatcher Auto-Parts Co. 185 Viaduct CLEVELAND, OHIO

Self Propelled Vehicles

BY J. B. HOMANS

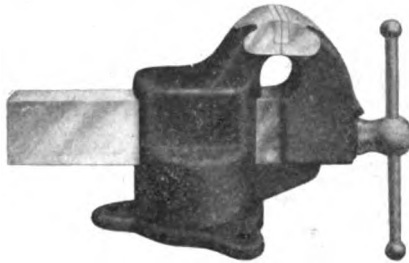
An excellent book treating of the practical side of the construction and operation of automobiles with full information for the novice or the experienced operator. Tells what to do and how to do it. Describes in detail the mechanism of a modern car and explains the functions of each part. Forty-four chapters of good sound information for those interested in automobiles. This book contains 672 pages and over 500 interesting illustrations and diagrams.

Size, 5 3/4 inches by 8 1/2 inches. Printed on fine paper and substantially bound in cloth. Delivered, \$2.00.

Address: THE AUTOMOBILE, Flatiron Building, New York.

Rock Island Automatic Swivel Vise

We make a size, this type, for automobiles. The base is fastened to the step or tool box at all times. The vise can be kept in the tool box and when needed is instantly ready for use. No screws, bolts, pins, etc.



Send for Catalogue.

Rock Island Tool Co., Rock Island, Ill.

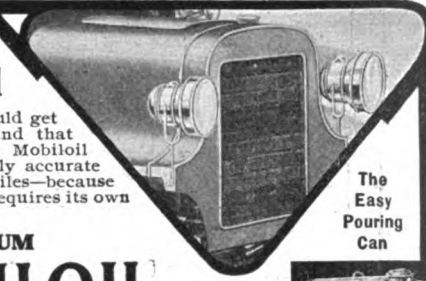
The Energy End

of the automobile should get the best attention—and that means the proper oil. Mobiloil is the only scientifically accurate lubricant for automobiles—because every make of engine requires its own kind of lubricant, and

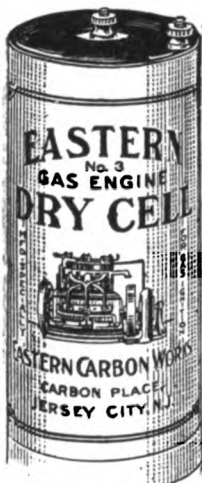
VACUUM MOBILOIL

in its various grades meets these requirements. Send for booklet which lists every make of automobile and tells just what grade of Mobiloil your automobile requires. Contains valuable pointers for motorists. It's free. Mobiloil comes in barrels and cans of varying capacities.

Manufactured by
VACUUM OIL CO., Rochester, N. Y.



The Easy Pouring Can



EASTERN GAS ENGINE DRY CELLS

Give more voltage, more amperage, more life, more uniformity and better efficiency than any other battery, and its recuperative power is the wonder and admiration of every user.

EASTERN BATTERY CONNECTOR
POSITIVELY WON'T SHAKE LOOSE

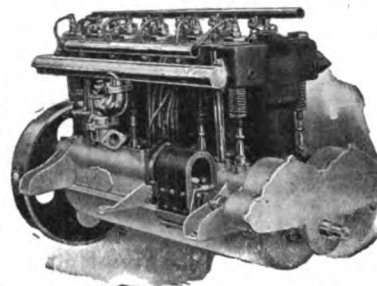
Eastern Carbon Works

Carbon Place Jersey City, N. J.

THE Jencick Motors

Suitable for Pleasure Cars and Heavy Duty Trucks, where reliability and efficiency are wanted.

H. P. 12 to 70, 2-4 and 6 cylinder, watercooled, four cycle, make and break and jump spark. Krupp chrome nickel steel. Parsons' manganese bronze base. Hess & Bright ball-bearings—simplicity of design and experienced workmanship. These are some of the Jencick features.



MOTORS BUILT BY NONE BUT SKILLED LABOR

and the above-mentioned materials, will have everlasting efficiency and durability. We will be pleased to mail catalogue on request.

JENCICK MOTOR MFG. CO., Port Chester, N. Y.

Special Introductory Offer

33 1-3 Per Cent. from List Prices



	List	Special
Leather cover Buffalo robe, cloth lining.....	\$15.00	\$10.00
Same with window.....	16.50	11.00
Leather covered, lined with fur.....	20.00	13.33
Same with window.....	21.50	14.33

The same good, warm, comfortable Muff. No reduction in quality. We are simply giving you the dealers' profit.

We have no representatives. Order direct, giving diameter of wheel, diameter of post and control rods running parallel, if any, and location of spark and throttle, name the car, and the Muff will fit.

Mandeville Steering Wheel Muff Co.
BLUFFTON, IND.



BRENNAN 1908 MOTORS AND TRANSMISSIONS

Now is the Time to Take up the Question of Motors and Transmissions for New Cars or Rebuilding Old Ones

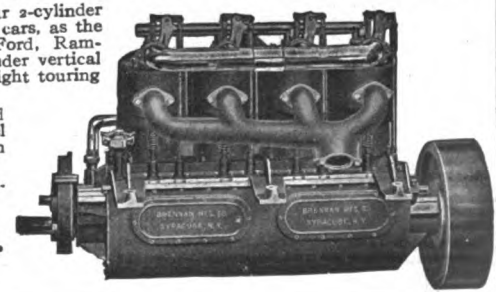
We furnish motors and transmissions that give the most satisfactory service and that save you money. For all makes of cars mounted complete on sub-frame

We make a specialty of furnishing our 2-cylinder opposed motors for all standard makes of cars, as the Jackson, Wayne, Pope-Hartford, Olds, Ford, Rambler, Queen, Cadillac, etc., and our 4-cylinder vertical motor of 4 9-16 bore x 4 in. stroke for light touring cars, as the Pope-Hartford, Aerocar, etc.

Motors and transmission gears furnished complete on sub-frame or pressed steel frame. Four and six-cylinder chassis from 28 H.P. to 80 H.P., built to order.

Write to us—all correspondence promptly answered.

BRENNAN MOTOR CO.
SYRACUSE, N. Y.



“Pearl Glass”

MACBETH's triplex polished
 Motor car lens mirrors
 Perfect curvature—copper backed
 Made of the celebrated “Pearl
 Glass”
 Perfectly colorless
 The best projector of light known

MACBETH, Pittsburgh

All kinds of glasses, clear and colored, for auto lamps



TIRES

ARE ALWAYS SATISFACTORY.

Years of study and experience are necessary to produce a tire that will prove satisfactory under all conditions. Our plant is devoted exclusively to the manufacture of pneumatic tires, and as pioneers in that line we have had the necessary experience, and the results of our close study in one line exclusively are shown in our line of 1908 tires.

Equip your cars with 1908 G & J Tires and Midgley Universal Rims, and you will have absolute tire protection.

G & J TIRE CO.

INDIANAPOLIS, IND.

BRANCHES

BOSTON: 243 Columbus Ave. CHICAGO: 1434 Michigan Ave.
 DETROIT: 247 Jefferson Ave. SAN FRANCISCO: 423-433 Golden Gate Ave.
 NEW YORK: 10 W. Sixtieth St.
 CLEVELAND: New No. 1837 Euclid Ave.

DISTRIBUTING AGENCIES

DENVER: 8528 Court Place. MEMPHIS: 181-183 Madison St.
 BUFFALO: 912 Main St. PORTLAND, ORE.: 64-66 Sixth St.
 PHILADELPHIA: 711 N. Broad St. MINNEAPOLIS: 21 S. Second St.
 LOS ANGELES: 1010 S. Main St. SYRACUSE, N. Y.: 212-214 S. Clinton St.
 OMAHA: Eleventh and Parnum Sts. ROCHESTER, N. Y.: 55 Main St. East.
 PITTSBURG: 913-915 Liberty Ave.
 ST. LOUIS: 415 North 4th St.
 ATLANTA, GA.: 35 N. Prior St.

*A wee bit more in price, but
 O, what a difference in the wearing!*

FISK TIRES

SAVE DOLLARS; SOMETIMES LIVES

FISK Mechanically Fastened Tire

The Only One in the World That Cannot Be Accidentally Pulled from the Rim

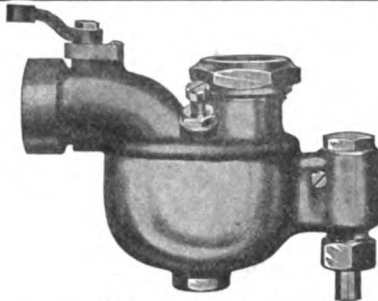
Fisk Standard Clincher
Fisk Quick Detachable

New products, made for all rims
 Fisk Quality

THE FISK RUBBER COMPANY, Chicopee Falls, Mass.

Branches in all principal cities

The
Single
Adjustment
Holley
Carburetor



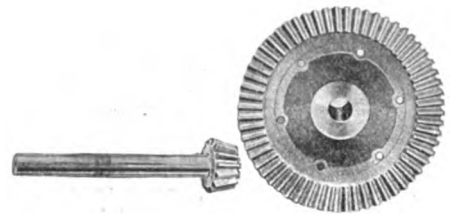
will be used on the 1908 output of the following builders:
MITCHELL MOTOR CAR COMPANY
OLDS MOTOR WORKS
T. B. JEFFERY & COMPANY
WAYNE AUTOMOBILE COMPANY
MOTORCAR COMPANY
SMITH AUTOMOBILE COMPANY
BUCKEYE MANUFACTURING COMPANY

Get a Holley and Drive Your Car at a Walk in High Gear.

HOLLEY BROTHERS CO., Detroit, Mich.

New England—Post & Lester Co., Hartford, Conn.
Boston—Post & Lester Co., 821 Boylston St.
Pacific Coast—Geo. P. Moore Co., 721 Golden Gate Ave., San Francisco, Cal.
Geo. P. Moore Co., 1005 South Main St., Los Angeles, Cal.
Geo. P. Moore Co., 231-233 Twelfth St., Oakland, Cal.
New York—Chas. E. Miller, 97 Reade St.
Philadelphia—Chas. E. Miller, 318-320 North Broad St.
Pittsburgh—Kaufmann Bros.
Cleveland—Chas. E. Miller, 406 Erie St.
Buffalo—Chas. E. Miller, 324 Main St.
Centaur Motor Co., 35 Franklin St.
Chicago—Excelsior Supply Co., 233 Randolph St.
Beckley-Ralston Co.
Denver—Denver Auto Goods Co.
Canada—John Forman, Montreal.
Baltimore—Loane-Hiltz Engineering Co.
Savannah—R. V. Connerat.

**PLANED BEVEL GEARS
FOR PROMPT DELIVERY**



Can furnish hardened steel driving gears, gears for differentials or for driving cam shafts, timers, etc., with accurately planed teeth. We have 12 Gleason bevel gear planers for turning out this work, besides some special blocking machines.

Send us your blue prints for estimates.

**The New Process Raw Hide Co.
Syracuse, N. Y.**

Makes
Automobile
Cleaning Easy



Takes off the dirt—but leaves the paint and varnish there. Mobo does this—does it in a new way—a better, cleaner, quicker way. If you value the appearance of your car, and want it always in good condition, get a can and try it.

MOBO

Automobile Cleanser

not only cleans off the grease and dirt, but acts as a preservative. Prevents peeling, blistering and cracking of the highly-polished surface. Mobo is a purely vegetable compound and, being absolutely harmless to the hands, won't injure the most delicate surface.

Packed in 3-lb. and 6-lb. tins; tubs, half-barrels and barrels.

Mobo can be obtained at the following supply house:

JULIUS BINDRIM, Automobile Supplies,
1057 Bedford Avenue, Brooklyn, N. Y.

and at all good automobile supply stores in all leading cities.

FREE—Our Mobo Booklet—"How to Clean Well, Varnish and Paint on an Automobile." Send for a copy

JOHN T. STANLEY, 640 W. 30th St., New York

**A PROSPEROUS
NEW YEAR**

to every user of
GOOD tires
and to every tire-
user who ought to
use them for econ-
omy's sake.

Morgan & Wright, Detroit

Branches, Agencies or Dealers everywhere

A CHAIN is no stronger than its weakest link;—an automobile is no better than its weakest part. A GOOD battery furnishes ample current at any speed, continuously, for an extended period.

A GOOD car must have *per se* a good battery.

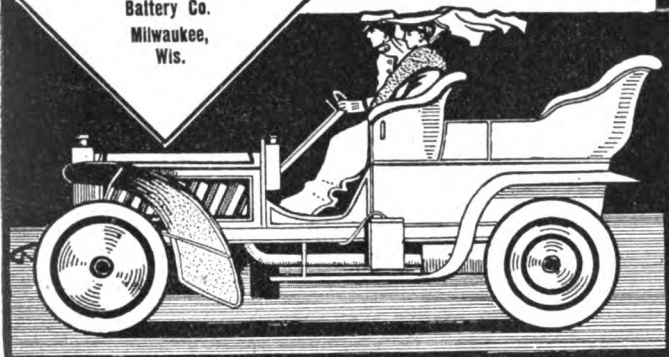
Manufacturers equip your Cars with "Northwestern"



and you forge a strong link in the chain that goes to make a perfect car.

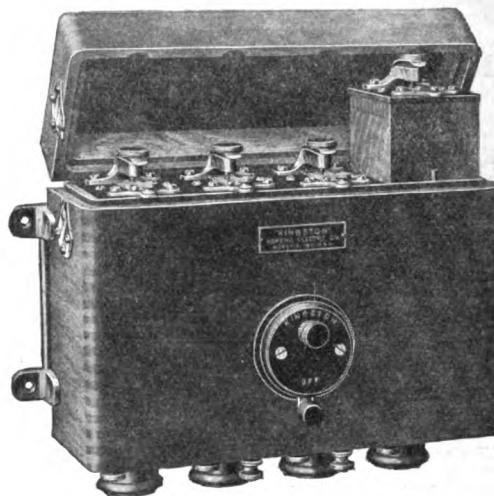
"Northwestern" Batteries are the most powerful, the longest lasting and always reliable. New Catalog on request.

Write us Northwestern Storage Battery Co. Milwaukee, Wis.



KINGSTON

1908 Spark Coils



High grade throughout. For finish, positive working and low battery consumption, cannot be excelled.

KOKOMO ELECTRIC CO., Kokomo, Ind.

Western Sales Agent
F. J. ALVIN
237 Randolph Street
Chicago, Ill.

Eastern Agent
CHAS. E. MILLER
97-101 Reade Street
New York, N. Y.

Canadian Agents
JOHN MULLEN & SON
Montreal and Toronto

MOSS



CUTS

catch the eye, ornament the ad., and give the "life," "snap" and "go" necessary to sell your product.

In soliciting your business we are placing at your service the oldest, largest and best engraving house in the world producing as perfect engravings as can be made for letter-press printing. Send us your orders,—let us demonstrate in a practical way we are all we claim.

MOSS
Photo-Engraving Company
295-309 Lafayette Street, New York
Corner Houston ("Puck Building")

MASURY

AUTOMOBILE

COLORS

MASURY

AUTOMOBILE COLORS AND VARNISHES

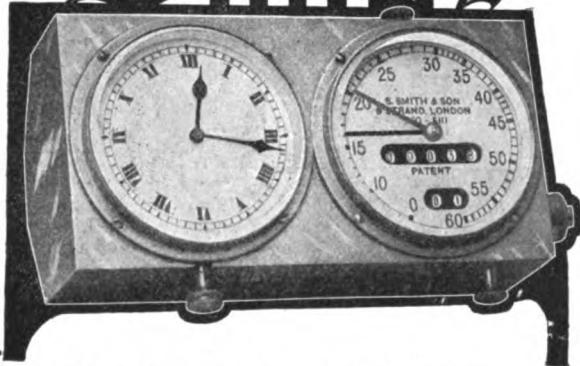
MANUFACTURED BY
JOHN W. MASURY & SON
NEW YORK
CHICAGO .. ST. LOUIS .. MINNEAPOLIS

MASURY

AUTOMOBILE

VARNISHES

Smith



English Speed Indicators

"Smith" Speed Indicators are worth the slightly higher price because they are:

- MORE ACCURATE** and **SENSITIVE** at all speeds on account of the hand workmanship and the 3-spring governor.
- MORE RELIABLE** because of the slow revolution of the driving shaft, and the use of friction drive instead of exposed cogs.
- MORE CONVENIENT**, because they are made both singly and in many combinations (see Type 5 above) with 8-day clocks, communicators, compasses, barometers, etc.

The attachment is universally adjustable.
 CATALOGUE ON REQUEST DEALERS WANTED

New models and new prices at our exhibit
 at the Importers' Salon

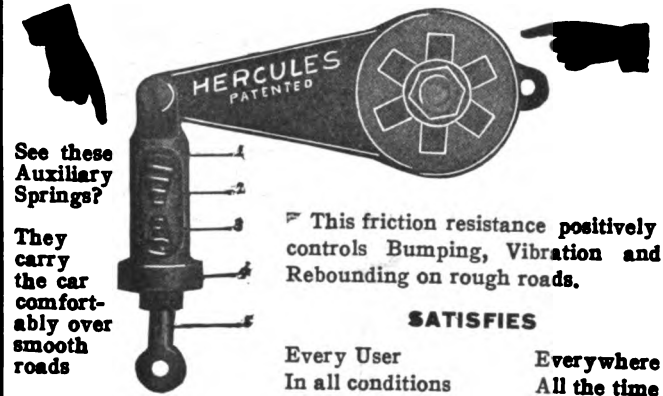
S. Smith & Son, Ltd.

Dept. C

116 BROAD ST., NEW YORK CITY

HERCULES SHOCK ABSORBERS

on your car Increase Safety, Comfort, Speed; Reduce Vibrations, Rebounding and Shocks. Save Springs, Axles, Tires, Repair Bills.



See these Auxiliary Springs?

They carry the car comfortably over smooth roads

This friction resistance positively controls Bumping, Vibration and Rebounding on rough roads.

SATISFIES

Every User
 In all conditions

Everywhere
 All the time

Ask the man who drives a car equipped with **HERCULES**

Hercules Auto Specialty Mfg. Company

CHICAGO, 115 Dearborn St.
 LOS ANGELES, 936 Denver Ave.

Sales Agents

NATIONAL SALES CORPORATION, New York, Chicago

BREECH-BLOCK

BETTER VALUE THAN ANY OTHER PLUG MADE



Insures cleanliness, freedom from the "fussed-up," uncomfortable condition consequent of working around a hot engine, and, best of all, insures comparative freedom from faulty ignition.

Eliminates Your Sparking-Plug Troubles

SAVES TIME, TOOLS, TEMPER and TROUBLE
 No other Plug possesses so many distinct advantages of value and efficiency.

The Breech-Block enables the operator to open and clean the plug in four seconds

- One-sixth turn of the handle opens
- Entire porcelain is exposed for cleaning
- One twist makes instantly white
- Locks with the push of a finger
- Tight to 2,000 pounds
- No Wrench to get, use or replace
- Terminal clips with each plug
- No thumb-nuts to loosen. No pliers
- Stuffing-nut chambered
- Plugs held by their handle in testing
- Not balanced on edge of your engine
- Soot-proof to the limit
- Unaffected by oil
- Chambered end protects porcelain
- Keeps porcelain fragments from cylinder
- Slightest piston movement cleans points
- Makes starting easy; fires first charge
- Big cars run slow on high gear
- Closely throttled; not a skip

INSIST ON HAVING THE "BREECH-BLOCK" PLUG
 Every possible requirement completely satisfied
 Write for booklet

THE STANDARD CO., Torrington, Conn.

EDOUARD DUBIED & Co

- Couvet - Switzerland.

Agent for the U.S.A.

Ch. Dien. The Monolith.
 43-45 West Thirty-Fourth Street.



Stevens-Duryea Six-Cylinder Automobiles

The wise automobile buyer will purchase a six-cylinder car if he desires a horse power of forty or over, or pays more than \$2,750. The six-cylinder car has so thoroughly demonstrated its great superiority over the high-powered Four that the latter type of car is being built by fewer manufacturers each succeeding year.

Six cylinders are absolutely necessary if you are to derive the maximum amount of pleasure in motor-ing.

It is obvious, however, that but few manufacturers are experienced builders of Sixes, inasmuch as the majority of manufacturers held back until they were forced to build Sixes. The Stevens-Duryea Company were the six-cylinder pioneers in America. The design of the Stevens-Duryea Big Six, which scored an instant and unqualified success, was being worked out a year before the first car was built in 1905. Hundreds of Stevens-Duryea Sixes were in use and giving satisfaction when manufacturers generally were starting to build Sixes.

The famous Stevens-Duryea Unit Power Plant and Three Point Support insure perfect alignment always, lighter weight and extreme simplicity and durability. Its six cylinders mean perfect control, quiet running and absence of vibration.

Don't purchase an experiment simply because it is a Six-cylinder car. Select a car that is a known quantity. Stevens-Duryea Sixes have been a known quantity since 1905.

Model U—Light Six	\$3,500
Model U—Light Six Limousine.....	4,500
Model S—Big Six.....	6,000
Model R—Limousine.....	3,300
Model X—Four-cylinder.....	2,750

STEVENS- DURYEA CO.

Chicopee Falls, Mass.

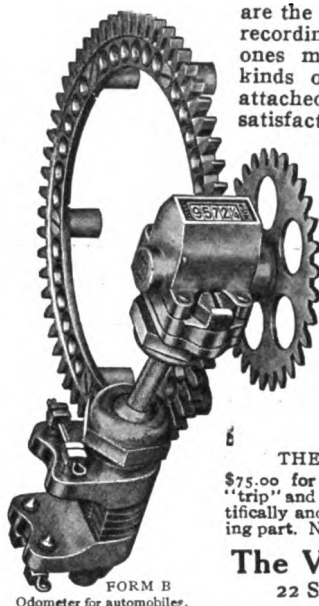
MEMBER A. L. A. M.



"IT'S NICE TO KNOW HOW FAR YOU GO."

Veeder

VEEDER ODOMETERS



are the world's standard instruments for recording distance traveled. The only ones mechanically right; used on all kinds of vehicles and when properly attached are guaranteed to give perfect satisfaction. Thousands of Veeder Odometers in use to one of any other make. Supplied in the following convenient forms for vehicles:

FOR AUTOMOBILES:—From \$10.00 to \$20.00, with all fittings complete to attach to any make of car. Give size of wheel and model of car when ordering.

FOR HORSE-DRAWN VEHICLES: From \$3.50 to \$9.00, with fittings complete, for all vehicles and all wheel sizes. State size of wheel used.

FOR BICYCLES AND MOTOR CYCLES:—Veeder Cyclometers from \$1.00 to \$2.50, ready to put on. Give wheel size.

THE VEEDER TACHODOMETER

\$75.00 for automobiles, registers distance, both "trip" and total, and shows speed at all times. Scientifically and permanently accurate. Only one moving part. No Springs. Descriptive matter free from

The Veeder Mfg. Company
22 Sargeant St., Hartford, Conn.

FORM B
Odometer for automobiles.

ALUMUNITE

TRADE MARK REGISTERED

THE ONLY SUCCESSFUL

ALUMINUM SOLDER

IN THE WORLD.

Guaranteed to Solder

ALUMINUM TO ALUMINUM
or
ALUMINUM TO OTHER METALS

It merits investigation.

ALUMINUM SOLDER & REFINING CO.,
Oswego, N. Y.

AGENTS—Motor Car Equipment Co., N. Y. City; Mercantile Motor Car Co., Brooklyn, N. Y.; Collister & Sayle, Cleveland, O.; Matthew Straus, Buffalo, N. Y.; Craig S. Bowling, Detroit, Mich.

HOLSMAN RECORDS

THE CAR WITH A REPUTATION!

5 YEARS OF SUCCESS!

The records of the participation of the Holsman Automobile in public contests date back to 1903 when it won a blue ribbon in the Chicago 100-mile Reliability Run of that year.

Some of the more recent records are:

Chicago 100-mile Reliability Run, July 26, 1906:
Perfect score in runabout class and first place in touring cars in our class.

Algonquin Hill Climbing Contest, Sept. 6, 1906:
Making better time than machines of nearly double the price.

Algonquin Hill Climbing Contest, Aug. 9, 1907:
Fastest time in its class.

Chicago 150-mile Reliability Non-Motor-Stop Run, June 28, 1907:
Perfect score.

Chicago 95-mile Fuel Economy Contest, Sept. 13, 1907:

Smallest gasoline consumption, with one exception; 29 miles per gallon.



The Holsman Automobile Company

The Oldest and Largest Manufacturers of High-Wheeled Automobiles.

Room 413, Monadnock Block, Chicago, Ill.

AUTOLINE

TRADE MARK.

The Perfected **OIL** For All Types
Lubricating **OIL** of Automobiles
and Motor Boats

"Ask the Garage Man for it." Will not Carbonize or Soot.
Manufactured by

WM. C. ROBINSON & SON CO.
Main Office, Baltimore, Md.

Branches: Boston, Mass., Philadelphia, Pa., Pittsburg, Pa., Cincinnati, O.
Indianapolis, Ind. Terre Haute, Ind.

See our Oil Exhibit at Boston Show

The EFFICIENCY of the GRAY MUFFLER

HAS BEEN PROVED
BY YEARS OF
SERVICE



The 1908 Model
is better than ever.

Made in sizes to effectively
muffle any style engine.
It will pay you to equip
with the "Gray."

GRAY-HAWLEY MANUFACTURING CO.

603 WEST FORT ST., DETROIT, MICH.

The Practical Gas Engineer

What It Is and How To Do It. A book of 150 pages neatly bound in cloth. Sent post-paid for \$1. Address Book Department, The Automobile, Flatiron Building, New York.

COL. SPRAGUE'S 1908 COMMON SENSE AUTO FRONTS

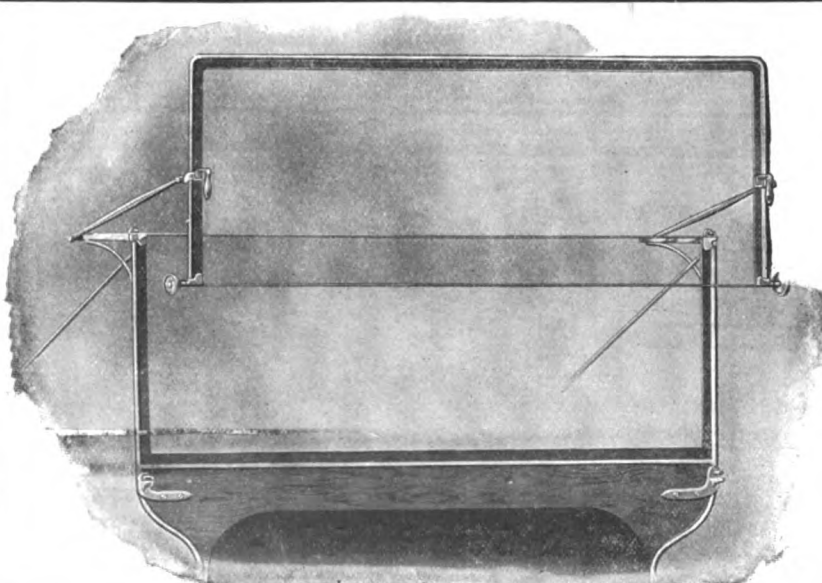
The Sprague Idea Made the Sprague Way
It works right. That's all No complicated traps to bother you.

**SIMPLICITY DURABILITY
ELEGANCE**

Can you find any fault with that? It can't rattle. It fills the bill. A child can work it. It's what you want, because you will be completely satisfied with it.

ASK FOR OUR NEW 1908 CATALOGUE

THE SPRAGUE UMBRELLA CO., Norwalk, O.



"CARTER CAR"

FR I C T I O N **S I M P L I C I T Y** **T R A N S M I S S I O N**



NO GEARS TO STRIP—
NO CLUTCH TO SLIP

MOTOR CAR CO. **DETROIT, MICH.**

WELCH

"The most EFFICIENT Car"

4 Cyl 50 H.P.

WELCH MOTOR CAR CO.

PONTIAC, MICH.

MILLER'S  **Anti-Freeze Compound**

Ten pounds of this compound added to two gallons of water will not freeze at 15 degrees below zero. Price of 10-pound can, \$1.00

Our Catalog, largest of its kind, mailed on request.

MANUFACTURED ONLY BY
CHAS. E. MILLER, 97-99-101 Reade St., New York

Branches: **NEW YORK** **BOSTON** **PHILADELPHIA**
 CLEVELAND **DETROIT** **BUFFALO**



Motor Buggies, Little Roadsters

FURNISHED COMPLETE OR PARTS OF SAME

One and Two Cylinders—
Vertical and Horizontal
Air-Cooled Motors.

All Styles of Water-Cooled
Engines

Friction and Planetary Transmissions
Single or Double Chain Drive

DIFFERENTIALS

We Supply all the Necessary Parts to Convert Buggies into Auto Buggies.



NEUSTADT AUTOMOBILE & SUPPLY CO., 3954 Olive St., St. Louis, Mo.

GEARLESS "GREAT SIX" The Greatest Proposition on Wheels

MODEL 75

PRICE \$4,000

HORSE POWER 75



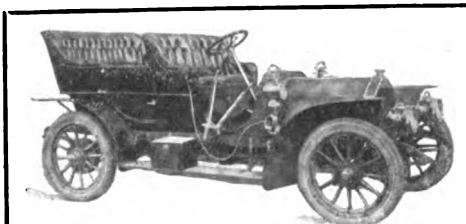
One of the most convincing arguments as to the reliability and proven worth of Gearless Cars is the fact that we have found it unnecessary to make any radical changes from our 1907 models. Such changes as have been made apply to the refinement of minor details, to which the progressive manufacturer is always keenly alive.

Catalogue tells it all. Write

Gearless Transmission Co.

(Motor Car Dept.)

295 PLYMOUTH AVE., ROCHESTER, N. Y.




Model H, 4-cyl., 20 H. P.
PRICE, \$1,875.00 F.O.B. FACTORY

Pullman
AUTOMOBILES

FIVE MODELS

MODEL H., 20 H.P., 4 cyl. Touring Car..... \$1,875.00	MODEL 4-40, 40 H.P., 4 cyl. Runabout..... \$3,000.00
MODEL 6-30, 30 H.P., 6 cyl. Speed Car..... 2,750.00	MODEL I, 40 H.P., 4 cyl. Touring Car..... 3,250.00
MODEL J, 40 H.P., 4 cyl., 7 Passenger Touring Car..... 3,500.00	

WRITE FOR AGENCY PROPOSITION  **YORK MOTOR CAR COMPANY - YORK, PA.**

WESTON ELECTRICAL INSTRUMENT CO.

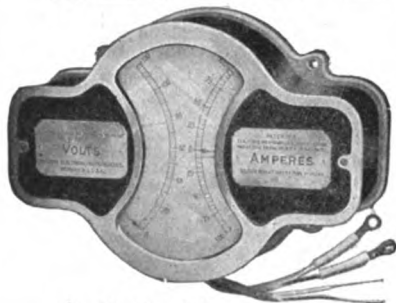
Electrical Measuring Instruments

FOR USE IN

Electrical Carriages and in Charging Stations

Send for Catalogue

Main Office and Works, Waverly Park, Newark, N. J.
 New York Office, - - - 74 Cortlandt Street

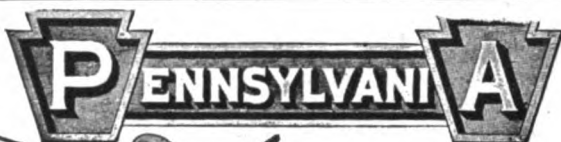


Combination Volt and Ammeter Model 39



Switchboard Instrument Model 24

Type "C" 50



PRICE
\$2,800
 With Magneto
\$3,000

LOS ANGELES, CAL.—Greer-Robbins Company, 1501-1505 South Main Street.
 SAN FRANCISCO, CAL.—City Hall Automobile Company, 66 Fulton Street.
 BOSTON, MASS.—Frederick E. Randall Company, 245 Columbus Avenue.
 CHICAGO, ILL.—B. C. Hamilton, 1218-20 Michigan Avenue.
 PROVIDENCE, R. I.—Pennsylvania Motor Car Agency, 133 Washington Street.
 DENVER, COL.—Denver Omnibus & Cab Company.
 KANSAS CITY, MO.—Auto-Motor Company, 1122-1124 East 15th Street.
 PITTSBURG, PA.—Bellefield Motor Company, 4514-16-18 Henry Street.
 BROOKLYN, N. Y.—Charles F. Batt, 1378 Bedford Ave.
 NEW YORK CITY.—Archer & Company, 1507 Broadway.
 SPOKANE, WASH.—Dulmage-Rose Automobile Company, 1212 Second Avenue.
 PHILADELPHIA, PA.—West-Stillman Motor Car Company, 153 No. Broad Street.
 BALTIMORE, MD.—Rice's Garage, North & Madison Aves.
 ST. LOUIS, MO.—Lakedel Automobile Co., 15143 Delmar Boulevard.
 BUFFALO, N. Y.—Brunn's Carriage Manufactory, 11104 Main Street.

Pennsylvania Auto Motor Co., Bryn'Mawr, Pa.

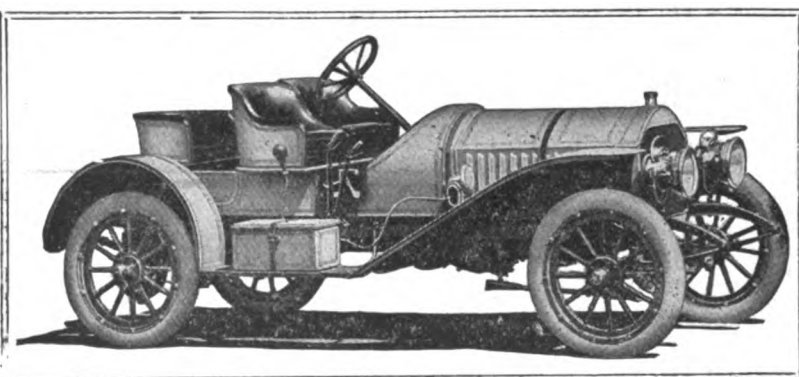
Valves-in-head motor.
 Chrome nickel steel.
 Annular bearings.
 Touring car, roadster, touring roadster, limousine.



1908

Locomobile

Combines Proved Reliability with Increased Efficiency and Low Cost of Up-Keep



MILE A MINUTE AUTOCAR ROADSTER, 30-35 H. P. Fully Equipped \$2,750

The Autocar

Type XIV Touring Car, 30 H. P. - - - \$2,750
 Type XV Runabout, fully equipped - - - 2,500
 Limousine - - - 3,750

IT PAYS TO KNOW THE AUTOCAR

The Autocar Company

ARDMORE, - - PA.

Write Department T for "AUTOCAR LIFE" and Catalogue



Start the New Year Right

Increase your sales by handling the

“Famous Apperson Jackrabbit.”

MODEL M \$2,750.00

35 H.P. Double Ignition. Other models at other prices.

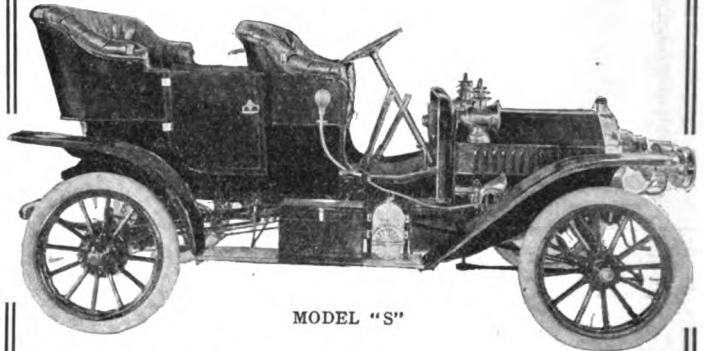
**Apperson Bros. Automobile
Company**

KOKOMO, INDIANA

Members A. L. A. M.



MOLINE



MODEL "S"

Model "S," 24 H.P. \$2,000

ALSO

Model "A," 35 H.P. \$2,500.00

Model "H," 20 H.P. \$1,250.00

*Our catalogue gives full information and will be
furnished on request.*

MOLINE AUTOMOBILE CO.
EAST MOLINE, ILL.

Member American Motor Car Manufacturers Association, New York

AGENTS and DEALERS

Get acquainted *now* with



RUNABOUT

"Built for Nothing but Service"

18-20 H.P., water cooled, with
either solid or pneumatic tires at

\$700 and \$775

Catalogues and Specifications from

THE
AURORA MOTOR WORKS
AURORA, ILL.



“Friction Flyer”

\$800

WRITE FOR CATALOGUE DESCRIBING
OUR FULL LINE

THE BUCKEYE MFG. CO.
ANDERSON, IND.

Evidence Almost Beyond Belief of the Efficiency of the
ELMORE IGNITION SYSTEM



Added to all the accumulated evidence of the past comes now a test so conclusive and sensational that it should interest every man who owns a car—whether it be an Elmore or not.

During the first week of December an Elmore Forty—the four-cylinder, two-cycle car—was driven 212 1-2 miles on a battery of six small vest-pocket flash lamp cells. Do you realize what that means?

These cells are about one inch in diameter and four inches long. Let us repeat again—one inch in diameter and four inches long. Not only did these miniature current producers supply the sparks for 212 1-2 miles, but they were drained down to 2-10 of an ampere.

When the test was stopped to enable the batteries to be exhibited at the Chicago show, the engine was still running on this small spark produced by 2-10 of an ampere of current—really but a small fraction of the amount of current necessary to operate the average four-cycle car.

Now don't you want to know more about an Elmore valveless, two-cycle engine—about an Elmore ignition system—about an Elmore car itself? Better consult the nearest agent—but write us for literature.

THE ELMORE MFG. CO., 1304 Amanda St., Clyde, O.
MEMBERS A. L. A. M.

OWNERSHIP OF THE
FULL-JEWELLED



includes the certainty of constant, efficient service at a remarkably low cost of maintenance.

ADVANCE CATALOG UPON REQUEST

Corbin Motor Vehicle Corporation

Member Association Licensed Automobile Manufacturers

New Britain Connecticut

1888 Broadway, 62d Street, New York

A New



7 Passenger Motor Car with Electric Transmission

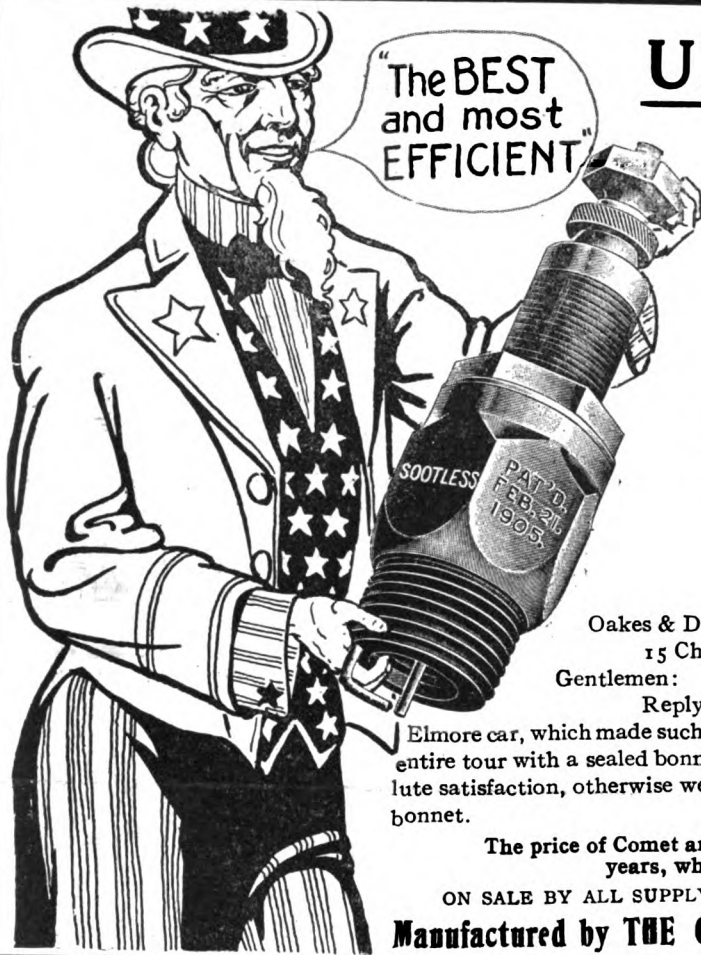
ELECTRICITY is not a prime power agent, yet as a means of transmission and control of power it has supplanted all other methods in steam railroads, street railroads, warships, factories, etc., and in the new high-powered 7 passenger gasoline car electricity has supplanted all friction clutch, gear boxes and shifting levers

Also the light Columbia touring car, runabout and limousine has many and important improvements for 1908

ELECTRIC VEHICLE CO., Hartford, Conn.

Member A. L. A. M.

NEW YORK: 134-136-138 West 39th Street



UNIVERSALLY USED

COMET and SOOTLESS SPARK PLUGS

ELMORE MFG. CO.
Manufacturers ELMORE AUTOMOBILES
Clyde, Ohio

Oakes & Dow Company,
15 Chardon Street, Boston, Mass.
Gentlemen:

Aug. 9th, 1907

Replying to yours of Aug. 7th we are pleased to advise you that our Elmore car, which made such a remarkable record in the Glidden Tour, having completed the entire tour with a sealed bonnet, was fitted with your sootless spark plugs, which gave absolute satisfaction, otherwise we would not have been able to complete the tour with a sealed bonnet.

Yours truly, ELMORE MFG. CO.

The price of Comet and Sootless Spark Plugs is the same as in the past three years, which shows that quality maintains the price.

ON SALE BY ALL SUPPLY DEALERS. OUR PLUGS FULLY COVERED BY PATENTS.

Manufactured by THE OAKES & DOW CO., 15 Chardon St., Boston, Mass.

T I M K E N

55%

55%

55%

of all the Exhibitors of both pleasure and commercial cars at the great Chicago Shows held in the Coliseum Annex, 1st Regiment Armory and Tattersalls 7th Regiment Armory are using

TIMKEN ROLLER BEARINGS OR AXLES.

When you consider the varied exhibits and large number of individual Exhibitors, this showing is most remarkable—yet it shows that more than half of them are of one mind, notwithstanding the fact that price is always secondary to quality with TIMKEN PRODUCTS.

In the great 3 day Chicago Reliability Run a HAYNES car WITH WHEEL HUB SEALED carried off the prize with a clean score. Some say a practical impossibility with bearings not of

THE TIMKEN PRINCIPLE AND QUALITY.

If you are not using TIMKEN PRODUCTS, write us—we have facts to present that not only mean profit, but reputation to you.

THE TIMKEN ROLLER BEARING AXLE CO.

CANTON, OHIO

Eastern Branch—10 E. 31st St., NEW YORK

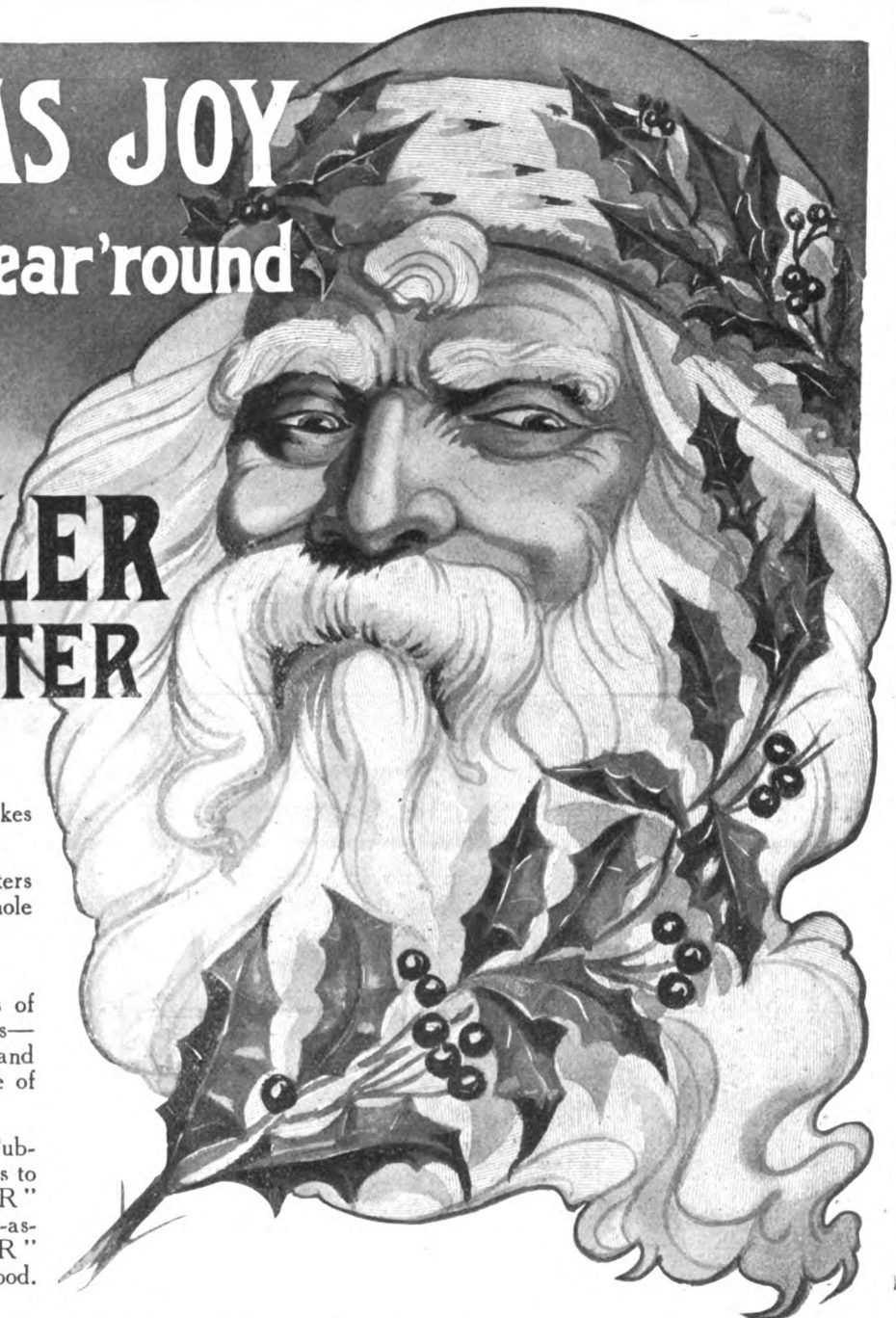
Western Branch—429 Wabash Ave., CHICAGO

CHRISTMAS JOY

The whole year'round

for
users of

SCHEBLER CARBURETER



It is successful Carburetion that makes automobiling pleasurable and practical.

Users of "SCHEBLER" Carbureters have both in fullest measure the whole year 'round.

"SCHEBLER" CARBURETER

ALWAYS RELIABLE regardless of engine speeds or atmospheric conditions—a perfect and uniform mixture always and an increase in the power of your engine of 20 to 30 per cent.

The Manufacturer owes it to the Public and the Public owes it to themselves to insist on having the "SCHEBLER" CARBURETER on their cars. "Just-as-good" is but a tribute to "SCHEBLER" superiority and should be so understood.

WHEELER & SCHEBLER, Manufacturers

Factory: INDIANAPOLIS, IND.

SALES OFFICES

F. J. ALVIN, Mgr.
233-237 Randolph St., Chicago.

NEW ENGLAND OFFICE

W. J. CONNELL, Mgr.
36 Columbus Ave., Boston, Mass.

EASTERN OFFICE

E. J. EDMOND, Mgr.
The Motor Mart, 62d and Broadway, N. Y.

CANADIAN OFFICE—JOHN MILLEN & SONS, LTD., Montreal—Vancouver—Toronto.

LIST OF DISTRIBUTORS

EXCELSIOR SUPPLY CO., Exclusive Agents for Chicago and Cook County, Ill.
Pope Manufacturing Co., Hartford, Conn.
The Kelsey Co., Buffalo, N. Y.
Chas. E. Miller, 824 Main St., Buffalo, N. Y.
Chas. E. Miller, 406 Erie St., Cleveland, Ohio.
Chas. E. Miller, 227 1-2 Jefferson Ave., Detroit, Mich.
E. B. Belcher, 26 Green St., Malden, Mass.
Hub Automobile Exchange, Dorchester, Mass.
National Elec. Supply Co., Washington, D. C.
Jos. Woodwell Co., Wood St. & Second Ave., Pittsburg, Pa.

J. W. Lathrop & Co., Mystic, Conn.
G. D. Thorndike, Portland, Me.
Jos. Brassard, Central Falls, R. I.
Wallace Bros., Norfolk, Va.
The Autolight Motor & Supply Co., 508 N. Broad St., Philadelphia, Pa.
Page Engineering Co., Baltimore, Md.
Smith Electric Engineering Co., Watertown, N.Y.
Kansas City Motor Car Co., Kansas City, Mo.
Neustadt Auto & Supply Co., St. Louis, Mo.
C. J. Smith & Co., 354 St. Peters St., St. Paul, Minn.
The Angier Co., Boston, Mass.

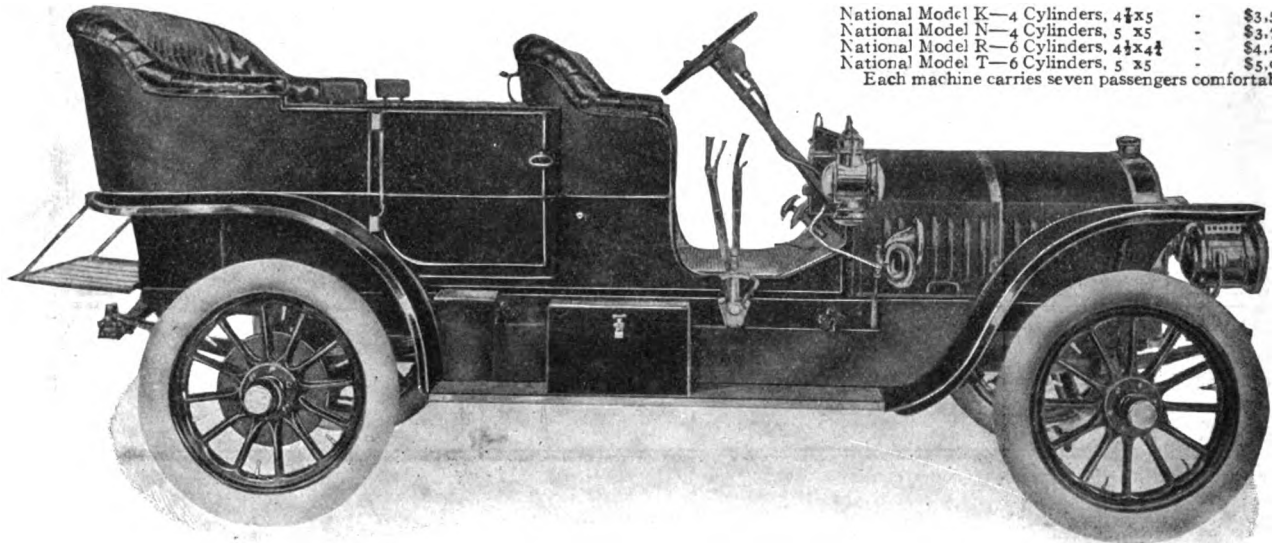
The E. R. Cumbe Co., 1528 Court Place, Denver, Col.
A. Baldwin & Co., 332 Baronne St., New Orleans, La.
Chanlor & Lyon Motor Supply Co., 930 S. Main St., Los Angeles, Cal.
Chanlor & Lyon Motor Supply Co., 503 Golden Gate Ave., San Francisco, Cal.
Wilson & Co., Ottawa, Ont., Can.
McCulloch & Boswell, Winnipeg, Man.
Canada Cycle Motor Co., Toronto Junction, Can.
Schuman Carriage Co., Honolulu, T. H.
Geo. Neill & Co., 38 Fenchurch St., London, Eng.

National Motor Cars

"THE ALL BALL-BEARING CARS"

The 1908 line consists of Two 4-Cylinder and Two 6-Cylinder Models in Touring Cars, Limousines and Roadsters, each equipped with National Ball-bearing Motors.

The entire line embodies the tried and proven National type of construction, refined and perfected in all details to the highest possible degree.



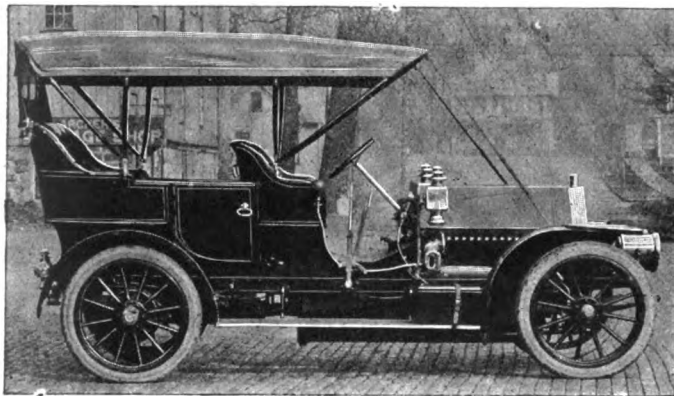
National Model K—4 Cylinders, 4 1/2 x 5 - \$3,500.00
 National Model N—4 Cylinders, 5 x 5 - \$3,700.00
 National Model R—6 Cylinders, 4 1/2 x 4 1/2 - \$4,200.00
 National Model T—6 Cylinders, 5 x 5 - \$5,000.00
 Each machine carries seven passengers comfortably.

WRITE FOR DESCRIPTIVE MATTER

National Motor Vehicle Company



Indianapolis, Ind.



The One Topic of Automobile Talk

The newest and best development of 1908 models embodying numerous novel and interesting features deserving of special attention.

Highest Quality, Moderate Price

Cost of Up-Keep Reduced to a Minimum

SPECIFICATIONS:

Motor—Rutenber, 4-cylinder
 Bore—4 3/4 inch
 Stroke—5 inch
 H.P.—40 at 1000 R.P.M.
 Transmission—Selective type, Sliding gear
 Speeds—Three forward and reverse

Bearings—Timken Roller
 Wheels—36 inch
 Tires—4 inch, any make
 Wheel Base—117 inch
 Tread—56 inch

Body—Touring, with seats for 7 passengers
 Front Axle—1 piece drop forging, I-beam section
 Rear Axle—Clutch driven, floating type
 Frame—Pressed steel

DON'T FAIL TO GET FULL PARTICULARS IMMEDIATELY

FOREST CITY MOTOR CAR CO.,

136 WALNUT STREET
 MASSILLON, OHIO

Agents Wanted in Unoccupied Territory. Write To-Day



THOMAS

The E. R. Thomas Motor Company Presents Four Styles of Chassis and Nineteen Styles of Bodies

THOMAS 4-20 TOWN CAR. Combines luxury with utility and necessity; designed particularly for city and suburban use in good or bad weather, for calling and shopping, for the theatre, for social functions and touring on good roads. This car is furnished with brougham, landaulet, cabriolet, limousine and doctor's car bodies. In Europe this style of car is the vogue, as it rapidly is becoming in America. Prices, \$3,000 to \$3,250.

THOMAS 4-40 DETROIT. A marvel of smooth and quiet running with a dash in operation and distinctive style in appearance that denotes the thoroughbred and fascinates the most critical. The 4-40 has been strengthened and improved where the wisdom of experience has suggested. It is especially designed to successfully eclipse, at a much lower price, shaft-driven cars of the highest price and class. It is equipped with runabout, tourabout, touring and limousine bodies. Prices, \$2,750 to \$3,750.

THOMAS 4-60 FLYER. The Old Reliable is smoother, snappier, faster, lighter, quieter and roomier than ever. It has been redesigned and refined until it has become one of the most beautiful and stylish cars to be seen. The mechanical changes are largely refinements, though the motor generates more power. A bearing between each cylinder is still one of its chief characteristics. It is equipped with runabout, tourabout, touring, landaulet and limousine bodies. Prices, \$4,500 to \$5,700.

THOMAS 6-70 SPECIAL. This is the climax of automobile construction, and is one of the most powerful and flexible cars made, retaining, as it does, the structural principles that have counted so much for reliability in the Thomas 4-60 Flyer. There is not a single experimental feature in its entire construction. For speed, smooth running on hills and bad roads, and for slow speed, all on the high gear, the 6-70 Special is not equalled. It is equipped with runabout, touring, landaulet and limousine bodies. Prices, \$6,000 to \$6,900.

E. R. THOMAS MOTOR COMPANY

Member A. L. A. M.

BUFFALO, N. Y.

*"You
Get
What
You
Pay
For."*

When we began the manufacturing of speed indicators we promised ourselves that quality should rule above all other considerations. That promise has never been broken.

We believed then, as we do now, that quality and honesty and fair dealing could be made to pay dividends. How well that belief has been borne out is best told by the fact that

The Warner Auto-Meter



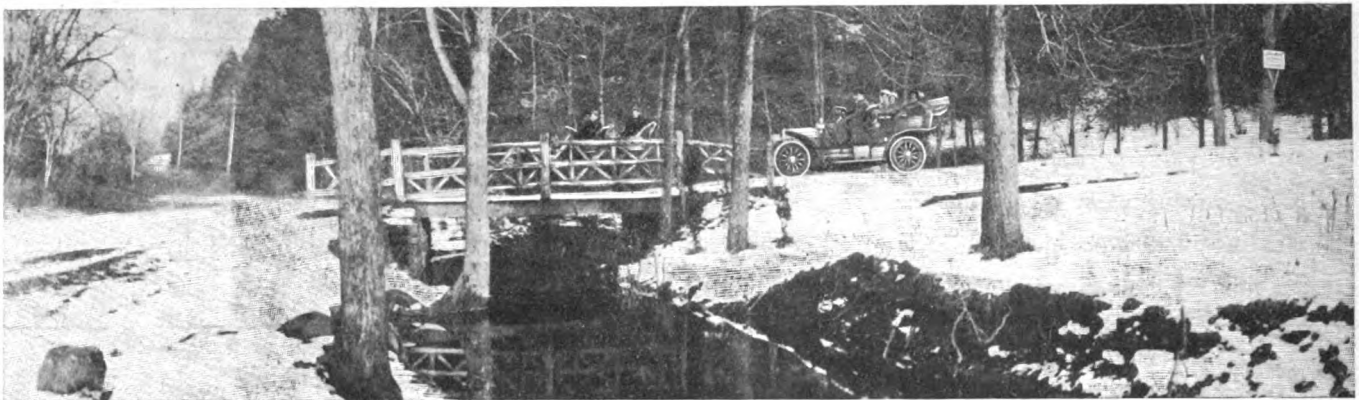
was on 70 per cent of the Glidden Tour 1907 contesting cars and on 60 per cent of the cars entered in the Glidden 1906 Tour.

That the Warner Magnetic principle of speed indication is the only one is proved by the fact that it has been adopted by the United States Government to show the velocity of the wind. Uncle Sam wants the best—a poor speed indicator is worse than none—he knows that he can't get a reliable one for less than the Warner price.

Write for Complete Information.

Warner

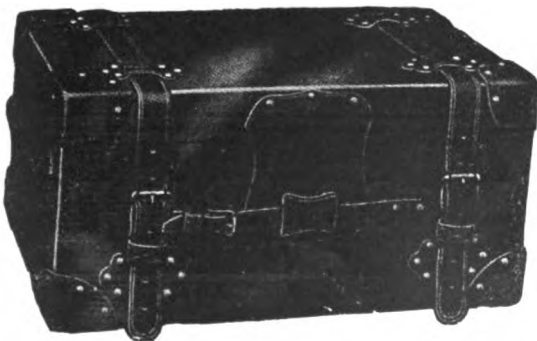
The Warner Instrument Co. 817 Roosevelt Avenue Beloit, Wis.



Winter Automobiling has a charm that is equalled
by no other open air pastime, and with a

JOHN BOYLE TRUNK

you are always ready for any emergency, regardless of weather changes—rain, sleet, cold winds or snow, or stop-overs en tour



With a **John Boyle Trunk** you can carry all requirements of clothing and other necessities for your family and self in one roomy, safe, sure—under lock and key—water-proof and dust-proof trunk, strapped out of your way at the rear of the car. Easily opened en route. At your destination unstrap from car and send into your rooms. Of inestimable convenience—gives pleasure, comfort and satisfaction to all tours and a finer appearance to your car. John Boyle & Co.'s trunks have a style and quality exclusively their own—none of the imitations approach them in any way, and their quality of material and construction makes them almost everlasting.

Write for Style Book and Prices for the various makes of cars

John Boyle & Co. 112-114 Duane St. 70-72 Reade St. New York

It is the Practical Things that Count

In the recent three-day 600-mile Reliability Run of the Chicago Motor Club a

Rambler

stock car with no special preparation or equipment made every control on time without an instant's delay or attention and finished in perfect condition.

A hypertechnical committee deprived us of a perfect score on account of a damaged tail lamp and loosened speedometer bracket, but the fact remains that this car underwent the most severe test ever devised without a seal being broken or the tool bag opened, and was at the finish in the same perfect condition as at the start.

Thus was the Rambler again proven

THE CAR OF STEADY SERVICE

If you want a car that is **RIGHT** at a price that is **REASONABLE** with the backing of one of the most powerful companies in the industry, see the Rambler line for 1908.

Two touring cars and a roadster at \$1,400 and \$2,250.

Catalog 34 upon request.

THOMAS B. JEFFERY & COMPANY

Main Office and Factory, Kenosha, Wis.

BRANCHES AND DISTRIBUTING AGENCIES:

Chicago

Milwaukee

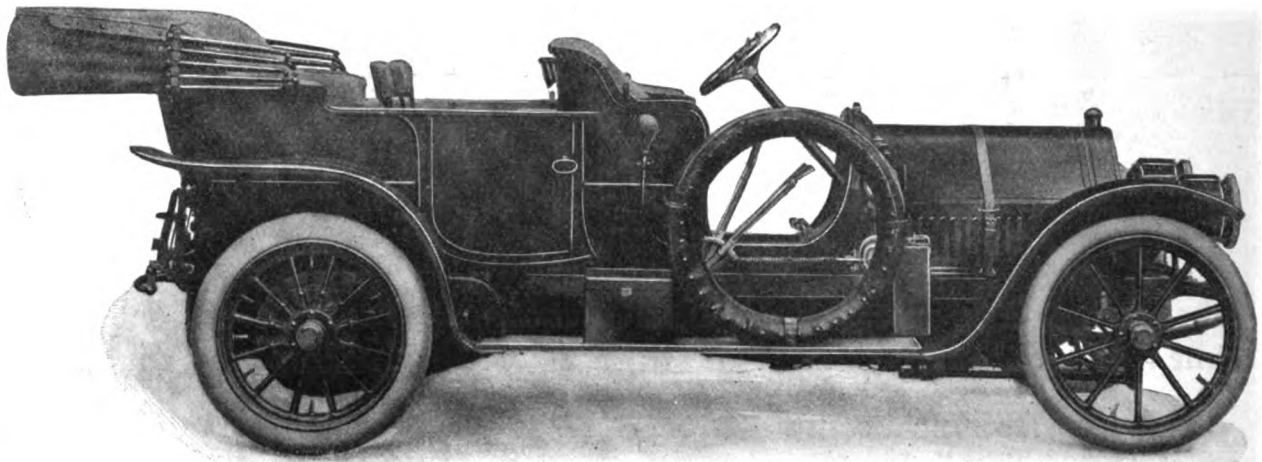
Boston

Philadelphia

San Francisco

POPE-TOLEDO

1908



Characterized by extreme elegance of appointment, simplicity of design, and superb finish.

**Quiet, Comfortable
and Very Speedy**

Shrewd, long-headed dealers have been strongly impressed with the wonderful showing made by the Pope-Toledo at New York and Chicago Shows.

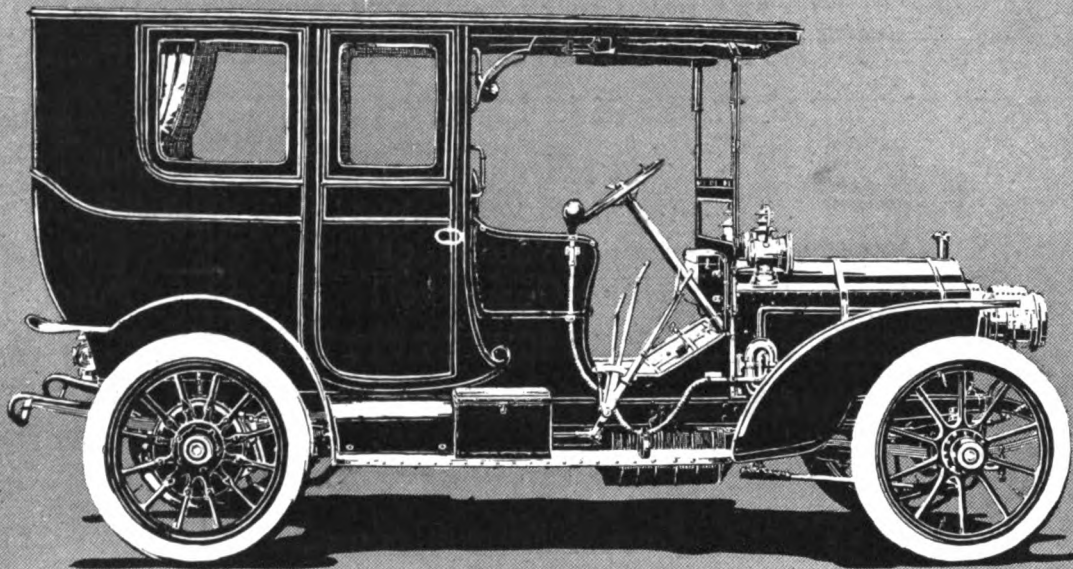
Live dealers in unoccupied territory are invited to correspond with us.

POPE MOTOR CAR COMPANY, Toledo, Ohio

MEMBERS A. L. A. M.

Packard

"THIRTY"
1908



"Ask the man who owns one"

PACKARD MOTOR CAR COMPANY
DETROIT, MICHIGAN

Are You Quite Satisfied?

Imported
Die
Forgings

Chrome Nickel Steel!
Chrome Vanadium Steel!
Special Auto Steel!

For all
Automobile
Parts

COST LESS THAN CASTINGS IN THE FIRST PLACE!

Round
Bars
All
Sizes

Chrome Nickel Steel!
Chrome Vanadium Steel!
Special Auto Steel!
Special Gear Steel!

Mill Lengths
or cut off
to suit
Purchasers

DO NOT HANDLE INFERIOR STEEL AT ALL!

Designs
and
Drawings

Of Motors, Transmissions,
Chassis or of other
parts of cars

Made
to
Order

AT A FIXED PRICE, FOR GUARANTEED WORK!

Expert
Attention
Given

To the investigation of
Automobiles,
their Materials or Quality

Fearless
Honest
Opinion

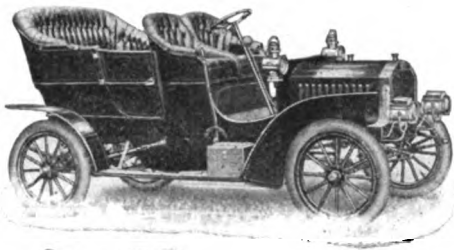
A STITCH IN TIME SAVES NINE!

J. M. ELLSWORTH

AUTOMOBILE ENGINEER

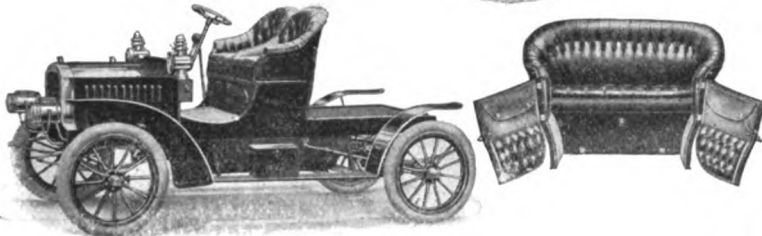
**518 W. 22d Street
New York**

The Model Line for 1908

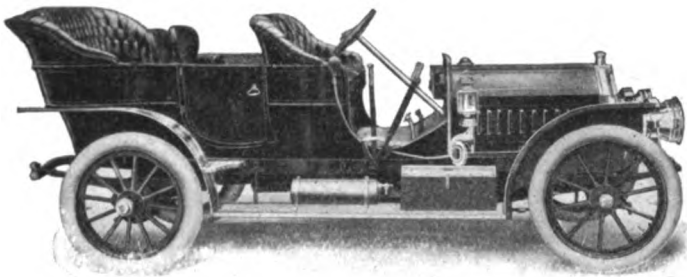


RUNABOUT CAR No. 11
 Motor—Double opposed, 5 x 7, 24-h.p. Wheelbase—100".
 Tires—32" x 3½". Body—Tilting type. Weight—1,650
 pounds. Price—\$1,150.

A speedier car and better hill climber than any car manufactured by any one in which a double opposed motor is used.



FIVE PASSENGER CAR NO. 12
 Motor—Double opposed, 5 x 7, 24-h.p. Wheelbase—100".
 Tires—32" x 3½". Body—Tilting. Tonneau—Detachable.
 Width of rear seat inside of upholstery—50". Depth—
 18". Height—24". Length of tonneau floor—30". Full
 specifications of this car will interest you.



FIVE PASSENGER CAR No. 14
 Motor—Double opposed, 5 x 7, 24-h.p. Wheelbase—104".
 Tires—32" x 3½". Body—Tilting. Tonneau—Detachable.
 Pressed steel construction throughout. Large, roomy, and
 a beautifully designed body. Easily in a class by itself,
 when it comes to easy riding, because of the long wheel-
 base and full elliptic springs.

FIVE TO SEVEN PASSENGER CAR No. 15
 Motor—4-cylinder, 5 x 5½, 50-h.p. Transmission—Slid-
 ing gear, progressive type. Clutch—3 disc, metallic, with
 cork insert. Wheelbase—118½". Wheels—1½" spoke.
 Tires—36 x 4½", rear; 36 x 4" front. Front springs—42"
 long; rear—54". Weight—2,900 pounds. Price—\$3,500.

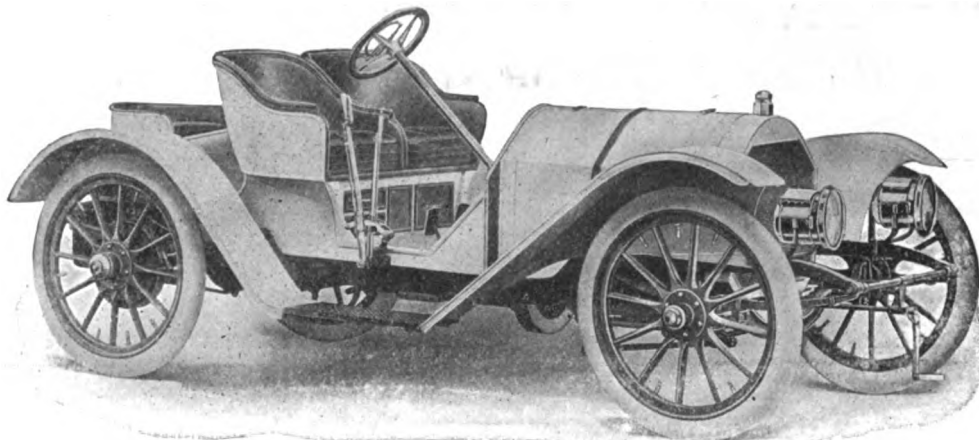
SEVEN PASSENGER CAR No. 16
 Motor—4-cylinder, 5 x 5½, 50-h.p. Transmission—Slid-
 ing gear, selective type. Clutch—Multiple disc. Wheel-
 base—122". Wheels—1½" spoke. Tires—Rear, 36 x 4½";
 front, 36 x 4". Springs—Front, 42"; rear, 54". Weight—
 3,000 pounds. Price—\$4,000.

For full specifications of above cars write for advance catalog No. 10.

Model Automobile Co., Peru, Indiana

IMPERIAL ROADSTER

The Car with the Straight Line Drive

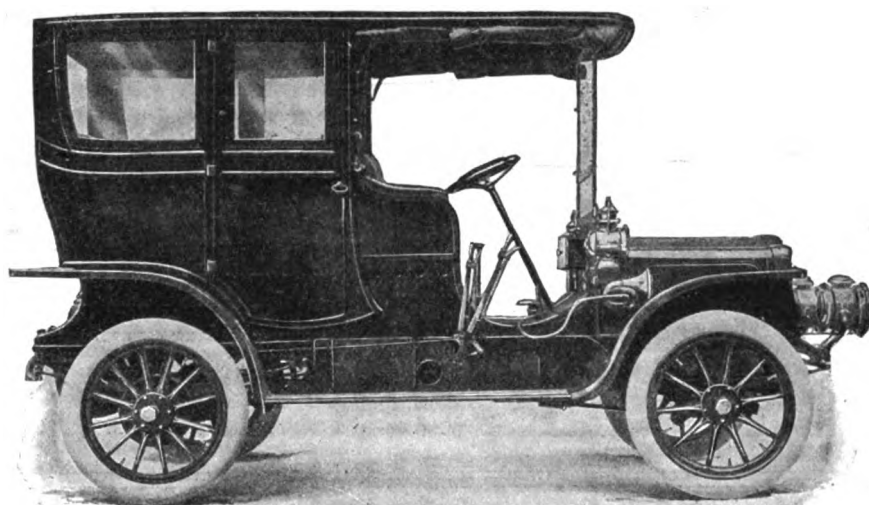


30-35 H.P., 36" wheels, selective type transmission, Eisemann Magneto, double system of ignition double drop frame. Price including gas lamps and generator, horn, tools, etc., \$2,500.00.

IMPERIAL MOTOR CAR CO., Williamsport, Penn., U. S. A.

Members A. M. C. M. A.

THE INCOMPARABLE WHITE THE CAR FOR SERVICE



Exclusive Features of the White Limousine.

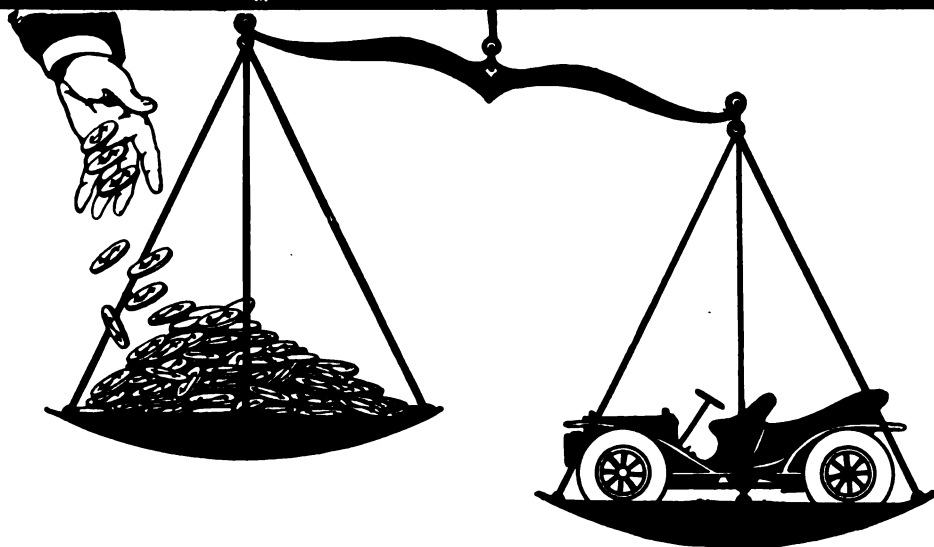
The exclusive White quality of absolute noiselessness of operation is of particular advantage in a limousine, because in a car with a closed body any noise made by the mechanism is even more noticeable and annoying than in an open vehicle.

Another exclusive White quality—namely—genuine flexibility of control, permits of the machine being guided safely and speedily through the crowded city streets. The speed of the White may be accommodated to the exigencies of street traffic without any changing of gears, jerky starts or the embarrassing and sometimes dangerous “stalling” of the engine.

As regards graceful lines and luxuriousness of equipment and finish, the White limousine must be seen to be appreciated.

Let us show you the unequalled luxury and comfort
of the White limousine

THE WHITE COMPANY
CLEVELAND, OHIO



Don't waste money and power with a heavy automobile

It takes gasoline and power to move weight. So every pound of weight that you don't need, wastes your fuel (money) and keeps your engine from giving the greatest speed and hill-climbing

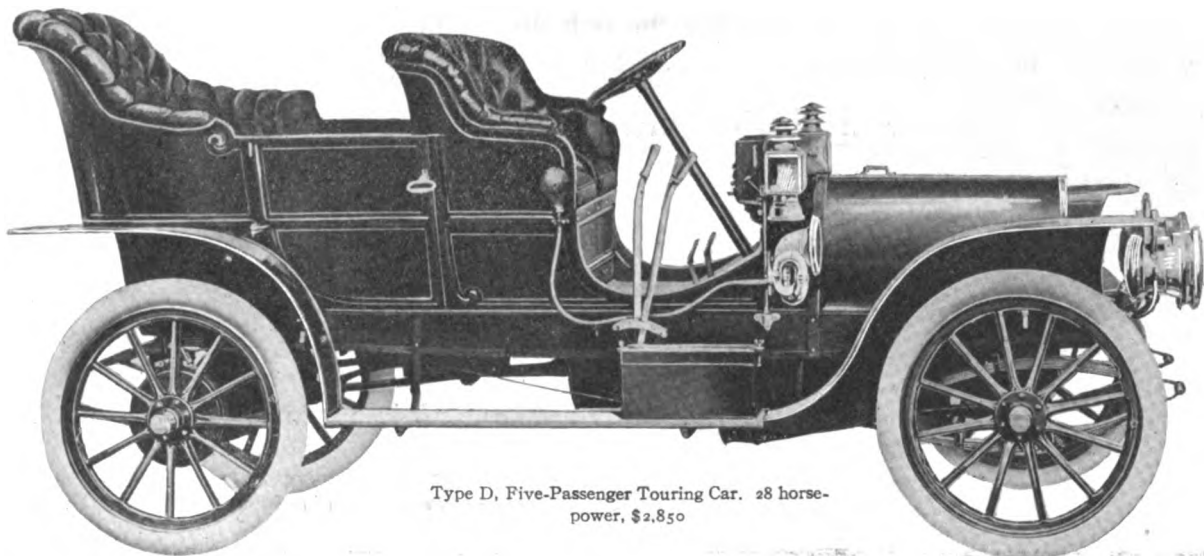
ability. Excess weight bears down on tires and wears them out—*expense*. The heavy water-cooled automobile has more parts to get out of order—*more expense*.

The light-weight, air-cooled Franklin weighs a great deal less than any other automobile of its power. No unnecessary weight to cut down speed and ability on hard roads and hills. The smallest cost for fuel and tires. And very little cost for maintenance and repairs.

Write for the Franklin catalogue.

H. H. FRANKLIN MFG. CO., Syracuse, N. Y.

Member Associated Licensed Automobile Manufacturers



Type D, Five-Passenger Touring Car. 28 horsepower, \$2,850

WINTON



The six-cylinder Winton Six-Teen-Six is **jerkless, joltless, vibrationless.** Does more and prettier work than any four you ever saw. Develops driving power at slow motor speed, reserving an abundance of high motor speed for a dashing spin or a superb hill climb on the high. Starts from the seat on compressed air. Creeps through crowded traffic on the high, ever ready to dash through the first opening in response to throttle. Avoids gear shifting. Goes the route **like coasting down hill.**

One demonstration is convincing that the Six-Teen-Six is precisely the car for the man who wants the best there is.

The Winton Motor Carriage Company

Member A. L. A. M.

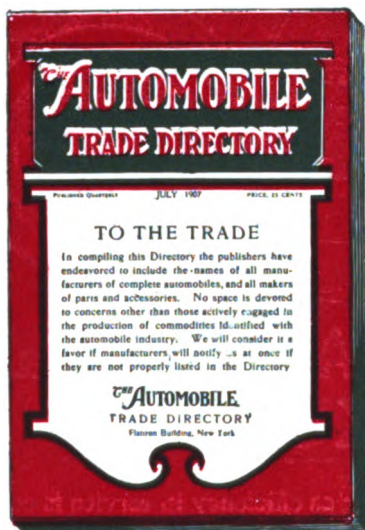
CLEVELAND, OHIO, U.S.A.

Branch Houses in

New York San Francisco Pittsburg Boston
Chicago Philadelphia Seattle Detroit

A Big, Live, Business-Bringing Proposition

THE AUTOMOBILE TRADE DIRECTORY



¶ Its sole purpose is to tell the buyer who makes the thing he wants, and the arrangement of our classified lists presents the advertiser's name and announcement to the purchaser just when the latter wants the identical thing advertised.

¶ The Directory is constantly referred to by Managers, Mechanical Engineers, Superintendents, Purchasing Agents, the men who specify and buy parts and material for the construction of cars, and by Dealers, Garages, Supply Jobbers, and the entire trade.

Could advertising be placed more exactly where it should go?

The Automobile Trade Directory Mailing List

comprising every Garage, Electric Charging Station, Salesroom, Repair Shop, Supply House and the purchasing agents, mechanical engineers, etc., of automobile manufacturing concerns in the United States and Canada.

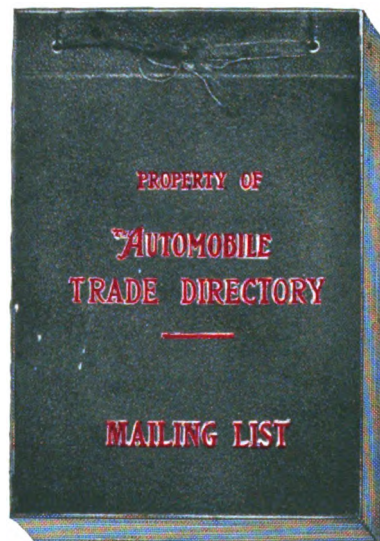
¶ This list enables our advertisers to "follow up" their advertising in The Automobile Trade Directory by direct communication with buyers through letters, circulars, etc.

¶ Our new Mailing List (now on the press) has been thoroughly revised and corrected to date, and is by far the most complete and accurate in existence. Monthly revisions and supplements will be furnished to keep it so.

¶ By this effective publicity and direct communication you concentrate your selling effort to the definite field you wish to reach and make it possible to talk to more active buyers for less money than in any other way.

January issue now in preparation

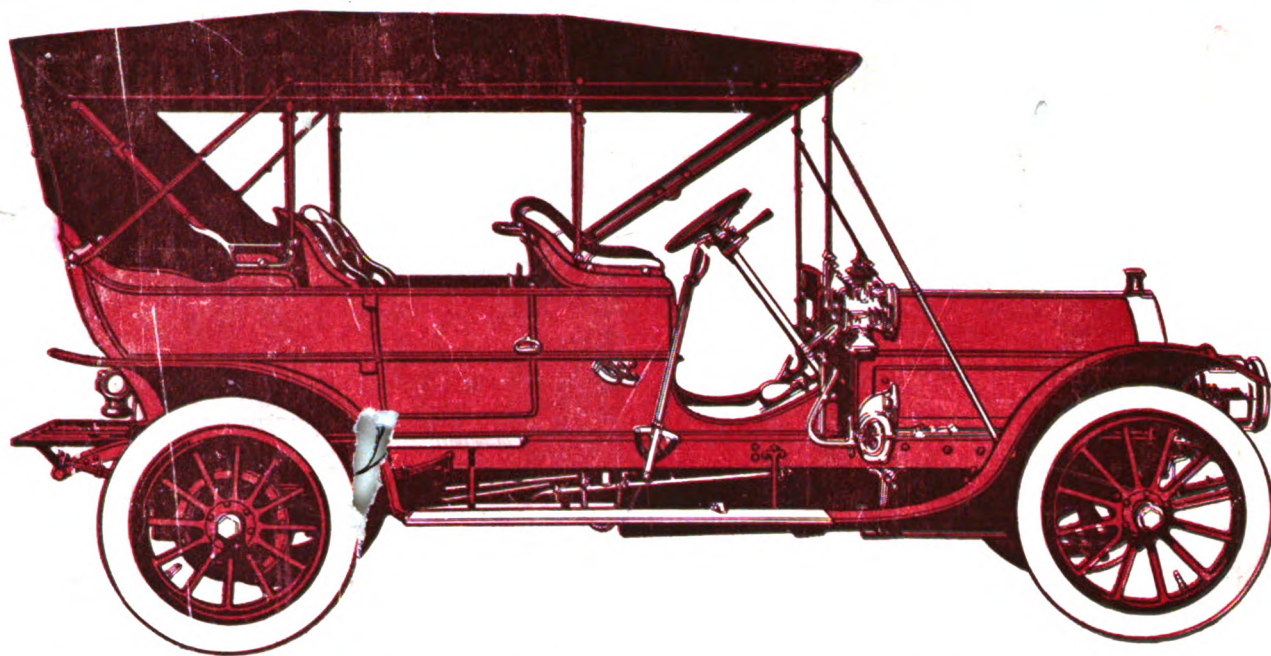
Write to-day for advertising rates and full information



THE AUTOMOBILE TRADE DIRECTORY

FLATIRON BUILDING, NEW YORK

Subscription price \$1.00 a year. Single copies 25 cents



The Last Word in GREAT ARROW Car Construction is LUXURY

The four-cylinder GREAT ARROW was and still is a good car as far as efficiency in service is concerned. The six-cylinder adds a touch of luxury, due to ABSENCE OF VIBRATION, which sums up in one word the chief argument in favor of the six-cylinder GREAT ARROW.

THERE ARE MANY MINOR ADVANTAGES, such as lighter weight of certain parts, ease in starting, possibility of running in traffic on a high gear and other things that will appear to the experienced motorist, but after all, THE ONE GREAT ARGUMENT IN FAVOR OF SIX CYLINDERS IS COMFORT.

A motor car is a pleasure vehicle, and the more comfortable we can make it, the more nearly it becomes the ideal pleasure vehicle, and comfort, luxury, the sensation of gliding rather than being propelled by machinery, are the results attained in the six-cylinder GREAT ARROW.

HERE ARE THE
1908 TOURING CARS

4-cylinder Great Arrow, 30 H.P., Price, \$4,000
4-cylinder Great Arrow, 40 H.P., Price, \$5,000
6-cylinder Great Arrow, 40 H.P., Price, \$5,500
6-cylinder Great Arrow, 60 H.P., Price, \$6,500

THE GEORGE N. PIERCE CO. (Members Association of Licensed Automobile Manufacturers), BUFFALO, N. Y.

PIERCE DEALERS

Boston, Mass.	J. W. Maguire Co.	745 Boylston Street	Milwaukee, Wis.	Hibbard Auto. Co.	187 Wisconsin Street
New York, N. Y.	Harrolds Motor Car Co.	233 West 54th Street	Minneapolis, Minn.	Pence Automobile Co.	717 Hennepin Avenue
Binghamton, N. Y.	Binghamton Motor Car Co.	172 State Street	Mobile, Ala.	So. Automobile Co.	105 S. Conception Street
Chicago, Ill.	H. Paulman & Co.	1430 Michigan Ave.	Montreal, Can.	Wilson Automobile Co.	117 Craig Street, West
Pittsburg, Pa.	Banker Brothers Co.	Baum & Beatty Streets	Newark, N. J.	Ellis Motor Car Co.	222 Halsey Street
Philadelphia, Pa.	Foss-Hughes Motor Car Co.	201 N. Broad Street	Omaha, Neb.	H. E. Frederickson	2046-2048 Farnham Street
San Francisco, Cal.	Mobile Carriage Co.	Golden Gate Ave. and Gough Street	Ottawa, Can.	Wilson & Co.	142 Bank Street
San Francisco, Cal.	The Geo. N. Pierce Co.	762 Golden Gate Avenue	Pittsfield, Mass.	Central Auto. Station Co.	55 West Street
Portland, Ore.	Covey & Wallace Motor Co.	16th and Alder Streets	Portland, Me.	F. A. Nickerson Co.	642 Congress Street
Seattle, Wash.	Broadway Auto. Co., Inc.	Madison St. and Broadway	Providence, R. I.	Foss-Hughes Motor Car Co.	512 Industrial Trust Bldg.
Los Angeles, Cal.	William E. Bush	953 South Main Street	Richmond, Va.	B. A. Blenner	1607 W. Broad Street
Baltimore, Md.	Southern Auto. Co.	1200 Mt. Royal Avenue	Rochester, N. Y.	U. S. Auto Co.	21 Plymouth Avenue
Buffalo, N. Y.	The Geo. N. Pierce Co.	752 Main St. (City Sales Department)	Salt Lake C., Utah	Tom Botterill	62 W. Third, South
Cleveland, Ohio	Metropolitan Motor Car Co.	Euclid Ave. and E. 19th St.	Scranton, Pa.	Standard Motor Car Co.	
Denver, Col.	Tom Botterill	1643 California Street	Springfield, Mass.	E. R. Clark Auto. Co.	461 Worthington Street
Detroit, Mich.	J. P. Schneider	187 Jefferson Avenue	St. Louis, Mo.	Western Auto. Co.	4701 Washington Blvd.
Hartford, Conn.	Miner Garage Co.	High & Allyn Streets	Syracuse, N. Y.	The Cronin Automobile Co.	567 South Clinton St.
Houston, Texas	Houston Motor Car Co.		Titusville, Pa.	Lambert & von Tacky	16 N. Franklin Street
Kansas City, Mo.	Palace Auto. Co.		Toronto, Ont.	Auto. & Supply Co., Ltd.	24 Temperance Street
Louisville, Ky.	John Mason Straus	1408 Walnut Street	Troy, N. Y.	Troy Auto. Exchange	22 Fourth Street
Davenport, Iowa	Iowa Auto & Tire Co.	Third and Chestnut Streets	Utica, N. Y.	Utica Motor Car Co.	
		414-416 Main St.	Paris, France	N. S. Goodsill (parts only)	22 Avenue de la Grand Armée
			Mexico City, Mexico	Mohler & Degress	la Independencia 12



3 9015 02446 5091

